### **ABOUT DRAGNET JOB APTITUDE TEST**

The test section measures your verbal reasoning ability, Logical reasoning and problem solving ability. This material provides in-depth insight into how the test looked like in the past.

#### BREAKDOWN:

20-NUMERICAL REASONING QUESTIONS	TIME=20MINUTES
20-VERBAL REASONING QUESTIONS	TIME=20MINUTES
10-16 ABSTRACT (INDUCTIVE) REASONING	TIME=10MINUTES

#### **TEST SCORING SYSTEM**

The questions in this test all carry equal marks and no negative marking is applied. However, it is advisable that you double-check your answer choices.

The test format includes Numerical Reasoning, Verbal reasoning and Abstract reasoning. Usually the same questions for all candidates.

#### **USE OF CALCULATOR**

Use of calculators are not allowed, but the test administrator is at liberty to decide whether or not use of calculators will be permitted in the hall. So it is best you factor in this reality, and try to practice without using calculator.

#### **STUDY PACK NAVIGATION:**

Use the in-built navigation system (at the left side of this study pack) to quickly go to any section you want to study.

#### **RECOMMENDATION:**

Please ensure that you go through all questions provided in this study pack to get a well rounded preparation. All questions from Dragnet's past entry level job aptitude test.

Happy Studying!

### NUMERICAL REASONING TEST 1

### Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 



2	Year	Annual attendance (100,000s)
asi	2006	14.6
2	2007	15.2
val	2008	16.3
aley	2009	16.8
ő	2010 Predicted	16.5

**Q1** How much did the combined revenue from Slot machines and Roulette differ

from that of Other table games between 2006-2009 inclusive (in £millions)?

- (A) 0.9
- (B) 9.0
- (C) 9.2 (D) 0.92
- (E) None of these

**Step 1** – Calculate the totals for Slot machines, Roulette, Other table games Slot machines = 1.3 + 1.4 + 1.8 + 1.5 = 6Roulette = 0.8 + 0.6 + 0.6 + 0.7 = 2.7Other table games = 4.4 + 4.2 + 4.5 + 4.8 = 17.9

**Step 2** – Calculate the difference 17.9 - 6 - 2.7 = 9.2

**Step 3** – Put into £millions = 0.92

Thus the correct answer is (D) 0.92



no	Year	Annual attendance (100,000s)
asi	2006	14.6
<u> </u>	2007	15.2
val	2008	16.3
Ilev	2009	16.8
ő	2010 Predicted	16.5

- **Q2** What was the average amount gambled on Slot machines in 2007 by each individual who attended Calewall casino?
  - (A) £90.00
  - (B) £9.00
  - (C) £0.90
  - (D) £900.00
  - (E) £0.09

Step 1 - Amount gambled/No of people =  $140,000 / 1,520,000 = \pm 0.09$ 

Thus the correct answer is (E) £0.09



<b>_</b>	i eai	Annual attenuance (100,0005)
asi	2006	14.6
2	2007	15.2
val	2008	16.3
aley	2009	16.8
ő	2010 Predicted	16.5

- Q3 There is a £15 entrance fee for each person gambling at Calewall casino. In which year, or years, was the entrance fee revenue less than £23 million?
  - (A) 2006, 2007
  - (B) 2007, 2008
  - (C) 2007
  - (D) 2006
  - (E) None of these

Step 1 - Calculate the entrance fee revenue for each year, as follows:

	Attendances	Entrance fee revenue
2006	1,460,000	x 15 = £21,900,000
2007	1,520,000	x 15 = £22,800,000
2008	1,630,000	x 15 = £24,450,000
2009	1,680,000	x 15 = £25,200,000

Thus the correct answer is (A) 2006, 2007



no	Year	Annual attendance (100,000s)
asi	2006	14.6
	2007	15.2
val	2008	16.3
alev	2009	16.8
ő	2010 Predicted	16.5

- **Q4** What will be the average annual change in attendance at Calewall casino across the years 2006-2010 if the 2010 prediction proves to be accurate?
  - (A) 47,500 decrease
  - (B) 53,500 decrease
  - (C) 52,500 increase
  - (D) 47,500 increase
  - (E) 53,500 increase

**Step 1** – Calculate the yearly change in attendance 2007 = 0.6 increase 2008 = 1.1 increase 2009 = 0.5 increase 2010 prediction = 0.3 decrease

**Step 2** - Calculate the average yearly change in attendance (0.6 + 1.1 + 0.5 - 0.3) / 4 = 0.475 (100,000s) = 47,500

Thus the correct answer is (D) 47,500 increase



**Q5** Calewall casino is subject to a takeover bid of 7 times its 2010 projected casino revenues. The Board responds that it can deliver 10% added value through cost-cuttings to this purchase price. What valuation is the Board putting on Calewall casino (in £ millions)?

(A) £48.51 million
(B) £44.1 million
(C) £4.85 million
(D) £4.41 million
(E) £6.3 million

**Step 1** - 2010 projected casino revenues = 4.7 + 1.1 + 0.5 = 6.3 6.3 x 7 = 44.1 44.1 x 110% = 48.51 (£100,000s)

Thus the correct answer is (C) £4.85 million



**Q6** If the 2010 prediction proves to be accurate, what is the average annual percentage change in Teala Media's R&D spend across the 5 years shown?

(A) 0.53
(B) 0.54
(C) 0.55
(D) 0.56

(E) 0.57

**Step 1** - Calculate the average (2.6 + 1.6 - 1.8 - 0.8 + 1.2) / 5 = 0.56

Thus the correct answer is (D) 0.56



Q7 What is the R&D spend projected to be for 2010?

- (A) £2.5 million
- (B) £2.75 million
- (C) £3.0 million
- (D) £3.25 million
- (E) £3.5 million

**Step 1** – Calculate the total R&D spends per project for 2009 (given in the table): Addition of 5 projects = 2,483.4 (£1000's)

**Step 2** – From the graph we see that the 2010 predicted change in R&D spend is +1.2% in the 2009 value. So add the 1.2%: 2,483,400 x 101.2% = £2.51 million

Thus the correct answer is (A) £2.5 million



- Q8 What was the R&D spend for 2008 (to the nearest £1,000)?
  - (A) £2,235,000
  - (B) £2,613,000
  - (C) £2,503,000
  - (D) £2,483,000
  - (E) £2,305,000

**Step 1** – Total R&D spend for 2009 is obtained from the table. Addition of 5 projects = 2,483.4 (£1000's) = £2,483,400. You may still have this number from your previous notes.

**Note 1**: Notice that the graph gives "change in R&D spend compared with previous year". So in 2009 the change compared to 2008 was -0.8% from the graph. It is NOT the difference between -1.8% and -0.8% (i.e. +1.0%).

**Note 2**: To get the correct percentage calculation think about a 0.8% drop from the 2008 figure to the 2009 figure. We would say [2008 figure]  $\times$  0.992 = [2009 figure]. We have calculated the 2009 figure to be £2,483,400 so by rearranging we can find 2008.

**Step 2** – Allow for the 0.8% decrease in R&D spend for 2009 compared with 2008  $\pounds$ 2,483,400  $\div$  0.992 =  $\pounds$ 2,503,427

Step 3 – To the nearest £1000

Thus the correct answer is (C) £2,503,000



- **Q9** R&D overheads were 12% of R&D spend in 2009. If R&D overheads are projected to rise by 1.1% between 2009 and 2010, what is the 2010 predicted R&D sum left after these overheads are taken in to account?
  - (A) £1.02million
  - (B) £1.22million
  - (C) £2.11million
  - (D) £2.21 million
  - (E) £2.48million

Step 1 - Total R&D spend in 2009 was £2,483.4 (thousands). So £2,483,400.

Step 2 - R&D overheads we are told are 12% of spend so 12% x £2,483,400 = £298,008.

**Step 3** - The graph tells us that the R&D spend in 2010 is projected to increase by 1.2%. This will be  $\pounds 2,483,400 \times 1.012 = \pounds 2,513,200.8$ .

And we are told in the question that the R&D overheads are expected to increase by 1.1%. This will be  $\pounds 298,008 \times 1.011 = \pounds 301,286.1$ .

**Step 4** - So the available R&D money left after overheads is (2,513,200.8 – 301,286.1) = £2,211,914.7.

Thus the correct answer is (D) £2.21 million



- **Q10** If delays at the end of 2009 resulted in a 2.5% increase in the cost of each of the two most expensive projects, what is the total R&D spend for 2009 (to the nearest £1,000)?
  - (A) £2,482,000
    (B) £2,527,000
    (C) £2,528,000
    (D) £2,556,000
    (E) None of These

**Step 1** – Add the additional 2.5% R&D charge for the two most expensive R&D projects for 2009

2010 additional New product development spend = 1056 x 0.025 = 26.4 2010 additional Process improvement systems spend = 672.8 x 0.025 = 16.82

**Step 2** – Calculate Total R&D spend for 2009 Total R&D spend = 425.9 + 672.8 + 215.5 + 1,056 + 113.2 + 26.4 + 16.82 = £2,526,620

Thus the correct answer is (B) £2,527,000



	]		
List of All Directors	At 1st April 2009	At 30 April 2009	At 31 <sup>st</sup> May 2009
Geoffrey Yates	1,100	1,050	910
Tobey Gilham	1,050	950	820
Susan Preddy	950	820	250
Samantha Hoxton	990	1,100	550
Trudy Stupples	1,200	960	2,400

# **Q11** What is the number of shares not held by Directors of Leutts (as of 30 April 2009)?

- (A) 25,620
- (B) 6,850
- (C) 43,500
- (D) 4,880
- (E) Cannot tell from data

The data you need is in both the pie-chart and the table.

**Step 1** - The pie-chart shows that 16% of Directors hold shares, so 100 - 16 = 84% do not hold shares

Step 2 - Calculate the total number of director shares at 30 April 2009

Director	At 30 April 2009
Geoffrey Yates	1,050
Tobey Gilham	950
Susan Preddy	820
Samantha Hoxton	1,100
Trudy Stupples	960
Total =	4,880

**Step 3** - Calculate 84% 16% = 4,880 84% = 4,880 x 84 / 16 = 25,620

Thus the correct answer is (A) 25,620.



	Number of Shares				
List of All Directors	At 1st April 2009	At 30 April 2009	At 31 <sup>st</sup> May 2009		
Geoffrey Yates	1,100	1,050	910		
Tobey Gilham	1,050	950	820		
Susan Preddy	950	820	250		
Samantha Hoxton	990	1,100	550		
Trudy Stupples	1,200	960	2,400		

- **Q12** Which Director has bought or sold the largest number of shares across the 2-month period shown?
  - (A) Geoffrey Yates
  - (B) Trudy Stupples
  - (C) Samantha Hoxton
  - (D) Susan Preddy
  - (E) Tobey Gilham

Step 1 - The largest number of shares can be found by calculating the differences in	า
shareholdings between the periods 1 <sup>st</sup> April – 30 April and 30 April – 31 <sup>st</sup> May.	

Director	At	At 30	Shares	At 30	At 31st	Shares	Total Shares Dealt
	1st	April	Dealt	April	May	Dealt	
	April	2009	over	2009	2009	over	
	2009		period			period	
Geoffrey	1,100	1,050	50	1,050	910	140	50 + 140 = 190
Yates							
Tobey	1,050	950	100	950	820	130	100 + 130 = 230
Gilham							
Susan	950	820	130	820	250	570	130 + 570 = 700
Preddy							
Samantha	990	1,100	110	1,100	550	550	110 + 550 = 660
Hoxton							
Trudy	1,200	960	240	960	2,400	1 4 4 0	240 + 1,440 = 1,680
Stupples						1,440	

Thus the correct answer is (B) Trudy Stupples



	Number of Shares				
List of All Directors	At 1st April 2009	At 30 April 2009	At 31 <sup>st</sup> May 2009		
Geoffrey Yates	1,100	1,050	910		
Tobey Gilham	1,050	950	820		
Susan Preddy	950	820	250		
Samantha Hoxton	990	1,100	550		
Trudy Stupples	1,200	960	2,400		

- **Q13** If Tobey Gilham sells half of his shareholding at 31 May 2009 at £45 per share, how much is this trade worth?
  - (A) £3,690
    (B) £18,250
    (C) £18,450
    (D) £9,230
    (E) £36,900

**Step 1** - From the table, Tobey Gilham holds 820 shares at 31 May 2009 820/2 = 410 shares at £45 per share £45 x 410 =£18,450

Thus the correct answer is (C) £18,450



	Number of Shares					
List of All Directors	At 1st April 2009	At 30 April 2009	At 31 <sup>st</sup> May 2009			
Geoffrey Yates	1,100	1,050	910			
Tobey Gilham	1,050	950	820			
Susan Preddy	950	820	250			
Samantha Hoxton	990	1,100	550			
Trudy Stupples	1,200	960	2,400			

#### Q14 Which of the following statements is true?

- (A) Current employees and Directors owned 40% of Leutts shares on 30 April 2009
- (B) The largest Director share dealing was 1,440 shares
- (C) Directors held 4,870 shares in total on 30 April 2009
- (D) Tobey Gilham held the most shares of any Director on 1st April 2009
- (E) Each Director has less shares on 31 May 2009 compared to 1st April 2009

Step 1 - Go through checking whether each answer option is true or false

**Note 1** - Current employees and Directors owned 37% of Leutts shares on 30 April 2009 – not 40%. FALSE

**Note 2** - The largest Director share dealing was 1440 shares which Trudy Stupples bought between 30 April – 31<sup>st</sup> May. TRUE

Note 3 - Directors held 4,880 shares in total on 30 April 2009 - not 4870 shares. FALSE

**Note 4** - Trudy Stupples held the most shares of any Director on 1<sup>st</sup> April 2009 – not Tobey Gilham. FALSE

**Note 5** - Each Director does not have less shares on 31 May 2009 compared to 1<sup>st</sup> April 2009 – Trudy Stupples has more shares. FALSE

Thus the correct answer is (B) "The largest Director share dealing was 1440 shares"



	Number of Shares					
List of All Directors	At 1st April 2009	At 30 April 2009	At 31 <sup>st</sup> May 2009			
Geoffrey Yates	1,100	1,050	910			
Tobey Gilham	1,050	950	820			
Susan Preddy	950	820	250			
Samantha Hoxton	990	1,100	550			
Trudy Stupples	1,200	960	2,400			

# **Q15** If Leutts shares are worth £52 on 30 April 2009, then what is the share valuation of the entire company?

(A) £1,686,000
(B) £1,588,000
(C) £1,566,000
(D) £1,586,000
(E) £1,856,000

**Step 1** - Total number of Director shares = 4,880 This represents 16% of the total shares So,  $100\% = 4880 \times 100 / 16 = 30,500$ Company share valuation =  $30,500 \times \pounds 52 = \pounds 1,586,000$ 

Thus the correct answer is (D) £1,586,000



**Q16** The total number of £400,000 Apline houses sold in 2009 represented 80% of the annual sales target. If this target was split equally across 5 salerooms, what was the individual sales target for each salesroom?

(A) 155 (B) 120

- (C) 125
- (D) 325
- (E) 225

Step 1 - Total £400,000 house sales = 230 + 270 = 500 houses

**Step 2** - 500 = 2009 target (5 salesrooms) x 80% / 100 2009 target (5 salesrooms) = 500/0.8 = 625

**Step 3** - 2009 target per salesroom = 625/5 = 125

Thus the correct answer is (C) 125



- **Q17** Stamp duty of 3% is paid on house sales over £250,000. How much stamp duty is paid by purchasers of Apline houses in 2009?
  - (A) £16,425,000
    (B) £18,550,000
    (C) £19,425,000
  - (D) £6,000,000
  - (E) £8,550,000

Step 1 – Calculate the total number of houses where stamp duty is due

£300,000 houses: 460 + 490 = 950£400,000 houses: 230 + 270 = 500£500,000 houses: 150 + 175 = 325

Step 2 - Calculate the stamp duty due

950 x £300,000 x 3% = £8,550,000 500 x £400,000 x 3% = £6,000,000 325 x £500,000 x 3% = £4,875,000 Total = £19,425,000

Thus the correct answer is (C) £19,425,000



Q18 What is the total value of 2009 Apline house sales?

- (A) £127.5 million
- (B) £777.5 million
- (C) £115 million
- (D) £162.5 million
- (E) £353,409 million

Step 1 - Calculate the total house sales for each half-year period, as follows;

Price	Jan to June 2009	July to Dec 2009	Total Sales (£million)
£200,000	310	340	130
£300,000	460	490	285
£400,000	230	270	200
£500,000	150	175	162.5
			777.5

Thus the correct answer is (B) £777.5 million



- **Q19** In 2010, Apline house sales between Jan-June remain the same as those in 2009, while the sales for the July-Dec period increase by a fifth. What is the difference in Apline house sales between July-Dec 2010 and Jan-June for 2010 (in £million)?
  - (A) 43.5
    (B) 52.2
    (C) 100
    (D) 125
  - (E) 125.6

Step 1 - Calculate the total sales for Jan to June:

 $\pounds 200,000 \times 310 = \pounds 62,000,000$  $\pounds 300,000 \times 460 = \pounds 138,000,000$  $\pounds 400,000 \times 230 = \pounds 92,000,000$  $\pounds 500,000 \times 150 = \pounds 75,000,000$  $\pounds 62,000,000 + \pounds 138,000,000 + \pounds 92,000,000 + \pounds 75,000,000 = \pounds 367,000,000$ 

Step 2 - Calculate the total sales for July to Dec and apply the increase of a fifth:

 $\pounds 200,000 \times 340 \times 1.2 = \pounds 81,600,000$  $\pounds 300,000 \times 490 \times 1.2 = \pounds 176,400,000$  $\pounds 400,000 \times 270 \times 1.2 = \pounds 129,600,000$  $\pounds 500,000 \times 175 \times 1.2 = \pounds 105,000,000$  $\pounds 81,600,000 + \pounds 176,400,000 + \pounds 129,600,000 + \pounds 105,000,000 = \pounds 492,600,000$ 

**Step 3** - Calculate the total difference between the two periods:

 $\pounds492,600,000 - \pounds367,000,000 = \pounds125,600,000$ 

Thus the correct answer is (E) 125.6



- **Q20** A marketing drive is to be used to increase the value of Jan-June house sales to the value of July-December house sales. If each £ spent on marketing results in £3 of increased sales, what value must be spent on marketing?
  - (A) £156.6 million
  - (B) £75.4 million
  - (C) £52.2 million
  - (D) £36.6 million
  - (E) £14.5 million

**Step 1** – Calculate the difference between the value of Jan-June house sales and the value of July-December house sales. This sum in millions is: 6 + 9 + 16 + 12.5 = 43.5 million.

**Step 2** – Calculate the marketing spend needed 43.5/3 = 14.5 (million).

Thus the correct answer is (E) £14.5 million

## NUMERICAL REASONING TEST 2

### Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

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Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 



- **Q1** What was the 2010 percentage change in the value of the Pacific Rim holding between October and November (to the nearest percent)?
  - (A)) 41% less
  - (B)) 41% more
  - (C) ) 36% less
  - (D) ) 34% less
  - (E) ) 33% less

**Step 1** – Calculate the Oct value The information that you need is shown in the pie-chart  $\pounds$ 37.5 million x 20% =  $\pounds$ 7.5 million

**Step 2** – Calculate the Nov value The information that you need is shown in the graph  $50.0 \times \pounds100,000 = \pounds5$  million

**Step 3** – Calculate the % difference 7.5 - 5.0 = 2.5100% x 2.5/7.5 = 33.33% less. Or simply divide 5.0 by 7.5 to get 0.6667, which is a 33.3% reduction.

Thus the correct answer is (E) 33% less



# **Q2** What was the ratio of Pacific Rim: Southern Pacific holdings in October 2010?

(A) 3:2 (B) 2:3 (C) 4:5 (D) 5:4 (E) 4:7

The information that you need is shown in the pie-chart **Step 1** - Put these October %'s into a ratio 20%:35% = 20:35

**Step 2** – Simplify the ratio, looking at the available answers. 20:35 = 4:7

Thus the correct answer is (E) 4:7



- **Q3** In October 2010 which two Pacific Bond fund holdings when combined had the same value as Southern Pacific holdings?
  - (A) Northern Pacific and Central Pacific
  - (B) ) Central Pacific and Pacific Rim
  - (C) Pacific Mixed and Pacific Rim
  - (D) Pacific Mixed and Northern Pacific
  - (E) Pacific Rim and Northern Pacific

The information that you need is shown in the graph

**Step 1** – Look for those holdings that are likely to have a combined value around the 35% mark:

Northern Pacific + Pacific Mixed = 30% Pacific Rim + Pacific Mixed = 32% Northern Pacific + Central Pacific = 33% Pacific Rim + Northern Pacific = 38% Central Pacific + Pacific Rim = 35%

Thus the correct answer is (B) Central Pacific and Pacific Rim



Q4 Which of the following represents the largest amount?

- (A) October's Pacific Mixed holding
- (B) Average November value of each of the 5 holdings
- (C) ) November value of holdings in Northern Pacific
- (D) ) 70% of November's value of holdings in Southern Pacific
- (E) Average December value of each of the 5 holdings

**Step 1** - In this one it is not obvious which ones are going to be wrong and therefore able to be discounted, so we must calculate the value of each option:

- (A) October's Pacific Mixed holding = 4.5 million
- (B) Average November value of each of the 5 holdings = 7.2 million
- (C) ) November value of holdings in Northern Pacific = 6.14 million
- (D) ) 70% of November's value of holdings in Southern Pacific = 6.47 million

(E) Average December value of each of the 5 holdings = 7 million

Thus the correct answer is (B) Average November value of each of the 5 holdings



- **Q5** In October 2010 what fraction of the total Pacific Bond did the Northern Pacific and Pacific Mixed fund holdings represent?
  - (A) 1/5
  - (B) 1/10
  - (C) 1/4
  - (D) 3/10
  - (E) 2/5

The information that you need is shown in the pie-chart.

**Step 1** - Add the Northern Pacific and Pacific Mixed %'s 18% + 12% = 30%

**Step 2** – Express this figure as a fraction 30 / 100 = 3/10

Thus the correct answer is (D) 3/10

Western	Number	Units sold						
Region - Store	of sales	Week 1		Week 2		Week 3		
location	staff	Actual	Target	Actual	Target	Actual	Target	
Redcliff	8	20	15	20	25	35	35	
Ather	9	30	20	40	25	40	35	
Wilkington	5	25	20	18	25	24	30	
Trew	8	15	10	14	15	12	15	
Tunston	6	5	10	6	15	9	15	

## **Q6** For Weeks 1 and 3, across all 5 stores combined, what was the difference (in units) between Actual and Target sales volumes?

- (A) ) 10 over target (Week 1); 10 under target (Week 3)
- (B) ) 10 over target (Week 1); 15 under target (Week 3)
- (C) ) 15 over target (Week 1); 10 under target (Week 3)
- (D) ) 15 over target (Week 1); 15 under target (Week 3)
- (E) ) 20 over target (Week 1); 10 under target (Week 3)

**Step 1** – Calculate the total Week 1 and Week 3 sales across the 5 Stores Week 1: 20 + 30 + 25 + 15 + 5 = 95 Week 3: 35 + 40 + 24 + 12 + 9 = 120

**Step 2** - Calculate the total Week 1 and Week 3 targets across the 5 Stores Week 1: 15 + 20 + 20 + 10 + 10 = 75 Week 3: 35 + 35 + 30 + 15 + 15 = 130

**Step 3** – Calculate the difference for Weeks 1 and 3 Week 1: 95 - 75 = 20 over target Week 3: 120 - 130 = 10 under target

Thus the correct answer is (E) 20 over target (Week 1); 10 under target (Week 3)

Western	Number	Units sold						
Region - Store	of sales	Week 1		Week 2		We	Week 3	
location	staff	Actual	Target	Actual	Target	Actual	Target	
Redcliff	8	20	15	20	25	35	35	
Ather	9	30	20	40	25	40	35	
Wilkington	5	25	20	18	25	24	30	
Trew	8	15	10	14	15	12	15	
Tunston	6	5	10	6	15	9	15	

**Q7** Over the three week period, which Store achieved the highest sales per sales staff member?

- (A) ) Redcliff
- (B) Ather
- (C) ) Wilkington
- (D) Trew
- (E) Tunston

#### Step 1 – Calculate each Store's total sales

Use the Actual sales figures for each of the 3 weeks, as follows:

Redcliff	20 + 20 + 35 = 75
Ather	30 + 40 + 40 = 110
Wilkington	25 + 18 + 24 = 67
Trew	15 + 14 + 12 = 41
Tunston	5+6+9=20

Step 2 – Calculate each Store's average sales per sales staff member, as follows:

Redcliff	75/8=9.4
Ather	110/9=12.2
Wilkington	67/5 = 13.4
Trew	41 / 8= 5.1
Tunston	20/6=3.3

Thus the correct answer is (C) Wilkington

Western	Number	Units sold						
Region - Store	of sales	Week 1		Week 2		We	Week 3	
location	staff	Actual	Target	Actual	Target	Actual	Target	
Redcliff	8	20	15	20	25	35	35	
Ather	9	30	20	40	25	40	35	
Wilkington	5	25	20	18	25	24	30	
Trew	8	15	10	14	15	12	15	
Tunston	6	5	10	6	15	9	15	

**Q8** Next year staff numbers are to be reduced by 1 at stores with 6 or less staff,

and by 2 staff at all other stores. What will be the average monthly target per staff member across all 5 stores if the regional target (across the 5 stores) is  $\pm 168,000?$ 

(A) £5,000
(B) £6,000
(C) £7,000
(D) £8,000
(E) £9,000

Step 1 – Calculate the new staff numbers

Redcliff	8 – 2 = 6 staff
Ather	9 – 2 = 7 staff
Wilkington	5 – 1 = 4 staff
Trew	8 – 2 = 6 staff
Tunston	6 – 1 = 5 staff

**Step 2** – Calculate the average target per staff member Average = target / total number of staff = 168,000 / 28 = £6,000

Thus the correct answer is (B) £6,000

Western	Number	Units sold						
Region - Store	of sales	Week 1		Week 2		Week 3		
location	staff	Actual	Target	Actual	Target	Actual	Target	
Redcliff	8	20	15	20	25	35	35	
Ather	9	30	20	40	25	40	35	
Wilkington	5	25	20	18	25	24	30	
Trew	8	15	10	14	15	12	15	
Tunston	6	5	10	6	15	9	15	

**Q9** The Western Region's overall sales (£120,000) were in a ratio of 3:2 to the Eastern Region's sales which itself had half the sales of the Northern and Southern Regions combined. What were the total sales of all 4 Regions?

(A) £180,000
(B) £200,000
(C) £220,000
(D) £240,000
(E) £360,000

**Step 1** – Calculate each Region's sales Eastern Region's sales =  $2 \times 120,000 / 3 = 80,000$ Northern + Southern Regions' sales =  $80,000 \times 2 = 160,000$ 

**Step 2** – Calculate the total sales 120,000 + 80,000 + 160,000 = 360,000

Thus the correct answer is (E) £360,000

Western	Number	Units sold						
Region - Store	of sales	Week 1		Week 2		We	Week 3	
location	staff	Actual	Target	Actual	Target	Actual	Target	
Redcliff	8	20	15	20	25	35	35	
Ather	9	30	20	40	25	40	35	
Wilkington	5	25	20	18	25	24	30	
Trew	8	15	10	14	15	12	15	
Tunston	6	5	10	6	15	9	15	

- **Q10** All sales in the three week period were based on an average £9.50 reduction in the sales price of the units sold. What was the total saving made by customers who bought units over the 3 week period (to the nearest £100)?
  - (A) £3,000
    (B) £3,500
    (C) £4,000
    (D) £4,500
    (E) £5,000

**Step 1** – Calculate the total sales We could use the working from Q6 to obtain Week 1 and Week 3 sales totals. Week 2 sales = 20 + 40 + 18 + 14 + 6 = 98Total sales = Week 1 + Week 2 + Week 3 = 95 + 98 + 120 = 313

**Step 2** – Calculate the amount saved 313 x £9.50 = £2,973.50

**Step 3** - (to the nearest £100) £2,973.50 = £3,000

Thus the correct answer is (A) £3,000

*Tip:* when summing numbers from a column or row, be careful not to take numbers from an adjacent category. It is also a good idea to enter the numbers as you go straight into your calculator, instead of writing out the sum on your rough paper then performing the calculation. This will reduce the number of stages in your working and save time and reduce the potential for input errors.



#### Manufacturing sector - Consultancy income by consultant

Consultant	Quarter 1	Quarter 2	Quarter 3	Quarter 4
David	4,000	3,500	5,000	4,000
Peter	6,000	6,500	7,000	10,500
Sarah	6,000	9,000	5,500	3,000
Jane	4,000	4,500	7,500	4,500
Harry	1,000	4,500	5,000	6,500

**Q11** Which sector experienced the highest sales for Quarters 1, 2 and 3 combined?

(A) ) Telecommunications(B) ) Utilities

(D) ) Unities (O) Manufacture

(C) Manufacturing(D) Financial

(E) Potoil

(E) Retail

The information that you need is shown in the graph Consultancy income by sector

**Step 1** – Calculate each sector's sales for Quarters 1, 2 and 3 combined Telecommunications = 30 + 27 + 25 = 82Utilities = 35 + 20 + 20 = 75Manufacturing = 21 + 32 + 30 = 83Financial = 25 + 29 + 30 = 84Retail = 23 + 30 + 25 = 78

Thus the correct answer is (D) Financial



#### Manufacturing sector - Consultancy income by consultant

Consultant	Quarter 1	Quarter 2	Quarter 3	Quarter 4
David	4,000	3,500	5,000	4,000
Peter	6,000	6,500	7,000	10,500
Sarah	6,000	9,000	5,500	3,000
Jane	4,000	4,500	7,500	4,500
Harry	1,000	4,500	5,000	6,500

- **Q12** Quarter 4's income per sector is in the same ratio as Quarter 3, and the consultancy income from the Financial sector is £33,000. What is the consultancy income from the Utilities sector?
  - (A) Can't tell from the data provided
    (B) £12,000
    (C) £22,000
    (D) £25,000
    (E) £45,000

The information that you need is shown in the graph Consultancy income by sector **Step 1** – Find the Quarter 3 ratios Utilities: Financial = 20:30 = 2:3

**Step 2** – Apply this ratio to the Utilities sector Utilities income =  $\pounds$ 33,000 x 2/3 =  $\pounds$ 22,000

Thus the correct answer is (C) £22,000


#### Manufacturing sector - Consultancy income by consultant

Consultant	Quarter 1	Quarter 2	Quarter 3	Quarter 4
David	4,000	3,500	5,000	4,000
Peter	6,000	6,500	7,000	10,500
Sarah	6,000	9,000	5,500	3,000
Jane	4,000	4,500	7,500	4,500
Harry	1,000	4,500	5,000	6,500

- **Q13** For Quarters 1 and 3 combined, which two Manufacturing sector consultants had incomes in the ratio 2:3?
  - (A) Harry and David
  - (B) Sarah and Jane
  - (C) ) Harry and Jane
  - (D) ) David and Peter
  - (E) ) David and Sarah

The information that you need is shown in the table.

**Step 1** – Calculate each Consultant's combined Quarter 1 and Quarter 3 income, as shown below:

Consultant	Quarter 1	Quarter 3	Combined
David	4,000	5,000	9,000
Peter	6,000	7,000	13,000
Sarah	6,000	5,500	11,500
Jane	4,000	7,500	11,500
Harry	1,000	5,000	6,000

The only possible 2:3 ratio is between Harry and David (6,000:9,000) Thus the correct answer is (A) Harry and David



#### Manufacturing sector - Consultancy income by consultant

Consultant	Quarter 1	Quarter 2	Quarter 3	Quarter 4
David	4,000	3,500	5,000	4,000
Peter	6,000	6,500	7,000	10,500
Sarah	6,000	9,000	5,500	3,000
Jane	4,000	4,500	7,500	4,500
Harry	1,000	4,500	5,000	6,500

- **Q14** The Manufacturing sector income from the five consultants is supplemented by the work of an associate consultant. What was the associate consultant's income from the Manufacturing sector across Quarters 1 to 3?
  - (A) £3,000(B) £4,000(C) £6,000
  - (D) £8,000
  - (E) £9,000

The information that you require here is shown in the table. **Step 1** – Calculate the total manufacturing income from the 5 consultants Q1 Total = 21,000 Q2 Total = 28,000 Q3 Total = 30,000 Total income (Quarters 1 to 3) = 79,000 The information that you require next is shown in the graph. **Step 2** – Calculate the overall consultancy income from the manufacturing sector 21 + 32 + 30 = 83,000 **Step 3** – Calculate the supplementary income 83,000 – 79,000 = 4,000

Thus the correct answer is (B) £4,000



#### Manufacturing sector - Consultancy income by consultant

Consultant	Quarter 1	Quarter 2	Quarter 3	Quarter 4
David	4,000	3,500	5,000	4,000
Peter	6,000	6,500	7,000	10,500
Sarah	6,000	9,000	5,500	3,000
Jane	4,000	4,500	7,500	4,500
Harry	1,000	4,500	5,000	6,500

- **Q15** The total quarterly income target, starting with £115,000 for Quarter 1, increased by 20% for each subsequent Quarter. In Quarter 3 what was the difference between actual income and the target?
  - (A) ) £8,000 under-performance
  - (B) ) £18,400 under-performance
  - (C)) £31,000 over-performance
  - (D) ) £31,000 under-performance
  - (E) ) £35,600 under-performance

**Step 1** – Calculate the target for Quarter 3, based upon the Quarter 2 target Quarter 2 target =  $\pounds$ 115,000 x 120% =  $\pounds$ 138,000 Quarter 3 target =  $\pounds$ 138,000 x 120% =  $\pounds$ 165,600

The information that you require next is shown in the graph. **Step 2** – Calculate the difference Quarter 3 income Quarter 3 income (000's) = 25 + 20 + 30 + 30 + 25 = 130

**Step 3** - calculate the difference in Quarter 3 between income and target 130,000 - 165,600 = 35,600 under-performance

Thus the correct answer is (E) £35,600 underperformance



- **Q16** Simon and Jessica have travel allowances of 60p and 44p per mile respectively. Simon and Jessica each travel on average 25 miles and 30 miles respectively per sales visit. How much travel allowance is claimed in total by these 2 Sales Managers in August?
  - (A) £1,050 (B) £1,122 (C) £2,122 (D) £2,172
  - (E) £2,272

**Step 1** – Calculate Simon and Jessica's total mileage in August Simon =  $60p \times 70 \times 25 = \pounds 1,050$ Jessica =  $44p \times 85 \times 30 = \pounds 1,122$ 

**Step 2** – Calculate Simon and Jessica's combined travel allowance payment  $\pounds$ 1,050 +  $\pounds$ 1,122 =  $\pounds$ 2,172

Thus the correct answer is (D) £2,172



- **Q17** If the percentage change in sales visits between September and October (projected) continues for November, what will Jessica and Kim's number of complete sales visits be in November?
  - (A)) 71 visits (Jessica); 77 visits (Kim)
  - (B)) 71 visits (Jessica); 78 visits (Kim)
  - (C)) 72 visits (Jessica); 78 visits (Kim)
  - (D)) 72 visits (Jessica); 79 visits (Kim)
  - (E)) 73 visits (Jessica); 79 visits (Kim)

**Step 1** – Calculate the % change for Jessica and Kim Jessica = 81/90 = 10% decrease Kim = 70/62 = 12.903% increase

**Step 2** – Calculate each Sales Manager's number of visits for November Jessica =  $81 \times 90\% = 72.9$  visits Kim =  $70 \times 112.903\% = 79.03$  visits

**Step 3** - This step can catch out people. The question asks for "complete sales visits" and 0.9 is not a complete visit. So Jessica completed 72 visits. Don't be tempted to round up.

Thus the correct answer is (D) 72 visits (Jessica); visits 79 (Kim)



# **Q18** If the margin of error on October's projected client visits is +/- 15%, what are the ranges for each Sales Manager (rounded to the nearest whole visit)?

(A) 90-100 (Simon); 77-85 (Jessica); 66-74 (Kim)
(B) 90- 107 (Simon); 74-87 (Jessica); 64-76 (Kim)
(C) 81-109 (Simon); 73-89 (Jessica); 63-77 (Kim)
(D) 81-109 (Simon); 69-93 (Jessica); 60-81 (Kim)
(E) 76-104 (Simon); 64-89 (Jessica); 56-76 (Kim)

**Step 1** - Calculate the 85% and 115% figures for each Sales Manager Simon (to the nearest whole visit)  $95 \times 85\% = 80.75 = 81$  $95 \times 115\% = 109.25 = 109$ 

Note that already we have eliminated 3 of the possible 5 answers.

**Step 2** - Jessica: 81 x 85% = 68.85 = 69 81 x 115% = 93.15 = 93

Kim 70 x 85% = 59.5 = 60 70 x 115% = 80.5 = 81

Thus the correct answer is (D) 81-109 (Simon); 69-93 (Jessica); 60-81 (Kim)

**Tip:** note the difference between "round to the nearest whole visit" and "give the number of complete visits". This is the difference between rounding to the nearest integer (could be up or down) and ignoring any part-complete events (will always be rounding down).



**Q19** Jessica, who travelled 3,500 miles in July, travelled an extra 10 miles per client visit compared to Simon. What was the total number of miles Simon travelled in July?

(A) 2,400
(B) 2,600
(C) 2,800
(D) 3,000
(E) 3,200

**Step 1** – Let x = Jessica's average mileage per client visit July visits = 70 = 3,500 / xX = 3,500 / 70 = 50 miles per visit

**Step 2** – Calculate Simon's average mileage per client visit 50 - 10 = 40 miles per visit

**Step 3** – Calculate the total number of miles Simon travelled in July  $40 \times 65 = 2,600$  miles

Thus the correct answer is (B) 2,600 miles



**Q20** The average order value per client visit is £145, £135 and £125 for Simon, Jessica and Kim respectively. Which Sales Managers generate the highest and lowest order values in June?

- (A) Kim (most); Jessica (least)
- (B) Simon (most); Jessica (least)
- (C) ) Jessica (most); Kim (least)
- (D) ) Jessica (most); Simon (least)
- (E) Kim (most); Simon (least)

Step 1 - Calculate each Sales Manager's client sales for June, as follows:

Simon	50 visits in June	$50 \text{ x} \pounds 145 = \pounds 7,250$
Jessica	45 visits in June	45 x £135 = £6,075
Kim	60 visits in June	$60 \times \pounds 125 = \pounds 7,500$

Thus the correct answer is (A) Kim (most); Jessica (least)

US operations Year 1	Subsidiary 1	Subsidiary 2	Subsidiary 3	Subsidiary 4	Subsidiary 5
Sales*	1,124	3,334	2,250	24,300	14,450
Salary payroll for all staff*	127	409	289	570	4,355
Number of staff	555	1,722	1,343	2,824	13,292
Dividends per share (cents):					
1. Interim dividend paid	6.2	8.5	9	15	11
2. Final proposed dividend	15.8	10.5	46	10	25
Number of shares (millions)	3	3.5	12	2.6	20

- **Q21** Which subsidiary will pay the lowest amount in dividends (interim and final dividends combined)?
  - (A) Subsidiary 1
  - (B) Subsidiary 2
  - (C) Subsidiary 3
  - (D) Subsidiary 4
  - (E) Subsidiary 5

**Step 1** - Calculate the total dividends payable per share for each subsidiary Subsidiary 1 = 6.2 + 15.8 = 22Subsidiary 2 = 8.5 + 10.5 = 19Subsidiary 3 = 9 + 46 = 55Subsidiary 4 = 15 + 10 = 25Subsidiary 5 = 11 + 25 = 36

**Step 2** – Calculate the total payable for each subsidiary Subsidiary 1 = 22 cents x 3 million shares = 660,000Subsidiary 2 = 19 cents x 3.5 million shares = 665,000Subsidiary 3 = 55 cents x 12 million shares = 6,600,000Subsidiary 4 = 25 cents x 2.6 million shares = 650,000Subsidiary 5 = 36 cents x 20 million shares = 7,200,000

Thus the correct answer is (D) Subsidiary 4

US operations Year 1	Subsidiary 1	Subsidiary 2	Subsidiary 3	Subsidiary 4	Subsidiary 5
Sales*	1,124	3,334	2,250	24,300	14,450
Salary payroll for all staff*	127	409	289	570	4,355
Number of staff	555	1,722	1,343	2,824	13,292
Dividends per share (cents):					
1. Interim dividend paid	6.2	8.5	9	15	11
2. Final proposed dividend	15.8	10.5	46	10	25
Number of shares (millions)	3	3.5	12	2.6	20

#### Q22 Which 2 or 3 subsidiaries had combined sales of 1,890.8 million?

- (A) Subsidiaries 1 and 5
- (B) Subsidiaries 2 and 5
- (C) Subsidiaries 1, 2 and 5
- (D) Subsidiaries 3 and 5
- (E) Subsidiaries 1, 3 and 5

Step 1 - This question is best answered by a process of elimination:

- Review the last number in each Sales figure. The Sales figures for Subsidiary 1 and Subsidiary 2 end in "4" and the others end in zero.
- Since the total ends in "8" both Subsidiary a and Subsidiary b must be included in the answer (i.e. "4" + "4" = "8").
- At this stage you can see that only one of the possible answers includes Subsidiary 1 and Subsidiary 2. If you wanted to complete the sum to double-check, do so.
- Subsidiary 1 + 2 + 5 = 1,124 + 3,334 + 14,450 = 18,908 (100,000s).

Thus the correct answer is (C) Subsidiaries 1, 2 and 5

US operations Year 1	Subsidiary 1	Subsidiary 2	Subsidiary 3	Subsidiary 4	Subsidiary 5
Sales*	1,124	3,334	2,250	24,300	14,450
Salary payroll for all staff*	127	409	289	570	4,355
Number of staff	555	1,722	1,343	2,824	13,292
Dividends per share (cents):					
1. Interim dividend paid	6.2	8.5	9	15	11
2. Final proposed dividend	15.8	10.5	46	10	25
Number of shares (millions)	3	3.5	12	2.6	20

Q23 Over the next year, Subsidiary 5's Sales are expected to drop by a fifth whilst

its number of staff is expected to increase by 15%. What will be the percentage change in the Sales per member of staff from Year 1 to the next?

(A) 25%
(B) 26%
(C) 29%
(D) 30%
(E) 44%

**Step 1** – Calculate next year's changes in the Subsidiary 5 data Sales  $14,450 \times 4/5 = 11,560$ Number of staff =  $13,292 \times 115\% = 15,285.8$ 

**Step 2** – Calculate next year's Sales per member of staff 11,560 / 15,285.66 = 0.756 (in \$100,000's)

**Step 3** – Calculate this year's Sales per member of staff 14,450 / 13,292 = 1.087 (in \$100,000's)

**Step 4** – Calculate the % change in the Sales per member of staff 0.756 / 1.087 = 0.6955, which is a 30.4% drop.

*Tip:* note we must divide 0.756 by 1.087, not the other way round, because the question asks us to go **from** Year 1 **to** next year. The calculation depends on what we take as the reference point. In full, the calculation is (1.087 - 0.756) / 1.087 = 30.4%.

Thus the correct answer is (D) 30%

US operations Year 1	Subsidiary 1	Subsidiary 2	Subsidiary 3	Subsidiary 4	Subsidiary 5
Sales*	1,124	3,334	2,250	24,300	14,450
Salary payroll for all staff*	127	409	289	570	4,355
Number of staff	555	1,722	1,343	2,824	13,292
Dividends per share (cents):					
1. Interim dividend paid	6.2	8.5	9	15	11
2. Final proposed dividend	15.8	10.5	46	10	25
Number of shares (millions)	3	3.5	12	2.6	20

**Q24** What is the ratio of Subsidiary 4's interim dividend per share compared to Subsidiary 5's final dividend per share?

- (A) 2:3
- (B) 5:2
- (C) 2:5
- (D) 3:5
- (E) 5:3

This is a fairly straight-forward one.

**Step 1** – Put the figures from the table into a ratio 15:25

**Step 2** – Simplify the ratio 3:5

Thus the correct answer is (D) 3:5

US operations Year 1	Subsidiary 1	Subsidiary 2	Subsidiary 3	Subsidiary 4	Subsidiary 5
Sales*	1,124	3,334	2,250	24,300	14,450
Salary payroll for all staff*	127	409	289	570	4,355
Number of staff	555	1,722	1,343	2,824	13,292
Dividends per share (cents):					
1. Interim dividend paid	6.2	8.5	9	15	11
2. Final proposed dividend	15.8	10.5	46	10	25
Number of shares (millions)	3	3.5	12	2.6	20

Q25 What is the lowest payroll per member of staff (across the 5 subsidiaries)?

(A) £23,751
(B) £22,883
(C) £21,519
(D) £20,764

(E) £20,184

**Step 1** - Calculate the average payroll for each subsidiary Subsidiary 1 = 12,700,000 / 555 = 22,883Subsidiary 2 = 40,900,000 / 1,722 = 23,751Subsidiary 3 = 28,900,000 / 1,343 = 21,519Subsidiary 4 = 57,000,000 / 2,824 = 20,184Subsidiary 5 = 435,500,000 / 13,292 = 32,764

Thus the correct answer is (E) £20,184

Consolidated Income Statements (£millions)	Competitor A	Competitor B	Competitor C
Revenue	580	632	600
Gross profit	128	148	147
Operational profit	108	128	131
Profit before tax	90	112	117
Corporation tax*	-27	-33.6	-35.1
Profit after tax	63	78.4	81.9

\*Tax = 30%

**Q26** If Profit before tax increases by 15% for Competitor B and decreases by 8%

for Competitor A, what is the difference between Competitor A and Competitor B's corporation tax payments (to the nearest £million)?

(A) ) £10 million
(B) ) £12 million
(C) ) £14 million
(D) ) £16 million
(E) ) £18 million

**Tip:** Don't be caught out by the fact that the question lists Competitor B first, when you might be expecting to see Competitor A then Competitor B. This is intended to throw those not paying attention.

**Step 1** – Add 15% to Competitor B's profit before tax 112 x 115% = 128.8

**Step 2** – Decrease Competitor A's profit before tax by 8% 90 x 92% = 82.8

**Step 3** - Calculate the difference in corporation tax (at 30%)  $(128.8 - 82.8) \times 30\% = 13.8 = \pounds 14$  million (to the nearest £million)

Thus the correct answer is (C) £14 million

Consolidated Income Statements (£millions)	Competitor A	Competitor B	Competitor C
Revenue	580	632	600
Gross profit	128	148	147
Operational profit	108	128	131
Profit before tax	90	112	117
Corporation tax*	-27	-33.6	-35.1
Profit after tax	63	78.4	81.9
*Tev = 200/			

\*Tax = 30%

Q27 Competitor B and Competitor C choose to declare their Revenues in \$ and

Euros respectively. What are these figures? (Use the exchange rates  $1\pounds =$ \$1.66;  $1\pounds = \pounds 1.15$ ).

(A) ) \$1,043 million (Competitor B); €708 million (Competitor C)

(B)) \$1,049 million (Competitor B); €690 million (Competitor C)

(C) ) \$1,049 million (Competitor B); €720 million (Competitor C)

(D) ) \$720 million (Competitor B); €1,055 million (Competitor C)

(E) ) Can't tell from the data provided

**Step 1** – Calculate Competitor B revenue in \$ 632 x 1.66 = \$1,049

**Step 2** – Calculate Competitor C revenues in Euros  $600 \times 1.15 \times = 690$ 

Thus the correct answer is (B) \$1,049 million (Competitor B); €690 million (Competitor C)

Consolidated Income Statements (£millions)	Competitor A	Competitor B	Competitor C
Revenue	580	632	600
Gross profit	128	148	147
Operational profit	108	128	131
Profit before tax	90	112	117
Corporation tax*	-27	-33.6	-35.1
Profit after tax	63	78.4	81.9
*Tax = 30%			

- **Q28** What would be the difference in Euros if Competitor A used an exchange rate of 1£ = €1.20, rather than 1£ = €1.15, when calculating its Profit after tax?
  - (A) ) €0.05 million (B) ) €1.15 million (C) ) €2.05 million (D) ) €3.05 million (E) ) €3.15 million

**Step 1** – Calculate the difference in the exchange rate 1.20 - 1.15 = €0.05

**Step 2** – Calculate the difference in Euros  $€0.05 \times 63 = €3.15$  million

Thus the correct answer is (E) €3.15 million

Consolidated Income Statements (£millions)	Competitor A	Competitor B	Competitor C
Revenue	580	632	600
Gross profit	128	148	147
Operational profit	108	128	131
Profit before tax	90	112	117
Corporation tax*	-27	-33.6	-35.1
Profit after tax	63	78.4	81.9
*Tax = 30%			

**Q29** What was the average Gross profit across the 3 competitors (to the nearest £10million)?

(A) ) £140 million
(B) ) £141 million
(C) ) £142 million
(D) ) £143 million
(E) ) £144 million
Step 1 - Calculate the total Gross Profit 128 + 148 + 147 = 423
Step 2 - Calculate the average 423 / 3 = 141

**Step 3** – To the nearest £10million = £140 million

Thus the correct answer is (A) £140 million

Consolidated Income Statements (£millions)	Competitor A	Competitor B	Competitor C
Revenue	580	632	600
Gross profit	128	148	147
Operational profit	108	128	131
Profit before tax	90	112	117
Corporation tax*	-27	-33.6	-35.1
Profit after tax	63	78.4	81.9
*Tax = 30%			

- **Q30** Competitor C moves to a country charging 15% corporation tax and corporation tax falls to 22% for Competitors A and B. What is the total corporation tax payable for the 3 competitors (based upon the Profit before tax figures shown)?
  - (A)) £62 million
  - (B)) £46 million
  - (C)) £26 million
  - (D)) £25 million
  - (E) ) Can't tell from data

**Step 1** – Calculate the corporation tax payable for each competitor Competitor  $A = 90 \times 22\% = 19.8$ Competitor  $B = 112 \times 22\% = 24.6$ Competitor  $C = 117 \times 15\% = 17.6$ 

**Step 2** – Calculate the total corporation tax payable  $19.8 + 24.6 + 17.6 = \pounds 62$  million

Thus the correct answer is (A) £62 million

# NUMERICAL REASONING TEST 3

# Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 

	2010	2009	2008	2007	2006
Sales	£1,047.9 m	£761.9 m	£1,005.0 m	£627.7 m	£637.8 m
Car units sold	16,710	12,636	15,905	12,163	12,360
Average sales price (per car)	£62,709	£60,296	£63,188	£51,607	£51,602
Average production cost (per car)	£14,500	£15,800	£13,600	£11,400	£13,750
Annual service charge per car	£250	£300	£350	£275	£400

**Q1** In which year was there the highest ratio of average sales price: average production cost?

(A) 2006
(B) 2007
(C) 2008
(D) 2009
(E) 2010

Step 1 - Calculate the ratio for each of the 5 years shown:

	2010	2009	2008	2007	2006
Average sales price	£62,709	£60,296	£63,188	£51,607	£51,602
Production cost	£14,500	£15,800	£13,600	£11,400	£13,750
Ratio	4.3:1	3.8:1	4.6:1	4.5:1	3.8:1

Thus the correct answer is (C) 2008

	2010	2009	2008	2007	2006
Sales	£1,047.9 m	£761.9 m	£1,005.0 m	£627.7 m	£637.8 m
Car units sold	16,710	12,636	15,905	12,163	12,360
Average sales price (per car)	£62,709	£60,296	£63,188	£51,607	£51,602
Average production cost (per car)	£14,500	£15,800	£13,600	£11,400	£13,750
Annual service charge per car	£250	£300	£350	£275	£400

Q2 What were the total production costs for 2009 (to the nearest £100,000)?

(A) ) £199.6 million
(B) ) £199.8 million
(C) ) £216.2 million
(D) ) £216.3 million
(E) ) £242.2 million

**Step 1** - Production costs = production cost per car x number of cars =  $\pounds 15,800 \times 12,636 = \pounds 199.648$  million =  $\pounds 199.6$  million (to the nearest  $\pounds 100,000$ )

Thus the correct answer is (A) £199.6 million

	2010	2009	2008	2007	2006
Sales	£1,047.9 m	£761.9 m	£1,005.0 m	£627.7 m	£637.8 m
Car units sold	16,710	12,636	15,905	12,163	12,360
Average sales price (per car)	£62,709	£60,296	£63,188	£51,607	£51,602
Average production cost (per car)	£14,500	£15,800	£13,600	£11,400	£13,750
Annual service charge per car	£250	£300	£350	£275	£400

- **Q3** If the dealer paid upfront for the annual service charge of each car sold, in which year would this have cost the dealer the least amount?
  - (A) 2006
    (B) 2007
    (C) 2008
    (D) 2009
    (E) 2010

**Step 1** - Calculate the cost to the dealer for each of the 5 years as shown:

	2010	2009	2008	2007	2006
Car units	16,710	12,636	15,905	12,163	12,360
sold					
Service	£250	£300	£350	£275	£400
charge					
Cost to car	£4.18	£3.79	£5.57	£3.34	£4.94
manufacturer	million	million	million	million	million

Thus the correct answer is (B) 2007

	2010	2009	2008	2007	2006
Sales	£1,047.9 m	£761.9 m	£1,005.0 m	£627.7 m	£637.8 m
Car units sold	16,710	12,636	15,905	12,163	12,360
Average sales price (per car)	£62,709	£60,296	£63,188	£51,607	£51,602
Average production cost (per car)	£14,500	£15,800	£13,600	£11,400	£13,750
Annual service charge per car	£250	£300	£350	£275	£400

- **Q4** If the average sales price for 2010 was 5% higher, but the number of cars sold that year was 9% lower, by what percent would the sales revenue have decreased for 2010?
  - (A) No change
    (B) 3.50%
    (C) 3.55%
    (D) 4.45%
    (E) 4.60%

**Step 1** – Calculate the new average sales price £62,709 x 105% = £65,844.45

**Step 2** – Calculate the new number of cars sold 16,710 x 91% = 15,206.1

**Note**: They can't sell.1 of a car so we will use 15,206.0. In this question it doesn't actually make a difference to the final answer but it's worth remembering things like this for other questions.

**Step 3** – Calculate the total sales increase £65,844.45 x 15,206 = £1,001.230707 million

**Step 4** – Calculate the total sales decrease as a % 1,001.230707 ÷ 1,047.9 = 0.95546, which is a 4.45% decrease.

Thus the correct answer is (D) 4.45%

	2010	2009	2008	2007	2006
Sales	£1,047.9 m	£761.9 m	£1,005.0 m	£627.7 m	£637.8 m
Car units sold	16,710	12,636	15,905	12,163	12,360
Average sales price (per car)	£62,709	£60,296	£63,188	£51,607	£51,602
Average production cost (per car)	£14,500	£15,800	£13,600	£11,400	£13,750
Annual service charge per car	£250	£300	£350	£275	£400

Q5 In 2008, car sales were split across 3 equally-priced models in the ratio of 7:8:6 for models A, B and C respectively. What was the sales revenue for model A?

- (A)) £287 million
- (B)) £335 million
- (C) £382 million
- (D)) £383 million
- (E) ) Can't tell from data

**Step 1** - Apply the ratio to the total sales for 2008  $7 \times \pounds1,005.0 \text{ m}/21 = \pounds335 \text{ million}.$ 

**Note**: we can answer this question because we are told that the three models were equally priced. If we were not told this information we would have to answer "cannot tell".

Thus the correct answer is (B) £335 million

	2006	<b>200</b> 7	2008	2009	2010
Staff costs	226	234	248	230	215
Property depreciation	120	117	112	115	132
Inventories	11,410	12,505	11,842	15,322	16,420
Loan impairment	13	12	9	17	22
Other expenses	336	459	357	413	502

**Q6** For how many years has the combined cost of Property depreciation and Staff costs exceeded that of Other expenses?

- (A)) 1 year
- (B) 2 years
- (C)) 3 years
- (D)) 4 years
- (E)) 5 years

Step 1 – Calculate each year's combined cost of Property depreciation and Staff costs

	2006	2007	2008	2009	2010
Staff costs + Property depreciation	226 + 120 = 346	234 + 117 = 351	248 + 112 = 360	230 + 115 = 345	215 + 132 = 347
<b>Step 2</b> > or <	Other expenses	\$?			
	> 336	< 459	> 357	< 413	< 502

Thus the correct answer is (B) 2 years

	2006	<b>200</b> 7	2008	2009	2010
Staff costs	226	234	248	230	215
Property depreciation	120	117	112	115	132
Inventories	11,410	12,505	11,842	15,322	16,420
Loan impairment	13	12	9	17	22
Other expenses	336	459	357	413	502

**Q7** In which year, or years, was there a 2:1 ratio of Staff costs: Property depreciation?

(A) 2010
(B) 2007 and 2008
(C) 2008 and 2009
(D) 2007 and 2009
(E) 2006, 2007 and 2009

**Step 1** - This can probably be done in your head: go along the columns and double the Property depreciation to see if it equals the Staff costs. You will see this is true for years 2007 and 2009.

In long-hand tabular form we have for each year:

	2006	2007	2008	2009	2010
Staff costs/ Property depreciation	226/120	234/117	248/112	230/115	215/132
Ratio	>2	2	>2	2	<2

Thus the correct answer is (D) 2007 and 2009

	2006	<b>200</b> 7	2008	2009	2010
Staff costs	226	234	248	230	215
Property depreciation	120	117	112	115	132
Inventories	11,410	12,505	11,842	15,322	16,420
Loan impairment	13	12	9	17	22
Other expenses	336	459	357	413	502

**Q8** What percent of total costs did Property depreciation represent in 2007?

(A) 4.7%(B) 3.7%(C) 2.7%

(D) 1.9%

(E) 0.9%

**Tip**: Notice the top of the table tells us we are looking at "Total costs by year". This enables us to answer the question. If we were not told the costs given are the whole picture (i.e. Total costs) we would be right to say "cannot say" since we would not know if there are other costs we don't know about. Watch out for this in other questions.

**Step 1** – Calculate total costs 234 + 117 + 12,505 + 12 + 459 = 13,327

**Step 2** - Calculate Property depreciation as a % of total costs 117 / 13,327 = 0.878%

Thus the correct answer is (E) 0.9%

	2006	<b>200</b> 7	2008	2009	2010
Staff costs	226	234	248	230	215
Property depreciation	120	117	112	115	132
Inventories	11,410	12,505	11,842	15,322	16,420
Loan impairment	13	12	9	17	22
Other expenses	336	459	357	413	502

Q9 Which cost changed by the second largest percent from 2008 to 2010?

- (A) ) Other expenses
- (B) Staff costs
- (C) ) Loan impairment
- (D) Inventories
- (E) Property depreciation

Step 1 – Calculate the % change for each of the 6 costs between the years 2008 to 2010.

Staff costs	215/248 = 0.867 ; 13.3% decrease
Property depreciation	132 / 112 = 1.179 ; 17.9% increase
Inventories	16,420 / 11,842 = 1.387 ; 38.7% increase
Loan impairment	22 / 9 = 2.44 ; 144.4% increase
Other expenses	502 / 357 = 1.406 ; 40.6% increase

**Note:** be careful to note the question asks for "the second largest". It is a common mistake to overlook this and select the largest increase.

Thus the correct answer is (A) Other expenses

	2006	<b>200</b> 7	2008	2009	2010
Staff costs	226	234	248	230	215
Property depreciation	120	117	112	115	132
Inventories	11,410	12,505	11,842	15,322	16,420
Loan impairment	13	12	9	17	22
Other expenses	336	459	357	413	502

- **Q10** If the 2006 Inventories cost had increased by an eighth compared to the previous year, what was the previous year's Inventories cost (to the nearest £10,000)?
  - (A) ) £10.41 million
  - (B) ) £10.14 million
  - (C)) £1.04 million
  - (D) ) £1.01 million
  - (E) ) Can't tell from data

**Step 1** - To increase by an eighth (12.5%) we simply multiply by 1.125. So we can say (previous year's Inventory costs) x  $1.125 = \pounds 11,410$ . Rearranging we have previous year's inventory costs =  $(\pounds 11,410 \div 1.125) = \pounds 10,142,222$ 

Thus the correct answer is (B) £10.14 million



- **Q11** Between 2010 and 2011 what is the total cut in the marketing budget across the 5 Brands combined (in €10,000s)?
  - (A) 135
    (B) 400
    (C) 500
    (D) 1,135
    (E) 1,535

**Step 1** – Calculate the 2010 total marketing budget 300 + 410 + 260 + 300 + 365 = 1635

**Step 2** – Calculate the 2011 total marketing budget 225 + 275 + 175 + 210 + 250 = 1135

**Step 3** – Calculate cut 2010 marketing budget – 2011 marketing budget = 1635 – 1135 = 500 (in €10,000s)

Thus the correct answer is (C) 500



- Q12 Which Brand has suffered the largest percentage cut in its Marketing Budget?
  - (A) Brand A
  - (B) Brand B
  - (C) Brand C
  - (D) Brand D (E) Brand E

**Step 1** - Calculate the % cut for each branch from 2010 to 2011: Brand  $A = 75/300 \times 100\% = 25\%$ Brand  $B = 135/410 \times 100\% = 32.9\%$ Brand  $C = 85/260 \times 100\% = 32.7\%$ Brand  $D = 90/300 \times 100\% = 30\%$ Brand  $E = 115/365 \times 100\% = 31.5\%$ 

Thus the correct answer is (B) Brand B



- **Q13** Between 2010 and 2011 what has been the mean percentage Budget reduction for each of the 5 Brands (to 1 decimal place)?
  - (A) 30.4%
  - (B) 30.5%
  - (C) 31.4%
  - (D) 31.5%
  - (E) 32.4%

**Step 1** - Calculate the % cut for each Brand. If you still have your notes from the previous question you can re-use those to save time: Brand  $A = 75/300 \times 100 = 25\%$ 

Brand  $A = 70300 \times 100 = 23\%$ Brand  $B = 135/410 \times 100 = 32.9\%$ Brand  $C = 85/260 \times 100 = 32.7\%$ Brand  $D = 90/300 \times 100 = 30\%$ Brand  $E = 115/365 \times 100 = 31.5\%$ 

**Step 2** – Calculate mean reduction. (25 + 32.9 + 32.7 + 30 + 31.5)/5 = 30.42%

**Step 3** – Calculate answer to 1 decimal place 30.4%

Thus the correct answer is (A) 30.4%



- Q14 Brand A and Brand D are to have their number of staff reduced by the same percentage reduction seen by their Marketing Budgets between 2010 and 2011. If the number of staff at Brand A was originally 120 and the number of staff at Brand D triple this, what are the new reduced staff numbers for each Brand?
  - (A) ) Can't tell from the data
    (B) ) 35 (Brand A); 142 (Brand D)
    (C) 90 (Brand A); 252 (Brand D)
    (D) ) 60 (Brand A); 240 (Brand D)
    (E) ) 50 (Brand A); 360 (Brand D)

**Step 1** – Calculate the percentage reduction in Marketing Budget for each Brand. Brand A: 225 / 300 = 25% reduction Brand D: 210 / 300 = 30% reduction

**Step 2** – Calculate the new number of staff for Brand A  $120 \times 0.75\% = 90$ 

**Step 3** – Calculate the new number of staff for Brand D  $(120 \times 3) \times 0.7 = 252$ 

Thus the correct answer is (C) 90 (Brand A); 252 (Brand D)



- **Q15** The total 2011 Marketing Budget for all five Brands is to be cut by a quarter in 2012. In £, what is the 2012 Marketing Budget? (to the nearest £100,000)?
  - (A) ) £3 million
    (B) ) £3.1 million
    (C) ) £5.2 million
    (D) ) £6.2 million
    (E) ) £7.1 million

#### **Step 1** – Calculate the 2012 marketing budget 2011 marketing budget (from previous question) = 1135 (€10,000s) 2012 marketing budget = €11.35 million x 75% = €8.5125 million

**Step 2** – Convert into £ 8,512,500 / 1.2 = £7.094 million

**Step 3** – Put answer into the nearest £100,000 £7.1 million

Thus the correct answer is (E) £7.1 million



#### Year 1 - Average number of passengers per week (1,000s)

All Terminals	А	В	С	D	E
Male passengers	52.9	66.6	62.9	77.1	78.8
Female passengers	52.7	66.5	63.1	76.9	78.5

Q16 Which terminal had the highest number of passengers per week in Year 2?

- (A) Terminal A
- (B) Terminal B
- (C) Terminal C
- (D) Terminal D
- (E) Terminal E

The information that you need is shown in both the table and the graph.

**Step 1** - Given Year 2's 1.5-2.5% increases in passenger numbers, save time by considering only which terminals have the highest number of passengers per week in Year 1. This is Terminal D and E.

**Step 2** - Calculate Year 1's total passengers for Terminals D and E (by adding male and female passenger numbers): Terminal D = 77.1 + 76.9 = 154Terminal E = 78.8 + 78.5 = 157.3

Step 3 - Calculate Year 2's totals for these Terminals: Terminal  $D = 154 \times 102\% = 157.08$ Terminal  $E = 157.3 \times 98\% = 154.15$ 

Thus the correct answer is (D) Terminal D



#### Year 1 - Average number of passengers per week (1,000s)

All Terminals	Α	В	С	D	E
Male passengers	52.9	66.6	62.9	77.1	78.8
Female passengers	52.7	66.5	63.1	76.9	78.5

# **Q17** For Year 1 what was the average weekly difference between male and female passengers per terminal?

- (A) ) 2,200 more males
- (B) ) 1,200 more males
- (C) ) 220 more females
- (D) ) 140 more females  $(\Sigma)$  ) 120 more males
- (E) ) 120 more males

The information that you need is shown in the table.

**Step 1** – Calculate the total difference between the weekly numbers of male and female passengers Total Male = 338.3 Total Female = 337.7 Difference (in 1,000s) = 0.6

**Step 2** – Calculate the average difference per terminal = 0.6 / 5 (1,000s) = 0.12 (1,000s) = 120 more male passengers

Thus the correct answer is (E) 120 more males


Year 1 - Average number of passengers per week (1,000s)

All Terminals	Α	В	С	D	E
Male passengers	52.9	66.6	62.9	77.1	78.8
Female passengers	52.7	66.5	63.1	76.9	78.5

- **Q18** Terminals A and D serve domestic flights, whilst Terminals B, C and E serve international flights. Each week on average how many more passengers in Year 1 took international flights compared to domestic flights (to the nearest 10,000)?
  - (A) 14,000
    (B) 15,000
    (C) 140,000
    (D) 150,000
    (E) 160,000

The information that you need is shown in the table.

**Step 1** – Calculate the total numbers of domestic flights and international flights Domestic flight total = 52.9 + 52.7 + 77.1 + 76.9 = 259.6International flight total = 66.6 + 66.5 + 62.9 + 63.1 + 78.8 + 78.5 = 416.4

**Step 2** – Calculate the difference 416.4 - 259.6 = 156.8 (1,000's) = 156,800

**Step 3** - To the nearest 10,000 160,000

Thus the correct answer is (E) 160,000



Year 1 - Average	number o	f passengers	per week	(1,000s)
------------------	----------	--------------	----------	----------

All Terminals	А	В	С	D	E
Male passengers	52.9	66.6	62.9	77.1	78.8
Female passengers	52.7	66.5	63.1	76.9	78.5

**Q19** In Year 2 each passenger spends on average £4.25 in Terminal C's shops. How much is the average weekly revenue for Terminal C's shops in Year 2 (to the nearest £10,000)?

(Δ)	£1 100 000
(A)	£4,400,000

- (B) £540,000
- (C) £54,000
- (D) £46,000
- (E) £44,000

**Step 1** – Calculate Year 2 passenger total for Terminal C (62.9 + 63.1) x 101.5% = 127.89 In 1,000s this is = 127,890

**Step 2** – Calculate the average weekly revenue generated  $127,890 \times \pounds 4.25 = \pounds 543,532.5 (\pounds 540,000 to the nearest \pounds 10,000)$ 

Thus the correct answer is (B) £540,000



Year 1 - Average	number of	passengers	per week	(1,000s)
------------------	-----------	------------	----------	----------

All Terminals	Α	В	С	D	E
Male passengers	52.9	66.6	62.9	77.1	78.8
Female passengers	52.7	66.5	63.1	76.9	78.5

**Q20** A competitor airport operator called Vefy Flights operates a different airport with half the average Year 1 weekly number of passengers operating from 3 terminals. What is Vefy Flights's average weekly number of passengers per terminal (to the nearest 1,000)?

(A)	110,000
(B)	113,000
(C)	133,000
(D)	142,000
(E)	150,000

**Step 1** – Calculate the total number of Terminal A-E passengers. Total number of Terminal A-E passengers = 676.

**Step 2** - Calculate Vefy Flights's average weekly number of passengers  $676 \times 0.5 = 338$ 

**Step 3** – Calculate Vefy Flights's average weekly number of passengers per terminal 338 / 3 = 112.667 (1,000's) = 112,667 = 113,000 (to the nearest 1,000)

Thus the correct answer is (B) 113,000



2010 Total Costs (£10,000s)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overheads	104	105	102	101
Supply chain	186	174	162	166
Labour	248	245	319	265
I.T.	149	138	140	191
Production	227	253	291	287

- Q21 If the total 2010 costs represent a 5% increase on the total 2009 costs, what were the total 2009 costs (to the nearest £million)?
  - (A)) £3 million
  - (B)) £4 million
  - (C)) £36 million
  - (D)) £37 million
  - (E)) £38 million

The information for 2010 that you need is shown in the table. **Step 1** – Calculate the total costs for 2010 Q1 total = 914 Q2 total = 915 Q3 total = 1,014 Q4 total = 1,010 Total = 3,853

**Step 2** – Calculate the total costs for 2009 3,853 = 105% x (2009 total costs) 2009 total costs = 3,853 / 1.05 = 3,669

**Step 3** - To the nearest £million 3,669 (£10,000s) = £37 million

Thus the correct answer is (D) £37 million



2010 Total Costs (£10,000s)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overheads	104	105	102	101
Supply chain	186	174	162	166
Labour	248	245	319	265
I.T.	149	138	140	191
Production	227	253	291	287

- **Q22** Which cost or costs on their own represented more than 17% of the total costs in 2010?
  - (A) ) Labour and Production
  - (B) Supply chain and I.T.
  - (C) ) Labour and Supply chain
  - (D) Supply chain, Labour and Production
  - (E) Supply chain, Labour, Production and I.T.

The information that you need is shown in the table. **Step 1** – Calculate the total cost across the 4 quarters for 2010 Q1 total = 914 Q2 total = 915 Q3 total = 1,014 Q4 total = 1,010 2010 Total costs = 3,853

**Step 2** – Calculate the % that each individual cost represented Overheads = (104 + 105 + 102 + 101) / 3,853 = 10.7% Supply chain = (186 + 174 + 162 + 166) / 3,853 = 17.9% Labour = (248 + 245 + 319 + 265) / 3,853 = 28.0% I.T. = (149 + 138 + 140 + 191) / 3,853 = 16.0% Production = (227 + 253 + 291 + 287) / 3,853 = 27.4%

Thus the correct answer is (D) Supply chain, Labour and Production



2010 Total Costs (£10,000s)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overheads	104	105	102	101
Supply chain	186	174	162	166
Labour	248	245	319	265
I.T.	149	138	140	191
Production	227	253	291	287

### Q23 In which of the years shown was there a 3:2 ratio of IT to Overheads costs?

(A) Cannot Say
(B) 2006 and 2007
(C) 2006, 2008 & 2010
(D) 2007, 2008 & 2010
(E) 2008 and 2009

The information that you need is shown in the graph and table.

**Step 1** - Calculate the ratio of IT: Overheads costs for each of the 5 years shown: 2006: 18%:12% = 3:2 2007: 20%:15% = 4:3 2008: 21%:14% = 3:2 2009: 17%:15% = 1.13 2010: 618: 412 = 3:2

Thus the correct answer is (C) 2006, 2008 & 2010



2010 Total Costs (£10,000s)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overheads	104	105	102	101
Supply chain	186	174	162	166
Labour	248	245	319	265
I.T.	149	138	140	191
Production	227	253	291	287

- Q24 If 2009's total costs were £250,000, what were the Production costs?
  - (A) £80,000
    (B) £75,000
    (C) £70,000
    (D) £65,000
    (E) £60,000

The information that you need is shown in the graph.

**Step 1** - Production costs = 26% = £250,000 x 26% = £65,000

Thus the correct answer is (D) £65,000



2010 Total Costs (£10,000s)	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Overheads	104	105	102	101
Supply chain	186	174	162	166
Labour	248	245	319	265
I.T.	149	138	140	191
Production	227	253	291	287

- **Q25** If the costs are put into order of decreasing size, in which two years is the order the same?
  - (A) 2006 and 2007
    (B) 2006 and 2008
    (C) 2006 and 2010
    (D) 2007 and 2008
    (E) 2007 and 2009

Step 1 - Put each year's costs into size order:

2006 = Labour, Production, Supply Chain, IT, Overheads 2007 = Production, Labour, IT, Supply Chain, Overheads 2008 = Labour, Production, IT, Supply Chain, Overheads 2009 = Production, Labour, Supply Chain, IT, Overheads

*Tip:* at this stage you could see that none of the years match so given that there is no "none of these" option you could gamble that 2010 will have the same order as one of the others, and thus go for answer (C).

**Step 2** - Carrying on for the remaining year: 2010 = Labour (1,077), Production (1,058), Supply Chain (688), IT (618), Overheads (412)

Thus the correct answer is (C) 2006 and 2010

UK Tourist data					
Country of origin	Annual Number of Tourists (1000s)	Total Spending (million)	Average Family Length of Stay (days)	Average Family Spend (£ per day)	
Australia	2,200	435	5.2	236	
Spain	1,300	410	2.8	116	
Germany	660	380	4.6	148	
U.S.A.	830	350	6.2	244	
Italy	550	283	3.8	164	

**Q26** On average, families from which country of origin spend the most during a typical stay?

(A) Australia(B) Spain(C) ) Germany(D) ) U.S.A.(E) Italy

**Step 1** - Multiply each country of origin's Average Family Length of Stay by Average Family Spend

Australia =  $5.2 \times 236 = 1,227.2$ Spain =  $2.8 \times 116 = 324.8$ Germany =  $4.6 \times 148 = 680.8$ U.S.A =  $6.2 \times 244 = 1,512.8$ Italy =  $3.8 \times 164 = 623.2$ 

Thus the correct answer is (D) U.S.A.

UK Tourist data					
Country of origin	Annual Number of Tourists (1000s)	Total Spending (million)	Average Family Length of Stay (days)	Average Family Spend (£ per day)	
Australia	2,200	435	5.2	236	
Spain	1,300	410	2.8	116	
Germany	660	380	4.6	148	
U.S.A.	830	350	6.2	244	
Italy	550	283	3.8	164	

## **Q27** On average, families from which of the countries shown spend the most and the least per typical stay?

- (A) ) Can't tell from the data
- (B) ) U.S.A. (most); Italy (least)
- (C) ) U.S.A. (most); Spain (least)
- (D) Australia (most); Italy (least)
- (E) Australia (most); Spain (least)

**Step 1** – For each country of origin, calculate the amount spent per family by multiplying the Average Family Length of Stay by Average Family Spending. This question is very similar to the previous question so you can use those workings if you still have them.

Australia =  $5.2 \times 236 = \pounds 1,227.20$ Spain =  $2.8 \times 116 = \pounds 324.80$ Germany =  $4.6 \times 148 = \pounds 680.80$ U.S.A =  $6.2 \times 244 = \pounds 1,512.80$ Italy =  $3.8 \times 164 = \pounds 623.20$ 

Thus the correct answer is (C) U.S.A. (most); Spain (least)

UK Tourist data					
Country of origin	Annual Number of Tourists (1000s)	Total Spending (million)	Average Family Length of Stay (days)	Average Family Spend (£ per day)	
Australia	2,200	435	5.2	236	
Spain	1,300	410	2.8	116	
Germany	660	380	4.6	148	
U.S.A.	830	350	6.2	244	
Italy	550	283	3.8	164	

#### Q28 Which of the following statements is True?

- (A) The ratio of German: Spanish tourists is 1:2
- (B) There are fewer Spanish tourists than German and Italian tourists combined
- (C) German families have the longest average length of stay
- (D) Total German tourist spending is more than 92% of Total Spanish tourist spending
- (E) There are over 4 times as many Australian tourists as Italian tourists

Step 1 - Go through each answer option to determine if it is True, as follows

The ratio of German:Spanish tourists is 1:2: 660:1300 = 33:65 So False

There are less Spanish tourists than German and Italian tourists combined: 1,300 (Spanish tourists) > 660 + 550 (German and Italian tourists combined) So False

German families have the longest average length of stay: Longest average length of stay = 6.2 (U.S.A) So False

Total German tourist spending is more than 92% of Total Spanish tourist spending: 92% of Spanish tourist spending =  $92\% \times 410 = 377.2$  (< 380) So True

There are over 4 times as many Australian tourists as Italian tourists:  $4 \times 550 = 2200$  (but not more than 2,200) So False

Thus the correct answer is (D), Total German tourist spending is more than 92% of Total Spanish tourist spending

	UK Tourist data					
Country of origin	Annual Number of Tourists (1000s)	Total Spending (million)	Average Family Length of Stay (days)	Average Family Spend (£ per day)		
Australia	2,200	435	5.2	236		
Spain	1,300	410	2.8	116		
Germany	660	380	4.6	148		
U.S.A.	830	350	6.2	244		
Italy	550	283	3.8	164		

Q29 On average which of the following tour parties would spend the most per day?

- (A) 2 Australian families
- (B) 2 Spanish families
- (C) 3 German families
- (D) 3 U.S.A. families
- (E) 3 Italian families

**Step 1** - Calculate the cost for each of the options: 2 Australian families =  $2 \times \pounds 236 = \pounds 472$ 2 Spanish families =  $2 \times \pounds 116 = \pounds 232$ 3 German families =  $3 \times \pounds 148 = \pounds 444$ 3 U.S.A. families =  $3 \times \pounds 244 = \pounds 732$ 3 Italian families =  $3 \times \pounds 164 = \pounds 492$ 

Thus the correct answer is (D) 3 USA families

UK Tourist data					
Country of origin	Annual Number of Tourists (1000s)	Total Spending (million)	Average Family Length of Stay (days)	Average Family Spend (£ per day)	
Australia	2,200	435	5.2	236	
Spain	1,300	410	2.8	116	
Germany	660	380	4.6	148	
U.S.A.	830	350	6.2	244	
Italy	550	283	3.8	164	

**Q30** Approximately, what's the average daily spend per family for the 5 countries of origin shown?

(A) £170

(B) £180

(C) £190

(D) £200

(E) Cannot tell from data

**Step 1** - Whilst it might be tempting to calculate (236 + 116 + 148 + 244 + 164) / 5 = £180, this is not quite correct.

To be able to calculate the average spend per family, we would need to know how many families from each country there are. For example there might be a lot more families from one country which would distort the overall average.

Thus the correct answer is (E) Cannot tell from data

## NUMERICAL REASONING TEST 4

### Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The t est will start on the next page.** 

	Units sold			Annual Target	Product Sales Target	
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	(Unit sales)	(Euros)
Greece	26,000	30,000	31,300	21,000	110,000	250,000
Portugal	28,000	33,200	22,600	20,400	105,000	240,000
Austria	20,000	28,300	22,500	35,000	105,000	240,000
Ireland	19,900	25,000	27,200	30,300	105,000	260,000
Croatia	21,500	29,400	25,800	28,500	110,000	230,000

# **Q1** What was the unit sales ratio of Austrian Quarter 4 : Portugal Quarter 1: Greek Quarter 4?

(A) 35:28:22
(B) 5:3:4
(C) 6:4:3
(D) 5:4:3
(E) 3:4:2

**Step 1** - Put the 3 countries into a ratio Austria (Quarter 4) : Portugal (Quarter 1): Greek (Quarter 4) = 35,000: 28,000: 21,000

**Step 2** – Simplify the ratio (recognize that 7 is a common denominator) 5:4:3

Thus the correct answer is (D) 5:4:3

	Units sold			Annual Target	Product Sales Target	
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	(Unit sales)	(Euros)
Greece	26,000	30,000	31,300	21,000	110,000	250,000
Portugal	28,000	33,200	22,600	20,400	105,000	240,000
Austria	20,000	28,300	22,500	35,000	105,000	240,000
Ireland	19,900	25,000	27,200	30,300	105,000	260,000
Croatia	21,500	29,400	25,800	28,500	110,000	230,000

#### Q2 Which country met or exceeded its annual target for unit sales?

- (A)) Greece
- (B) Portugal
- (C) Austria
- (D) Ireland
- (E) Croatia

**Tip:** Notice that all the available answers have just one country, so we know that as soon as we have found one country that exceeded its target, we have the correct answer and we can move on.

**Step 1** – Calculate the total unit sales for each country Greece = 108,300 Portugal = 104,200 Austria = 105,800 Ireland = 102,400 Crotia = 105,200

**Step 2** – Compare each total to the Yearly Target (Unit sales) Targets are either 105,000 or 110,000. Only Austria has exceeded its 105,000 target.

Thus the correct answer is (C) Austria

	Units sold			Annual Target	Product Sales Target	
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	(Unit sales)	(Euros)
Greece	26,000	30,000	31,300	21,000	110,000	250,000
Portugal	28,000	33,200	22,600	20,400	105,000	240,000
Austria	20,000	28,300	22,500	35,000	105,000	240,000
Ireland	19,900	25,000	27,200	30,300	105,000	260,000
Croatia	21,500	29,400	25,800	28,500	110,000	230,000

- **Q3** The previous year's average number of Portuguese units sold per quarter was 20% higher than the year shown. What was the previous year's average number of Portuguese units sold per quarter?
  - (A) 104,200
    (B) 31,260
    (C) 26,050
    (D) 21,260
    (E) 20,840

**Step 1** – Calculate this year's average number of Portuguese units sold per quarter (28,000 + 33,200 + 22,600 + 20,400) / 4 = 104,200 / 4 = 26,050

**Step 2** – Calculate a 20% increase to get last year's average number of Portuguese units sold per quarter 26,050 x 1.2 = 31,260

Thus the correct answer is (B) 31,260

	Units sold			Annual Target	Product Sales Target	
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	(Unit sales)	(Euros)
Greece	26,000	30,000	31,300	21,000	110,000	250,000
Portugal	28,000	33,200	22,600	20,400	105,000	240,000
Austria	20,000	28,300	22,500	35,000	105,000	240,000
Ireland	19,900	25,000	27,200	30,300	105,000	260,000
Croatia	21,500	29,400	25,800	28,500	110,000	230,000

- Q4 If Austria's annual corporation tax was 22% on the first €200,000 of sales and 20% on sales exceeding €200,000, how much is their corporation tax bill for the year (assuming each unit is sold at €3.5)?
  - (A) €34,000
    (B) €34,060
    (C) €37,060
    (D) €44,000
    (E) €78,060

**Step 1** – Calculate the total value of Austrian unit sales Total Austrian unit sales = 105,800Total value of Austrian unit sales =  $105,800 \times \le 3.5 = \le 370,300$ 

**Step 2** - Calculate the corporation tax for the first €200,000 of Austrian unit sales  $€200,000 \times 22\% = €44,000$ 

**Step 3** - Calculate the tax for sales exceeding €200,000 €370,300 - €200,000 = €170,300 €170,300 x 20% = €34,060

**Step 4** – Calculate the total tax €44,000 + €34,060

Thus the correct answer is (E) €78,060

	Units sold			Annual Target	Product Sales Target	
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	(Unit sales)	(Euros)
Greece	26,000	30,000	31,300	21,000	110,000	250,000
Portugal	28,000	33,200	22,600	20,400	105,000	240,000
Austria	20,000	28,300	22,500	35,000	105,000	240,000
Ireland	19,900	25,000	27,200	30,300	105,000	260,000
Croatia	21,500	29,400	25,800	28,500	110,000	230,000

**Q5** Greek and Irish sales generated 2.5 Euros per unit sold, whilst the other countries' sales generated 2.25 Euros per unit sold. Which country or countries exceeded their Annual Product Sales Target?

- (A) Portugal and Austria
- (B) Ireland and Austria
- (C)) Croatia and Austria
- (D)) Croatia and Greece
- (E) Ireland and Greece

**Step 1** – Calculate the total unit sales for each country Using the earlier question's total unit sales for each country Greece =  $108,300 \times 2.5 = 270,750$ Portugal =  $104,200 \times 2.25 = 234,450$ Austria =  $105,800 \times 2.25 = 238,050$ Ireland =  $102,400 \times 2.5 = 256,000$ Croatia =  $105,200 \times 2.25 = 236,700$ 

**Step 2** – Compare each total to the Annual Product Sales Target Only Croatia and Greece exceeded their respective targets.

Thus the correct answer is (D) Croatia and Greece

Share	Price today	Price yesterday
	(£)	<b>(£)</b>
Share A	20.0	19.4
Share B	4.2	3.9
Share C	18.1	19.3
Share D	5.6	5.1
Share E	3.1	3.3
Exchange Rate	Today	Yesterday
\$	\$1.62 to the £	\$1.63 to the £
€	€1.23 to the £	€1.22 to the £

**Q6** Which shares have increased and decreased respectively in value by the largest percent from yesterday to today?

(A) Share D, Share A
(B) Share D, Share C
(C) Share D, Share E
(D) Share B, Share A
(E) Share B, Share C

**Tip:** The wording of the question for percentage increases and decreases is critical. Since the wording says "FROM yesterday TO today" the calculation we must perform is (today)  $\div$  (yesterday). To determine this, think about how you would increase something by say 20%. You multiply the original by 1.2 to get the increased result.

**Step 1** – Calculate the % change in value for each share Share A: 20/19.4 = 3.1% increase Share B: 4.2/3.9 = 7.7% increase Share C: 18.1/19.3 = 6.2% decrease Share D: 5.6/5.1 = 9.8% increase Share E: 3.1/3.3 = 6.1% decrease

Thus the correct answer is (B) Share D, Share C

Share	Price today	Price yesterday
	(£)	(£)
Share A	20.0	19.4
Share B	4.2	3.9
Share C	18.1	19.3
Share D	5.6	5.1
Share E	3.1	3.3
Exchange Rate	Today	Yesterday
\$	\$1.62 to the £	\$1.63 to the £
€	€1.23 to the £	€1.22 to the £

**Q7** A dealer buys 250 Share Ds and 350 Share Es at yesterday's prices and

sells these at today's prices. How much profit or loss does the dealer make?

(A) ) £125 profit
(B) ) £70 profit
(C) ) £55 profit
(D) ) £125 loss
(E) ) £70 loss

**Step 1** – Calculate the Share D profit/loss 250 x (5.6-5.1) = 125 profit

**Step 2** – Calculate the Share *E* profit/loss 350 x (3.1-3.3) = 70 loss

**Step 3** – Calculate the overall profit/loss 125 profit – 70 loss = £55 profit

Thus the correct answer is (C) £55 profit

Share	Price today	Price yesterday
	(£)	(£)
Share A	20.0	19.4
Share B	4.2	3.9
Share C	18.1	19.3
Share D	5.6	5.1
Share E	3.1	3.3
Exchange Rate	Today	Yesterday
\$	\$1.62 to the £	\$1.63 to the £
€	€1.23 to the £	€1.22 to the £

Q8 A trader has 200,000 Share Bs to sell at today's price and today plans to split her proceeds equally into an investment in Share A and Share D. In how many Share As and Share Ds does the trader invest?

- (A) ) 20,000 Share A and 70,000 Share D
- (B) ) 21,000 Share A and 75,000 Share D
- (C) ) 22,000 Share A and 80,000 Share D
- (D) ) 23,000 Share A and 85,000 Share D
- (E)) 24,000 Share A and 90,000 Share D

**Step 1** – Calculate the amount invested per share  $200,000 \times 4.2 = \pounds 840,000$  $\pounds 840,000 / 2 = \pounds 420,000$  per share A and D.

**Step 2** – Calculate the number of Share A shares at today's prices  $\pounds$ 420,000/20 = 21,000 of Share A

**Step 3** – Calculate the number of Share D shares at today's prices  $\pounds$ 420,000/5.6 = 75,000 of Share D

*Tip:* If at this point you had answers in decimals you should question whether that's correct and go back.

Thus the correct answer is (B) 21,000 Share A and 75,000 Share D

Share	Price today	Price yesterday
	(£)	<b>(£)</b>
Share A	20.0	19.4
Share B	4.2	3.9
Share C	18.1	19.3
Share D	5.6	5.1
Share E	3.1	3.3
Exchange Rate	Today	Yesterday
\$	\$1.62 to the £	\$1.63 to the £
€	€1.23 to the £	€1.22 to the £

- **Q9** What was the total cost of buying 550 Share C's yesterday and 1,050 Share E's today (to the nearest \$1,000)?
  - (A) \$11,000(B) \$14,000
  - (C) \$17,000
  - (D) \$18,000
  - (E) \$23,000

**Step 1** - Calculate the cost of 550 Share Cs bought yesterday  $550 \times 19.3 = \pounds 10,615$ 

**Step 2** – Change into \$ 10,615 x 1.63 = \$17,302.45

**Step 3** – Calculate the cost of 1,050 Share Es bought today  $1,050 \times 3.1 = \pounds 3,255$ 

**Step 4** – Change into \$ 3,255 x 1.62 = \$5,273.1

**Step 5** – Calculate the total cost \$17,302.45+ \$5,273.1 = \$22,575.55

**Tip:** If you forgot to convert into dollars, your answer of  $\pounds 14,000$  looks very similar to option (B) and you would have got this question wrong. Often, distracters like this are included in the answers to catch you out.

Thus the correct answer is (E) \$23,000

Share	Price today	Price yesterday
	(£)	(£)
Share A	20.0	19.4
Share B	4.2	3.9
Share C	18.1	19.3
Share D	5.6	5.1
Share E	3.1	3.3
Exchange Rate	Today	Yesterday
\$	\$1.62 to the £	\$1.63 to the £
€	€1.23 to the £	€1.22 to the £

- Q10 Today's prices for Share A and Share C (in Euros) respectively represent a 15% decrease and a 22% increase on the price (in Euros) one year ago. What were the respective prices a year ago (to the nearest Euro)?
  - (A) ) €18 (Share A); €18 (Share C) (B) ) €22 (Share A); €22 (Share C) (C) ) €29 (Share A); €29 (Share C) (D) ) €29 (Share A); €18 (Share C) (E) ) €29 (Share A); €30 (Share C)

Step 1 – Convert share prices in to Euros Share A:  $20 \times 1.23 = \pounds 24.6$ Share C:  $18.1 \times 1.23 = \pounds 22.263$ 

Step 2 - Calculate the Share A price one year ago  $24.6 \div 0.85 = \text{€}28.94$ 

**Step 3** – Calculate the Share C price one year ago 22.263 ÷ 1.22 = €18.25

Thus the correct answer is (D) €29 (Share A); €18 (Share C)



% of total Sales	Northern	Southern	Eastern	Western	Central
Year 1	22	24	22	18	14
Year 3	24	20	24	16	16

Q11 Which two products had the same total product sales in Year 2?

- (A) Product A and Product B
- (B) Product A and Product C
- (C) Product A and Product D
- (D) Product B and Product C
- (E) Product B and Product D

There is nothing difficult about this one, just a lot of careful calculator work.

**Step 1** – Calculate Year 2 product sales for each product Product A total = 22.5 Product B total = 27.5 Product C total = 23.5 Product D total= 27.5

Thus the correct answer is (E) Product B and Product D



% of total Sales	Northern	Southern	Eastern	Western	Central
Year 1	22	24	22	18	14
Year 3	24	20	24	16	16

- **Q12** As a percentage of total sales across all regions, how has the Eastern region's sales changed between Year 1 and Year 2?
  - (A)) 1% less
  - (B)) 1.7% more
  - (C)) 1.7% less
  - (D)) 3% more
  - (E)) 3% less

The information that you need is in the graph (Year 2) and the table (Year 1)

**Step 1** – Calculate the Eastern region's % of total sales (Year 2) Eastern region's Year 2 sales = 4.5 + 5.5 + 5.0 = 20.5Add up the total sales for all products across all regions (Year 2) (2.5 + 5 + 6 + 7 + 4.5 + 6.5 + 5 + 4.5 + 4.5 + 5.5 + 5.5 + 5 + 5 + 4.5 + 4.5 + 6.5 + 6 + 6 + 2.5 + 4.5) = 101 (£10,000s). Now as a % of total sales this is 20.5 / 101 = 20.3% for year 2.

**Step 2** – Calculate the change between Year 1 and Year 2 Year 1 from the table is given as 22%And 22 - 20.3 = 1.7%

Thus the correct answer is (C) 1.7% less



% of total Sales	Northern	Southern	Eastern	Western	Central
Year 1	22	24	22	18	14
Year 3	24	20	24	16	16

- **Q13** For products A, B, C and D combined, which region had a sales value different from the other regions in Year 2?
  - (A) Western
  - (B) Eastern
  - (C)) Central
  - (D) ) Northern
  - (E) ) None of these

**Step 1** - Calculate the total sales for each region Eastern = 4.5 + 5.5 + 5.5 + 5 = 20.5Northern = 2.5 + 5 + 6 + 7 = 20.5Southern = 4.5 + 6.5 + 5 + 4.5 = 20.5Western = 5 + 4.5 + 4.5 + 6.5 = 20.5Central = 6 + 6 + 2.5 + 4.5 = 19

We can now see that the Central region had a value not equal to the others.

Thus the correct answer is (C) Central



% of total Sales	Northern	Southern	Eastern	Western	Central
Year 1	22	24	22	18	14
Year 3	24	20	24	16	16

Q14 The 5 regions shown represent UK product sales, which is one-quarter of the

value of US product sales and 50% of the value of Asian product sales. What are Year 2's total product sales for all 3 territories combined?

(A) £9,010,000
(B) £7,070,000
(C) £5,000,000
(D) £3,030,000
(E) £1,010,000

**Step 1** – Refer back to the earlier question for the Year 2 product sales for each product (this is why it's useful to have legible notes on your rough workings).

**Step 2** - Calculate the total Year 2 product sales for the UK Total = 22.5 + 27.5 + 23.5 + 27.5 = 101 (10,000's) = 1,010,000

**Step 3** – Create an equation totaling the sales of all 3 territories Total = UK + US + AsiaTotal = 1,010,000 x (1 + 4 + 2) = £7,070,000

Thus the correct answer is (B) £7,070,000



% of total Sales	Northern	Southern	Eastern	Western	Central
Year 1	22	24	22	18	14
Year 3	24	20	24	16	16

- **Q15** Which region experienced the greatest change in its share of total UK sales between Year 1 and Year 2?
  - (A) ) Northern
  - (B) Southern
  - (C)) Western
  - (D) Eastern
  - (E) Central

The information that you need is in the graph (Year 2) and the table (Year 1)

**Step 1** – Calculate each region's % of total sales for Year 2 (you can save time by using the figures from a previous question) Eastern = 20.5/101 = 20.3Northern = 20.5/101 = 20.3Southern = 20.5/101 = 20.3Western = 20.5/101 = 20.3Central = 19/101 = 18.8

Step 2 – Calculate the change in market share between Year 1 and Year 2, as follows;

N	S	E	W	С
22 – 20.3	24 – 20.3	22 – 20.3	18 – 20.3	14 – 18.8
= 1.7%	= 3.7%	= 1.7%	= -2.3%	= -4.8%

Thus the correct answer is (E) Central

Total Liabilities	Previous Year (£million)	Current Year (£million)	Next Year's Projection (£million)
<b>Current Liabilities</b>			
Interest paying loans	135	126	134
Currency swaps	8.5	11.3	6.9
Other current liabilities	42	52	48.3
Non-Current Liabilities			
Interest bearing loans	53	45	42.6
Pension payments	204	196	218
Tax liabilities	48	56.4	49.5

**Q16** Next year, which liability is projected to have experienced the second highest percentage change in value compared with last year?

- (A) Interest paying loans
- (B) Currency swaps
- (C) ) Other current liabilities
- (D) Pension payments
- (E)) Cannot tell

Step 1 - Calculate the % change in value for each liability shown.

Interest paying loans = 134/135 = 0.993 = 0.7% decrease Currency swaps= 6.9/8.5 = 0.812 = 18.8% decrease – second largest change Other current liabilities = 48/42 = 15% increase Interest bearing loans = 42.6/53 = 19.62% decrease – Largest change Pension payments = 218/204 = 6.9% increase Tax liabilities = 49.5/48 = 3.125% increase.

Thus the correct answer is (B) Currency swaps

Total Liabilities	Previous Year (£million)	Current Year (£million)	Next Year's Projection (£million)
<b>Current Liabilities</b>			
Interest paying loans	135	126	134
Currency swaps	8.5	11.3	6.9
Other current liabilities	42	52	48.3
Non-Current Liabilities			
Interest bearing loans	53	45	42.6
Pension payments	204	196	218
Tax liabilities	48	56.4	49.5

**Q17** What is the average difference between the total Non-Current Liabilities and the total Current Liabilities for the 3 years shown (to the nearest £million)?

(A) ) £116 million (B) ) £117 million (C) ) £118 million (D) ) £119 million (E) ) £120 million

**Step 1** – Calculate the Previous year's difference between the total Non-current liabilities and the total Current liabilities 305 – 185.5 = 119.5

**Step 2** – Calculate the Current year's difference between the total Non-current liabilities and the total Current liabilities 297.4 – 189.3 = 108.1

**Step 3** – Calculate Next year's projected difference between the total Non-current liabilities and the total Current liabilities 310.1 - 189.2 = 120.9

**Step 4** – Calculate the average (119.5 + 108.1 + 120.9) / 3 = 116.2

Thus the correct answer is (A) £116 million

Total Liabilities	Previous Year (£million)	Current Year (£million)	Next Year's Projection (£million)
<b>Current Liabilities</b>			
Interest paying loans	135	126	134
Currency swaps	8.5	11.3	6.9
Other current liabilities	42	52	48.3
Non-Current Liabilities			
Interest bearing loans	53	45	42.6
Pension payments	204	196	218
Tax liabilities	48	56.4	49.5

**Q18** If the projected figures shown prove accurate and the same percentage changes occur for each liability in the year after next, what will the total Current Liabilities be in the year after next (to the nearest £million)?

- (A)) £192 million
- (B)) £189 million
- (C)) £187 million
- (D)) £185 million

(E)) £183 million

Step 1 - Calculate each Current Liability's % change, as follows

Interest paying loans	134 / 126 = 106.35%
Currency swaps	6.9/11.3=61.06 %
Other current liabilities	48.3 / 52 = 92.88%

Step 2 - Calculate each Current Liability's subsequent year's value

Interest paying loans	134 x 106.35% = 142.51
Currency swaps	6.9 x 61.06% = 4.21
Other current liabilities	48.3 x 92.88% = 44.86

*Tip:* instead of writing down the percentage increase for each category, it saves time if you leave the number in your calculator and work out the "subsequent year" figure straight away. In other words, combine steps 1 and 2.

**Step 3** – Total the Current Liability values 142.51 + 4.21 + 44.86 = 191.59

Thus the correct answer is (A) £192 million

Total Liabilities	Previous Year (£million)	Current Year (£million)	Next Year's Projection (£million)
<b>Current Liabilities</b>			
Interest paying loans	135	126	134
Currency swaps	8.5	11.3	6.9
Other current liabilities	42	52	48.3
Non-Current Liabilities			
Interest bearing loans	53	45	42.6
Pension payments	204	196	218
Tax liabilities	48	56.4	49.5

- **Q19** The Pension payments figure for each year is based upon the following numbers of ex-employees drawing a pension: 8,155 (previous year); 8,240 (current year); 8,325 (next year). What is the average pension payable across the 3 years shown (to the nearest £1,000)?
  - (A) £15,000
    (B) £20,000
    (C) £25,000
    (D) £30,000
    (E) £35,000

**Step 1** – Calculate the total amount of pension payments across the 3 years shown  $204 + 196 + 218 = \pounds618$  million

**Step 2** – Calculate the total number of ex-employees drawing a pension across the 3 years shown

8,155 + 8,240 + 8,325 = 24,720

**Step 3** – Calculate the average pension payable across the 3 years  $\pounds 618 \text{ million} / 24,720 = \pounds 25,000$ 

Thus the correct answer is (C) £25,000

Total Liabilities	Previous Year (£million)	Current Year (£million)	Next Year's Projection (£million)
Current Liabilities			
Interest paying loans	135	126	134
Currency swaps	8.5	11.3	6.9
Other current liabilities	42	52	48.3
Non-Current Liabilities			
Interest bearing loans	53	45	42.6
Pension payments	204	196	218
Tax liabilities	48	56.4	49.5

- **Q20** Next year's projected figures need to be corrected by adding an additional 4% for inflation. What is next year's corrected total Non-Current Liabilities?
  - (A) ) £322.5 million
    (B) ) £310.1 million
    (C) ) £309.3 million
    (D) ) £297.7 million
    (E) ) £297.4 million

**Step 1** – Calculate next year's projected total Non-current liabilities Interest bearing loans + Pension payments + Tax liabilities = 42.6 + 218 + 49.5 = 310.1

**Step 2** – Correct the total by adding 4% for inflation  $310.1 \times 1.04 = \text{\pounds}322.5$  million

Thus the correct answer is (A) £322.5 million



Global income (% annual change on year before)				2011	
	2007	2008	2009	2010	(projection)
Zwex Ltd	2.3	0.6	2.2	1.8	2.1
Quew plc	-0.7	-0.8	0.3	1.1	1.4
Ploche Inc	1.4	1.2	1.6	0.5	2.9

- Q21 What was the global income for Ploche Inc in 2007 (to the nearest £10,000)?
  - (A) £6,000,000
    (B) £5,510,000
    (C) £5,500,000
    (D) £5,430,000
    (E) £4,510,000

The information that you need is shown in both the line graph and the histogram.

**Step 1** – Calculate 2006's global income for Ploche Inc by adding the 4 quarters 13.5 + 11.6 + 13.9 + 15.3 = 54.3 (£100,000s) = £5.43 million

**Step 2** – Calculate 2007 global income (allowing for the annual change of 1.4%)  $\pounds 5.43$  million x 1.014 =  $\pounds 5.506$  million

**Step 3** - To the nearest £10,000 £5.506 million = £5,510,000

Thus the correct answer is (B) £5,510,000



Global income (% annual change on year before)					2011
	2007	2008	2009	2010	(projection)
Zwex Ltd	2.3	0.6	2.2	1.8	2.1
Quew plc	-0.7	-0.8	0.3	1.1	1.4
Ploche Inc	1.4	1.2	1.6	0.5	2.9

#### Q22 Which of the following statements is true?

(A) Ploche Inc increased global income each quarter during 2006

(B) Between 2007-2010 Zwex Ltd has experienced 6.9% global income growth

(C) In 2006 Quew plc's global income was £5,430,000

(D) Ploche Inc has experienced positive global growth each year between 2006-2010

(E) The average 2006 Quarter 2 sales were £1.15 million

(A) Ploche Inc increased global income each quarter during 2006. FALSE – not in Quarter 2

(B) Between 2007-2010 Zwex Ltd has experienced 6.9% global income growth. FALSE - % are cumulative year-on-year. Hence the growth between 2007-2010 is  $(1.006 \times 1.022 \times 1.018) = 1.0466$ , or an increase of 4.66% between 2007 and 2010.

(C) In 2006 Quew plc's global income was £5,430,000 FALSE – it was £5,410,000

(D) Ploche Inc has experienced positive global growth each year between 2006-2010 TRUE

(E) ) The average 2006 Quarter 2 sales were  $\pounds$ 1.15 million FALSE – they were  $\pounds$ 1.27 million

Thus the correct answer is (D) Ploche Inc has experienced positive global growth each year between 2006-2010


Global income (% annual change on year before)					2011
	2007	2008	2009	2010	(projection)
Zwex Ltd	2.3	0.6	2.2	1.8	2.1
Quew plc	-0.7	-0.8	0.3	1.1	1.4
Ploche Inc	1.4	1.2	1.6	0.5	2.9

- **Q23** In which year up to 2010 did Quew plc experience a higher annual % growth than either Zwex Ltd or Ploche Inc?
  - (A) 2007
  - (B) 2008
  - (C) 2009
  - (D) 2010
  - (E) None of these

**Step 1** - Simply compare Quew plc's figures for each period compared to Zwex Ltd and Ploche Inc:

	2007	2008	2009	2010
Zwex Ltd	2.3	0.6	2.2	1.8
Quew plc	-0.7	-0.8	0.3	1.1
Ploche Inc	1.4	1.2	1.6	0.5

We see that in 2010 Quew grew by 1.1% whilst Ploche grew by 0.5%. Note the question asks for EITHER Zwex or Ploche; don't fall into the trap of looking for a year in which Quew is larger than BOTH Zwex and Ploche.

Thus the correct answer is (D) 2010



Global income (% annual change on year before)					2011
	2007	2008	2009	2010	(projection)
Zwex Ltd	2.3	0.6	2.2	1.8	2.1
Quew plc	-0.7	-0.8	0.3	1.1	1.4
Ploche Inc	1.4	1.2	1.6	0.5	2.9

- **Q24** In 2006 Zwex's Global sales comprised European and non-European sales, which were in the ratio 3:4. What were Zwex's European sales for 2006?
  - (A)) £2.14 million
  - (B)) £2.5 million
  - (C)) £3 million
  - (D)) £3.5 million
  - (E)) £3.75 million

**Step 1** – Calculate Zwex Ltd's Global sales for 2006 8.6 + 17.4 + 12.7 + 11.3 = 50 (£100,000s)

**Step 2** – Put this figure into the ratio given in the question. If European sales were 3 parts out of a total of 7 (i.e. European plus non-European) we have to multiply by 3/7.

**Step 3** – Calculate Zwex's European sales  $\pounds 5$  million x  $3/7 = \pounds 2.143$  million

Thus the correct answer is (A) £2.14 million



Global income (% annual change on year before)					2011
	2007	2008	2009	2010	(projection)
Zwex Ltd	2.3	0.6	2.2	1.8	2.1
Quew plc	-0.7	-0.8	0.3	1.1	1.4
Ploche Inc	1.4	1.2	1.6	0.5	2.9

Q25 What was the global income for Quew plc in 2008 (to the nearest £100,000)?

(A) ) £5.41 million (B) ) £5.37 million (C) ) £5.33 million (D) ) £5.30 million (E) ) £5.23 million

The information that you need is shown in both the table and the histogram.

**Step 1** – Calculate 2006's global income for Quew plc by adding the 4 quarters 12.4 + 9.2 + 16.7 + 15.8 = 54.1 (£100,000's) = £5.41 million

**Step 2** – Calculate 2007 global income (allowing for the global income change of - 0.7%) £5.41 million x 99.3% = £5.37 million

**Step 3** – Calculate 2008 global income (allowing for the global income change of - 0.8%) £5.37 million x 99.2% = £5.33 million

**Step 4** - To the nearest £100,000 £5.33 million = £5.30 million

Note that £5.33 is incorrect as the question asked for to the nearest £100,000.

Thus the correct answer is (D) £5.30 million

	2006	2007	2008	2009	2010
	(Emillion)	(£million)	(£million)	(£million)	(£million)
Adjusted earnings	1.02	1.05	0.95	0.98	1.11
Cash flow	1.32	1.42	1.34	1.25	1.53
Attributable profit	1.95	2.11	1.93	1.88	2.23
Average profit (per 500 units)	) £250	£325	£175	£200	£300
Average sales price (per unit)	£4.50	£4.65	£4.30	£4.15	£4.60

- **Q26** From 2006 to 2007 Attributable profit increased at double the percentage rate as it did between 2005-2006. What was the Attributable profit figure for 2005?
  - (A) )  $\pounds 0.23$  million (B) )  $\pounds 1.03$  million (C) )  $\pounds 1.83$  million (D) )  $\pounds 1.87$  million (E) )  $\pounds 2.03$  million

**Step 1** – Calculate the 2005-2006 rate of Attributable profit increase Rate between 2006-2007 = 2.11 / 1.95 = 8.2% increase Rate between 2005-2006 = 8.2 / 2 = 4.1% increase

**Step 2** – Calculate the Attributable profit figure for 2005  $1.95 \div 1.041 = 1.87$  (£million)

Thus the correct answer is (D) £1.87 million

	2006	2007	2008	2009	2010
	(£million)	(Emillion)	(£million)	(£million)	(£million)
Adjusted earnings	1.02	1.05	0.95	0.98	1.11
Cash flow	1.32	1.42	1.34	1.25	1.53
Attributable profit	1.95	2.11	1.93	1.88	2.23
Average profit (per 500 units)	) £250	£325	£175	£200	£300
Average sales price (per unit)	£4.50	£4.65	£4.30	£4.15	£4.60

**Q27** If the target was to have an average profit (per unit) in excess of 50p, in which year or years was this achieved?

(A) 2006
(B) 2006 and 2007
(C) 2010
(D) 2007 and 2010
(E) 2006, 2007 and 2010

Step 1 - Calculate the average profit (per unit) as follows:

2006	2007	2008	2009	2010
£250	£325	£175	£200	£300
£250/	£325/	£175/500	£200/	£300
500 =	500 =	$= \pm 0.35$	500 =	/ 500
£0.50	£0.65		£0.40	=
				£0.60

Note the question asks for "in excess of 50p". So in 2006 where the profit was exactly 50p, this does not satisfy the requirement.

Thus the correct answer is (D) 2007 and 2010

	2006	2007	2008	2009	2010
	(£million)	(Emillion)	(£million)	(£million)	(Emillion)
Adjusted earnings	1.02	1.05	0.95	0.98	1.11
Cash flow	1.32	1.42	1.34	1.25	1.53
Attributable profit	1.95	2.11	1.93	1.88	2.23
Average profit (per 500 units)	) £250	£325	£175	£200	£300
Average sales price (per unit)	£4.50	£4.65	£4.30	£4.15	£4.60

Q28 In 2011, if Adjusted earnings increase by an eighth and there is a 2:3 ratio of (2011 Adjusted earnings: 2011 Cash flow), what will be the Cash flow in 2011?

(A) ) £2.14 million
(B) ) £1.87 million
(C) ) £1.25 million
(D) ) £0.83 million
(E) ) £0.14 million

**Step 1** – Calculate the 2011 Adjusted earnings 1.11 x 1 1/8 = 1.249

**Step 2** – Calculate the 2011 Cash flow Adjusted earnings : Cash flow = 2:3 Cash flow =  $1.249 \times 3/2 = 1.87$ 

Thus the correct answer is (B) £1.87 million

	2006	2007	2008	2009	2010
	(£million)	(£million)	(£million)	(£million)	(£million)
Adjusted earnings	1.02	1.05	0.95	0.98	1.11
Cash flow	1.32	1.42	1.34	1.25	1.53
Attributable profit	1.95	2.11	1.93	1.88	2.23
Average profit (per 500 units)	) £250	£325	£175	£200	£300
Average sales price (per unit)	£4.50	£4.65	£4.30	£4.15	£4.60

Q29 Which year had the lowest ratio of Adjusted earnings to Attributable profit?

(A) 2006
(B) 2007
(C) 2008
(D) 2009
(E) 2010

Step 1 - Calculate the ratio for each year as shown in the table below;

	2006	2007	2008	2009	2010
Adjusted earnings/ Attributable profit	= 1.02/1.95	= 1.05/2.11	= 0.95/1.93	= 0.98/1.88	= 1.11/2.23
	= 0.52	= 0.498	= 0.492	= 0.52	= 0.50

Thus the correct answer is (C) 2008

	2006	2007	2008	2009	2010
	(£million)	(Emillion)	(£million)	(£million)	(£million)
Adjusted earnings	1.02	1.05	0.95	0.98	1.11
Cash flow	1.32	1.42	1.34	1.25	1.53
Attributable profit	1.95	2.11	1.93	1.88	2.23
Average profit (per 500 units)	£250	£325	£175	£200	£300
Average sales price (per unit)	£4.50	£4.65	£4.30	£4.15	£4.60

# **Q30** Which year from 2007 onwards showed the greatest percentage change in Cash flow compared to the preceding year?

(A) 2006
(B) 2007
(C) 2008
(D) 2009
(E) 2010

Step 1 – Calculate the % change in cash flow for each year

2007	2008	2009	2010
1.42 / 1.32	1.34 / 1.42	1.25 / 1.34	1.53/1.25
= 7.58%	= 5.63%	= 6.72%	= 22.4%
(increase)	(decrease)	(decrease)	(increase)

Thus the correct answer is (E) 2010

#### NUMERICAL REASONING TEST 5

#### Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 

Product code	Non-European stores selling product	Current month's sales (\$)	Price per product unit (\$)
DE45*	14	35,000	175
PU20*	9	20,000	200
AE25	6	13,000	130
PU10**	5	24,000	150
FD24**	7	9,000	180

\*\* Promotional offer = 4 for the price of 3

Product code	European stores selling product	Current month's sales (€)	Price per product unit (€)
DE45	26	21,000	150
PU20	19	30,000	160
AE25	11	24,500	200
PU10	9	18,700	110
FD24	13	14,700	90

- Q1 Which of the products shown had the lowest value of sales per non-European store and which had the highest value of sales per European store?
  - (A) PU10 (non-European); AE25 (European)
  - (B) FD24 (non-European); DE45 (European)
  - (C) FD24 (non-European); AE25 (European)
  - (D) AE25 (non-European); PU10 (European)
  - (E) AE25 (non-European); FD24 (European)

**Step 1** – Calculate each product's average sales per European store DE45 = 21,000/26 = 808 PU20 = 30,000/19 = 1,579 AE25 = 24,500/11 = 2,227 PU10 = 18,700/9 = 2,078FD24 = 14,700/13 = 1,131

**Step 2** – Calculate each product's average sales per non-European store DE45 = 35,000/14 = 2,500 PU20 = 20,000/9 = 2,222 AE25 = 13,000/6 = 2,167 PU10 = 24,000/5 = 4,800 FD24 = 9,000/7 = 1,286

Thus the correct answer is (C) FD24 (non-European); AE25 (European)

Product code	Non-European stores selling product	Current month's sales (\$)	Price per product unit (\$)
DE45*	14	35,000	175
PU20*	9	20,000	200
AE25	6	13,000	130
PU10**	5	24,000	150
FD24**	7	9,000	180

\*\* Promotional offer = 4 for the price of 3

Product code	European stores selling product	Current month's sales (€)	Price per product unit (€)
DE45	26	21,000	150
PU20	19	30,000	160
AE25	11	24,500	200
PU10	9	18,700	110
FD24	13	14,700	90

Q2 What is the discrepancy (in \$) between the AE25 price per product unit in non-European stores compared to European stores. Use an exchange rate of €0.80 to the \$.

(A) \$30
(B) \$120
(C) \$130
(D) \$200

(E) \$230

The information that you need is shown in both tables. Note from the possible answers it doesn't matter which is the greater, we just need the difference.

**Tip:** If you struggle with the term " $\in X$  to the \$" and you sometimes multiply when you should divide by the conversion, think of an extreme example. So think of a two currencies that have very different strengths, for example Zimbabwean Dollar to the British Pound. It doesn't matter what the values are but you know there are lots of ZWDs to the BGP and you also know that the same product will cost a lot more ZWDs than GBP. Hopefully that will help you decide if currency A should be a higher number than currency B, or vise versa.

**Step 1** – Read from the table the AE25 price per product unit (non-European stores) = \$130

**Step 2** – Calculate the AE25 price per product unit (European stores) =  $\notin 200 \div 0.80 = \$250$ 

**Step 3** – Calculate the difference between the two \$250 - \$130 = \$120

Thus the correct answer is (B) \$120

Product code	Non-European stores selling product	Current month's sales (\$)	Price per product unit (\$)
DE45*	14	35,000	175
PU20*	9	20,000	200
AE25	6	13,000	130
PU10**	5	24,000	150
FD24**	7	9,000	180

\*\* Promotional offer = 4 for the price of 3

Product code	European stores selling product	Current month's sales (€)	Price per product unit (€)
DE45	26	21,000	150
PU20	19	30,000	160
AE25	11	24,500	200
PU10	9	18,700	110
FD24	13	14,700	90

- Q3 This month's combined target for non-European and European sales of AE25 is €40,000. Using an exchange rate of €0.75 to the \$, what is the difference between the sales values shown and this target?
  - (A) €575
    (B) €750
    (C) €5,100
    (D) €5,750
    (E) €7,500

The information that you need is shown in both tables

**Step 1** – Calculate AE25's non-European sales in Euros  $$13,000 \times €0.75 = €9,750$ 

Step 2 – Calculate AE25's combined European and non-European sales €9,750 + €24,500 = €34,250

**Step 3** – Calculate the discrepancy against target sales €40,000 - €34,250 = €5,750

Thus the correct answer is (D) €5,750

Product code	Non-European stores selling product	Current month's sales (\$)	Price per product unit (\$)
DE45*	14	35,000	175
PU20*	9	20,000	200
AE25	6	13,000	130
PU10**	5	24,000	150
FD24**	7	9,000	180

\*\* Promotional offer = 4 for the price of 3

Product code	European stores selling product	Current month's sales (€)	Price per product unit (€)
DE45	26	21,000	150
PU20	19	30,000	160
AE25	11	24,500	200
PU10	9	18,700	110
FD24	13	14,700	90

- **Q4** Combining European and non-European sales, which products generated the highest number of product units sold? Use the non-promotional sales prices shown.
  - (A) DE45(B) PU20(C) AE25
  - (D) PU10
  - (E) FD24

The information that you need is shown in both tables.

Step 1 – Calculate the number of sales per product (non-European stores)

	Product unit sales
DE45	35,000/175 = 200
PU20	20,000/200 = 100
AE25	13,000/130 = 100
PU10	24,000/150= 160
FD24	9,000/180 = 50

Step 2 – Calculate the number of sales per product (European stores)

DE45	€145	21,000/150 = 140
PU20	€185	30,000/160 = 187.5
AE25	€240	24,500/200 = 122.5
PU10	€110	18,700/110 = 170

Step 3 - Calculate the total number of sales per product

DE45	200 + 140 = 340
PU20	100 + 187.5 = 287.5
AE25	100 + 122.5 = 222.5
PU10	160 + 170 = 330
FD24	50 + 63.33 = 213.33

Thus the correct answer is (A) DE45

Product code	Non-European stores selling product	Current month's sales (\$)	Price per product unit (\$)
DE45*	14	35,000	175
PU20*	9	20,000	200
AE25	6	13,000	130
PU10**	5	24,000	150
FD24**	7	9,000	180

\*\* Promotional offer = 4 for the price of 3

Product code	European stores selling product	Current month's sales (€)	Price per product unit (€)
DE45	26	21,000	150
PU20	19	30,000	160
AE25	11	24,500	200
PU10	9	18,700	110
FD24	13	14,700	90

Q5 Given that a customer uses the promotional offers shown, put the 5 products sold in non-European stores into order of increasing promotional price per unit (starting with the cheapest).

(A) AE25, PU10, DE45, FD24, PU20
(B) PU10, DE45, PU20, AE25, FD24
(C) PU10, DE45, AE25, PU20, FD24
(D) DE45, PU10, PU20, AE25, FD24
(E) PU10, DE45, PU20, FD24, AE25

The information that we need is shown in the first table (non-European stores)

**Step 1** – Calculate the 3 for the price of 2 promotional offers DE45 promotional price per unit =  $2/3 \times $175 = $116.67$ PU20 promotional price per unit =  $2/3 \times $200 = $133.33$ 

**Step 2** – Calculate the 4 for the price of 3 promotional offers PU10 promotional price per unit =  $3/4 \times $150 = $112.50$ FD24 promotional price per unit =  $3/4 \times $180 = $135.00$ 

**Step 3** – Put these promotional prices into order alongside the fifth product (AE25) priced at \$130 and not on promotion

Thus the correct answer is (C) PU10, DE45, AE25, PU20, FD24



Equity fund values	UK	US	European	Far Eastern	Emerging Markets
Total value (£million)	55.6	24.3	52.1	26.2	38.9
Number of investors	3,450	1,460	3,295	1,575	2,660

- **Q6** On the previous day, the value of the shares held in the Emerging Markets Fund was 0.5% lower than the values given here. What was the previous day's value of shares in the Emerging Markets Fund?
  - (A) ) £18.35 million
    (B) ) £18.40 million
    (C) ) £18.50 million
    (D) ) £19.35 million
    (E) ) £19.40 million

The information that we need is shown in both the graph and the table.

Step 1 - Calculate the value of the shares component of the Emerging Markets Fund

38.9 million x 50% = £19.45 million

**Step 2** – Calculate the previous day's value  $\pounds$ 19.45 million x .995 =  $\pounds$ 19.35 million

Thus the correct answer is (D) £19.35 million



Equity fund values	UK	US	European	Far Eastern	Emerging Markets
Total value (£million)	55.6	24.3	52.1	26.2	38.9
Number of investors	3,450	1,460	3,295	1,575	2,660

- **Q7** Which out of the Emerging Markets, UK and Far Eastern funds hold the lowest value of Cash and the lowest value of Bonds?
  - (A) UK (Cash); Far Eastern (Bonds)
  - (B) Emerging Markets (Cash); Far Eastern (Bonds)
  - (C) ) Far Eastern (Cash); UK (Bonds)
  - (D) Emerging Markets (Cash); UK (Bonds)
  - (E) UK (Cash); Far Eastern (Cash)

The information that we need is shown in both the table and the graph.

**Step 1** - Calculate the value of the Cash held within each of the Funds in the question Cash value = total value x cash %  $UK(Cash) = 55.6 \times 10\% = \pm 5.56$  million

See table below:

	Cash
UK	£5.56 million
Far Eastern	£7.86 million
Emerging	
Markets	£3.89 million

**Step 2** - Calculate the value of the Bonds held within each of the Funds in the question Bonds value = total value x bonds % UK (Bonds) = 55.6 x 20% = £11.12 million See table below:

	Bonds
UK	£11.12 million
Far Eastern	£3.41 million
Emerging	
Markets	£11.67 million

Thus the correct answer is (B) Emerging Markets (Cash); Far Eastern (Bonds)



Equity fund values	UK	US	European	Far Eastern	Emerging Markets
Total value (£million)	55.6	24.3	52.1	26.2	38.9
Number of investors	3,450	1,460	3,295	1,575	2,660

Q8 Which equity fund has the highest average value per individual investor?

- (A) ) UK Fund
- (B) US Fund
- (C) European Fund
- (D) Far East Fund
- (E) Emerging Markets Fund

The information that we need is shown in the table. Note there doesn't appear to be an obvious answer just from inspection so we must calculate each option.

**Step 1** - For each equity fund calculate the average value per individual investor.  $UK = 55.6/3,450 = \pounds 16,116$   $US = 24.3/1,460 = \pounds 16,644$ European = 52.1/3,295 = £15,811 Far East = 26.2/1,575 = £16,635 Emerging Markets = 38.9/2,660 = £14,624

Thus the correct answer is (B) US Fund



Equity fund values	UK	US	European	Far Eastern	Emerging Markets
Total value (£million)	55.6	24.3	52.1	26.2	38.9
Number of investors	3,450	1,460	3,295	1,575	2,660

### **Q9** Which of the components of the UK and US equity funds have the highest and the lowest value?

- (A) lowest is US Fund (Bonds); highest is UK Fund (Derivatives)
- (B) lowest is US Fund (Shares); highest is UK Fund (Shares)
- (C) lowest is UK Fund (Bonds); highest is US Fund (Shares)
- (D) lowest is US Fund (Bonds); highest is UK Fund (Shares)
- (E) lowest is US Fund (Derivatives); highest is UK Fund (Shares)

**Tip:** Note that just from looking at the graph and table we know the overall US fund is smaller than the UK fund and the smallest fraction within the US find (10% to Derivatives) is not larger than the smallest fraction within the UK fund. So we can instantly say the smallest fraction is Derivatives in the US fund. As it happens there is only one multiple choice with this as an option so we know (E) is the correct answer.

In full, the solution is as follows. The information that we need is shown in both the graph and the table.

**Step 1** - Calculate the value of each component of each equity fund, using this formula: Component value = Total value x Equity fund component % UK Fund (Cash) = 55.6 x 10% = 5.56 (£million) See table below for other component values:

	Component value (£million)					
	Cash	Bonds	Derivatives	Shares		
UK	5.56	11.12	16.68	22.24		
US	4.86	3.65	2.43	13.37		

Thus the correct answer is (E) lowest is US Fund (Derivatives); highest is UK Fund (Shares)



Equity fund values	UK	US	European	Far Eastern	Emerging Markets
Total value (£million)	55.6	24.3	52.1	26.2	38.9
Number of investors	3,450	1,460	3,295	1,575	2,660

- **Q10** Which equity fund holding(s) hold less than double the number of Shares compared to Bonds?
  - (A) ) UK
    (B) US
    (C) Emerging Markets
    (D) ) UK, US
    (E) ) UK, US, Emerging Markets

The information that we need is shown in the graph.

Step 1 - Calculate the Shares: Bonds ratios for each equity fund

	Bonds	Shares
UK	20	40
US	15	55
European	7	70
Far Eastern	13	30
Emerging Markets	30	50

The UK fund has exactly double the number of Shares compared to Bonds. Only the Emerging Markets has less than double the number of Shares compared to Bonds.

Thus the correct answer is (C) Emerging Markets

MAINTENANCE COSTS (£ per week)							
Manufacturing Plant	Insurance	Servicing	Rent	Utilities	Administration	Misc.	
Midlands	196	1,050	300	95	650	525	
Bordeaux	204	1,100	250	236	600	400	
Berlin	212	950	275	164	450	400	
Amsterdam	154	1,025	350	245	525	500	
Glasgow	195	875	300	189	720	425	

- **Q11** Averaged across the Manufacturing Plants, put the average values for each of the maintenance costs in decreasing size order, starting with the highest.
  - (A) Servicing, Administration, Misc., Rent, Insurance, Utilities
  - (B) Servicing, Administration, Rent, Misc., Utilities, Insurance
  - (C) Servicing, Administration, Rent, Misc., Insurance, Utilities
  - (D) Servicing, Administration, Misc., Rent, Utilities, Insurance
  - (E) ) None of these

**Step 1** - Calculate the average for each maintenance cost: Insurance = 192.2 Servicing = 1,000 Rent = 295 Utilities = 185.8 Administration = 589 Misc = 450

Thus the correct answer is (A) Servicing, Administration, Misc., Rent, Insurance, Utilities

MAINTENANCE COSTS (£ per week)							
Manufacturing Plant	Insurance	Servicing	Rent	Utilities	Administration	Misc.	
Midlands	196	1,050	300	95	650	525	
Bordeaux	204	1,100	250	236	600	400	
Berlin	212	950	275	164	450	400	
Amsterdam	154	1,025	350	245	525	500	
Glasgow	195	875	300	189	720	425	

**Q12** For which manufacturing plant(s) are the Administration: Rent costs in the ratio 12:5?

- (A) Bordeaux
- (B) Berlin
- (C) Midlands and Glasgow
- (D) Berlin and Midlands
- (E) ) Glasgow and Bordeaux

Step 1 - Calculate the Administration: Rent cost ratio for each production plant, as follows:

Midlands	650:300 =	13:6	
Bordeaux	600:250 =	12:5	
Berlin	450:275 =	18:11	
Amsterdam	525:350 =	21:14	
Glasgow	720:300 =	12:5	

Thus the correct answer is (E) Glasgow and Bordeaux

MAINTENANCE COSTS (£ per week)						
Manufacturing Plant	Insurance	Servicing	Rent	Utilities	Administration	Misc.
Midlands	196	1,050	300	95	650	525
Bordeaux	204	1,100	250	236	600	400
Berlin	212	950	275	164	450	400
Amsterdam	154	1,025	350	245	525	500
Glasgow	195	875	300	189	720	425

- **Q13** For the Glasgow manufacturing plant, which maintenance cost(s) represent approximately 7% of the total costs?
  - (A) ) Rent and Utilities
  - (B) Rent
  - (C)) Utilities
  - (D) Insurance
  - (E) Insurance and Utilities

**Step 1** - For the Glasgow plant, calculate the total costs 195 + 875 + 300 + 189 + 720 + 425 = 2,704

Step 2 - For the Glasgow plant, calculate each cost as a % of the total cost

Insurance =  $100\% \times 195/2,704 = 7\%$ Servicing =  $100\% \times 875/2,704 = 32\%$ Rent =  $100\% \times 300/2,704 = 11\%$ Utilities =  $100\% \times 189/2,704 = 7\%$ Administration =  $100\% \times 720/2,704 = 27\%$ Misc =  $100\% \times 425/2,704 = 16\%$ 

*Tip:* To save time, you can stop after you've calculated 7% for Insurance and just scan across the row to see if any other costs are close to £195. You will see that Utilities are.

Thus the correct answer is (E) Insurance and Utilities

MAINTENANCE COSTS (£ per week)							
Manufacturing Plant	Insurance	Servicing	Rent	Utilities	Administration	Mise.	
Midlands	196	1,050	300	95	650	525	
Bordeaux	204	1,100	250	236	600	400	
Berlin	212	950	275	164	450	400	
Amsterdam	154	1,025	350	245	525	500	
Glasgow	195	875	300	189	720	425	

**Q14** What is the average annual cost for servicing each of the 5 manufacturing plants (assume 4 weeks in a month)?

(A) £3,300
(B) £12,400
(C) £16,500
(D) £39,600
(E) £48,000

**Step 1** – Total the servicing costs 1,050 + 1,100 + 950 + 1,025 + 875 = £5,000 per week

**Step 2** – Calculate the monthly cost  $5,000 \times 4 = \pounds 20,000$  per month

**Step 3** – Calculate the average monthly cost  $\pounds 20,000 / 5 = \pounds 4,000$  per month

**Step 4** – Calculate the average annual cost  $4,000 \times 12 = \pounds 48,000$ 

Thus the correct answer is (E) £48,000

MAINTENANCE COSTS (£ per week)						
Manufacturing Plant	Insurance	Servicing	Rent	Utilities	Administration	Misc.
Midlands	196	1,050	300	95	650	525
Bordeaux	204	1,100	250	236	600	400
Berlin	212	950	275	164	450	400
Amsterdam	154	1,025	350	245	525	500
Glasgow	195	875	300	189	720	425

**Q15** Which two manufacturing plants have the same total maintenance costs per week?

- (A) Midlands and Glasgow
- (B) Bordeaux and Glasgow
- (C) Bordeaux and Amsterdam
- (D) Midlands and Amsterdam
- (E) ) None of these

**Step 1** - Calculate the total weekly maintenance costs for each production plant Midlands = 196 + 1,050 + 300 + 95 + 650 + 525 = 2,816Bordeaux = 204 + 1,100 + 250 + 236 + 600 + 400 = 2,790Berlin = 212 + 950 + 275 + 164 + 450 + 400 = 2,451Amsterdam = 154 + 1,025 + 350 + 245 + 525 + 500 = 2,799Glasgow = 195 + 875 + 300 + 189 + 720 + 425 = 2,704

Thus the correct answer is (E) None of these



**Q16** Which garden furniture manufacturer has 22.5% of the UK market in terms of 2010 annual sales?

- (A) Manufacturer A
- (B) Manufacturer B
- (C) Manufacturer C
- (D) Manufacturer D
- (E) Manufacturer E

The information that you need is shown in the pie-chart.

**Step 1** – Calculate the total annual sales for all furniture manufacturers 1.2 + 3.3 + 2.4 + 2.7 + 2.4 = £12 million

**Step 2** – Next, the quickest way to complete this question is to calculate 22.5% of the 12 million and see which manufacturer has this sales value. So 22.5% of 12 is 2.7. We immediately see that Manufacturer D has sales of 2.7 (ignoring any units).

Alternatively, the slower way would be to calculate the % of the UK market held by each furniture manufacturer:

Manufacturer  $A = 1.2/12 \times 100\% = 10\%$ Manufacturer  $B = 3.3/12 \times 100\% = 27.5\%$ Manufacturer  $C = 2.4/12 \times 100\% = 20\%$ Manufacturer  $D = 2.7/12 \times 100\% = 22.5\%$ Manufacturer  $E = 2.4/12 \times 100\% = 20\%$ 

Thus the correct answer is (D) Manufacturer D



- Q17 Manufacturers B and D each aim to increase their annual sales from 2010 to 2011 by a quarter. Manufacturers A, C and E each aim to grow their annual sales by a fifth. Assuming all companies meet these targets, what will be 2011's total furniture manufacturer sales (to the nearest £million)?
  - (A) ) £13 million
    (B) ) £14 million
    (C) ) £15 million
    (D) ) £16 million
    (E) ) £17 million

The information that you need is shown in the pie-chart.

Step 1 - Calculate the 2011 targets for each garden furniture manufacturer

Manufacturer A:  $1.2 \times 1.2 = 1.44$ Manufacturer B:  $3.3 \times 1.25 = 4.125$ Manufacturer C:  $2.4 \times 1.2 = 2.88$ Manufacturer D:  $2.7 \times 1.25 = 3.375$ Manufacturer E:  $2.4 \times 1.2 = 2.88$ 

**Step 2** – Calculate the total 2011 target for all garden furniture manufacturers 1.44 + 4.125 + 2.88 + 3.375 + 2.88 = 14.7

Step 3 – To the nearest £million = £15 million

Note: in this question we were lucky that £14.7 million was not an available answer. Sometimes questions deliberately include the answer not rounded as required, to catch you out.



#### **Q18** Which region showed the second largest absolute difference in Company C sales between 2009 and 2010?

- (A) Northern
- (B) Central
- (C) Southern
- (D) Eastern
- (E) Western

*Tip* - *The word "absolute" in the question means we are considering the value of the change, not the percentage change.* 

The information that you need is shown in the table.

Step 1 - Calculate the change in Company C sales (2009-2010) for each region

Northern: 278,500 - 312,500 = -34,000 Central: 470,400 - 396,700 = 73,700 Southern: 502,000 - 546,300 = -44,300 Eastern: 643,100 - 595,500 = 47,600 Western: 506,000 - 529,000 = -23,000

Thus the correct answer is (D) Eastern



## **Q19** What is the percentage increase in Company C's total sales for 2010 compared its 2009 total sales?

- (A) 0.83%
- (B) 0.84%
- (C) 0.85%
- (D) 0.86%
- (E) 0.87%

The information that you need is shown in the table.

*Step 1* – Calculate 2009's total sales 312,500 + 396,700 + 546,300 + 595,500 + 529,000 = 2,380,000

**Step 2** – Calculate 2010's total sales 278,500 + 470,400 + 502,000 + 643,100 + 506,000 = 2,400,000

**Step 3** – Calculate the % difference 2,400,000 / 2,380,000 = 1.0084 which is a 0.84% increase.

Thus the correct answer is (B) 0.84%



- **Q20** If Company C's sales in 2009 were in the ratio of 8:7 for online: offline sales, what were the offline sales (to the nearest £1,000)?
  - (A) £110,000
    (B) £1,000,000
    (C) £1,100,000
    (D) £1,110,000
    (E) £1,111,000

**Step 1** – Use Manufacturer C's 2009 total sales figure from the previous question i.e. 2,380,000 (312,500 + 396,700 + 546,300 + 595,500 + 529,000)

**Step 2** – Put this figure into the question's ratio Online sales + offline sales = 2,380,000Offline sales =  $(2,380,000 \times 7)/(7+8) = 1,110,667$ 

**Step 3** - To the nearest £1,000 = 1,111,000

Thus the correct answer is (E) £1,111,000



- Q21 Assume that the percentage change trends between the Current Year and Next Year continue at the same rate for a subsequent year. What's the subsequent year's average entry level graduate salary (to the nearest £500)?
  - (A) £28,000
  - (B) £28,500
  - (C) £29,000
  - (D) £29,500
  - (E) Can't tell from data

It might be tempting to do the following calculation, however since we don't know how many graduates there are in each sector we cannot calculate the average salary. For example if Engineering has 1,000 graduates and Research has 10, it is not true to add up the totals and divide by the number of sectors (five).

Thus the answer is (E) Can't tell from data.

Don't be tempted to do this:

- Step 1 Calculate the subsequent year's entry level graduate salary for each sector
- Step 2 Calculate the average
- **Step 3** to the nearest  $\pounds 500 = \pounds 28,500$



- **Q22** In Year 3 a company paid the average entry graduate starting salaries when recruiting 15 graduates for a consultancy role and 6 graduates for a research role. What was the average salary per recruited graduate?
  - (A) £26,000
    (B) £26,114
    (C) £26,429
    (D) £26,500
  - (E) £27,000

**Step 1** – Total the salaries for 15 graduates (consultancy) 15 x 27,000 = 405,000

**Step 2** – Total the salaries for 6 graduates (research) 6 x 23,500 = 141,000

**Step 3** – Calculate the average salary per graduate (405,000 + 141,000)/21 = £26,000

Thus the correct answer is (A) £26,000



- **Q23** Which sector has seen the smallest percentage increase in graduate entry level salary between Year 2 and the Current Year?
  - (A) Engineering
    (B) ) Research
    (C) ) Consulting
    (D) ) Legal
    (E) Accounting

Step 1 - Calculate the % increase for each sector

Engineering: (24.5 - 23.7)/23.7 = 3.4%Research: (24.2 - 23.5)/23.5 = 3.0%Consulting: (28.3 - 27.6)/27.6 = 2.5%Legal: (33.2 - 29.8)/29.8 = 11.4%Accounting: (27.3 - 26.6)/26.6 = 2.6%

Thus the correct answer is (C) Consulting



Q24 The current year's entry level graduate salaries for working in logistics and retail are £25,000 and £24,000 respectively. If these sectors experience the same percentage change as the legal sector over the same period, what's next year's predicted entry level graduate salary in the logistics and retail sectors (to the nearest £100)?

(A) £24,800 (logistics); £25,800 (retail)

- (B) £25,100 (logistics); £25,300 (retail)
- (C) £25,500 (logistics); £25,000 (retail)
- (D) £25,800 (logistics); £24,800 (retail)
- (E) Can't tell from data

**Step 1** – Calculate the % increase in legal sector salaries between the current year and next year

100% x (34.3 - 33.2)/33.2 = 3.31%

**Step 2** – Apply this % increase to the entry level graduate salaries (logistics)  $103.31\% \times \pounds 25,000 = \pounds 25,828$ 

**Step 3** – Apply this % increase to the entry level graduate salaries (retail)  $103.31\% \times \pounds 24,000 = \pounds 24,794$ 

Thus the correct answer is (D) £25,800 (logistics); £24,800 (retail)


- **Q25** Which of the 5 sectors had the lowest difference in entry level graduate salary between Year 3 and the Current Year?
  - (A) Engineering(B) Research(C) ) Consulting(D) ) Legal(E) Accounting

Step 1 - Calculate the change for each sector

Engineering: 24.5 - 24.1 = 0.4Research: 24.2 - 23.5 = 0.7Consulting: 28.3 - 27 = 1.3Legal: 33.2 - 30.9 = 2.3Accounting: 27.3 - 27 = 0.3

**Note** - Because the question asks for 'difference' not percentage change, we must calculate the absolute difference. As it happens, if you had worked out the percentage change by mistake, you would still have arrived at (E) Accounting.

Thus the correct answer is (E) Accounting



	Competitor					
	Α	В	С	D	E	
Staff (1,000s)	325	180	295	204	154	
Monthly customers (millions)	4.2	2.2	4.5	3.1	2.2	
Number of countries of operation	38	30	22	28	32	

# **Q26** Which competitor(s) has less than 100,000 customers per day (assume 30 days per month)?

- (A) All competitors
- (B) Competitor B
- (C) ) Competitor E
- (D) ) Competitors B and E
- (E) ) Competitors B, D and E

The information that you need is shown in the table.

**Step 1** – Calculate the number of daily customers for each competitor, as shown below:

Per month	4.2	2.2	4.5	3.1	2.2
Per day (millions)	/30 = 0.14	/30 = 0.073	/30 = 0.15	/30 = 0.103	/30 = 0.073

These figures are in millions.

Thus the correct answer is (D) Competitors B and E



	Competitor					
	Α	В	С	D	E	
Staff (1,000s)	325	180	295	204	154	
Monthly customers (millions)	4.2	2.2	4.5	3.1	2.2	
Number of countries of operation	38	30	22	28	32	

- **Q27** Which Competitor has the lowest average number of staff per country of operation?
  - (A) Competitor A(B) Competitor B(C) ) Competitor C(D) ) Competitor D
  - (E) Competitor E

The information that you need is shown in the table.

**Step 1** - Calculate the average number of staff per country of operation for each Competitor, as shown below

	А	В	С	D	E
Staff /					
Countri					
es of	325,000/38	180,000/30	295,000/22	204,000/28	154,000/32
operati					
on					
	= 8,553	= 6,000	= 13,409	= 7,286	= 4,813

Thus the correct answer is (E) Competitor E



	Competitor					
	Α	В	С	D	E	
Staff (1,000s)	325	180	295	204	154	
Monthly customers (millions)	4.2	2.2	4.5	3.1	2.2	
Number of countries of operation	38	30	22	28	32	

- **Q28** If Competitors B to E make up 85% of the business sector in which they operate (based upon operating profits), approximately what are the total operating profits of the other companies in the same business sector?
  - (A)) £3 million
  - (B)) £28 million
  - (C)) £33 million
  - (D)) £35 million
  - (E)) £221 million

The information that you need is shown in the graph.

**Step 1** – Calculate the total operating profits for Competitors B to E  $45.4 + 56.5 + 42.9 + 42.7 = \pounds 187.5$  million

**Step 2** – Calculate operating profits for the entire sector  $187.5 \div 0.85 = 220.6$  million.

**Step 3** – Calculate other companies' operating profits  $220.6 \times 15\% = 33.09$  million = £33 million approx.

Thus the correct answer is (C) £33 million



	Competitor					
	Α	В	С	D	E	
Staff (1,000s)	325	180	295	204	154	
Monthly customers (millions)	4.2	2.2	4.5	3.1	2.2	
Number of countries of operation	38	30	22	28	32	

**Q29** Competitor B has an additional business that generates an additional 8% to the Retail Sales shown. Competitors A and C have additional businesses that

generate 7% and 4% additional revenue respectively. What's the total of these additional sales streams for Competitors A, B and C combined (to the nearest  $\pounds$  million)?

(A) ) £9 million
(B) ) £10 million
(C) ) £11 million
(D) ) £12 million
(E) ) £13 million

The information that you need is shown in the graph.

**Step 1** – Calculate the additional sales for Competitor B 52.5 x 8% = 4.20

**Step 2** – Calculate the additional sales for Competitor A  $57.4 \times 7\% = 4.02$ 

**Step 3** – Calculate the additional sales for Competitor C  $68.2 \times 4\% = 2.73$ 

Step 4 – Calculate the total sales

4.20 + 4.02 + 2.73 = 10.95

**Step 5** – To the nearest £million  $10.95 = \pounds 11$  million

Thus the correct answer is (C) £11 million



	Competitor					
	Α	В	С	D	E	
Staff (1,000s)	325	180	295	204	154	
Monthly customers (millions)	4.2	2.2	4.5	3.1	2.2	
Number of countries of operation	38	30	22	28	32	

**Q30** Which two Competitors average the same approximate number of customers per country of operation?

- (A) ) Competitor A and Competitor D
- (B) ) Competitor B and Competitor D
- (C) ) Competitor A and Competitor C
- (D) ) Competitor B and Competitor E
- (E) ) No two competitors

The information that you need is shown in the table.

**Step 1** - Calculate the average number of customers per country of operation for each Competitor

Competitor A = 4.2/38 = 0.111Competitor B = 2.2/30 = 0.073Competitor C = 4.5/22 = 0.205Competitor D = 3.1/28 = 0.111Competitor E = 2.2/32 = 0.069

Thus the correct answer is (A) Competitor A and Competitor D

### NUMERICAL REASONING TEST 6

#### Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 

Total EU population (1 <sup>st</sup> Jan 2012) = 480 million									
	Belgium	Denmark	Ireland	Hungary	Greece				
Total Population (millions)	10.4	5.4	4.1	10.1	10.8				
Pecentage of Population in Employment (by gender)									
- Female	37.4	34.6	41.4	39.5	36.8				
- Male	35.6	58.2	38.8	38.4	34.4				
Population Change Factors (per	1,000 popu	lation)							
- Increase from births	11.1	12	15.2	13.1	9.6				
- Decrease from deaths	9.8	10.3	6.9	10.4	9.5				
- Net migration inflow	3.4	0.9	11.8	1.8	3.1				

Q1 Which country has the largest number of males in employment?

(A) Belgium
(B) Denmark
(C) Ireland
(D) ) Hungary

(E)) Greece

**Step 1** – Calculate the number of males that are employed in Belgium, Hungary and Greece. Note that Denmark and Ireland have approximately half the total population of the other three countries and so can be ruled out immediately to save time.

Belgium =  $10.4 \times 35.6\% = 3.7$  million (Denmark =  $5.4 \times 58.2\% = 3.14$  million) (Ireland =  $4.1 \times 38.8\% = 1.6$  million) Hungary =  $10.1 \times 38.4\% = 3.9$  million Greece =  $10.8 \times 34.4\% = 3.7$  million

Thus the correct answer is (D) Hungary

Total EU population (1 <sup>st</sup> Jan 2012) = 480 million									
	Belgium	Denmark	Ireland	Hungary	Greece				
Total Population (millions)	10.4	5.4	4.1	10.1	10.8				
Pecentage of Population in Employment (by gender)									
- Female	37.4	34.6	41.4	39.5	36.8				
- Male	35.6	58.2	38.8	38.4	34.4				
Population Change Factors (per	1,000 popu	lation)							
- Increase from births	11.1	12	15.2	13.1	9.6				
- Decrease from deaths	9.8	10.3	6.9	10.4	9.5				
- Net migration inflow	3.4	0.9	11.8	1.8	3.1				

**Q2** What percentage do the five countries shown represent of the total EU population?

(A) 7.5%
(B) 8.5%
(C) 9.5%
(D) 10.5%
(E) 11.5%

Step 1 – Total the population of the five countries

10.4 + 5.4 + 4.1 + 10.1 + 10.8 = 40.8 million Step 2 – Calculate the % of the total EU population 40.8 / 480 = 8.5%

Thus the correct answer is (B) 8.5%

Total EU population (1 <sup>st</sup> Jan 2012) = 480 million									
	Belgium	Denmark	Ireland	Hungary	Greece				
Total Population (millions)	10.4	5.4	4.1	10.1	10.8				
Pecentage of Population in Employment (by gender)									
- Female	37.4	34.6	41.4	39.5	36.8				
- Male	35.6	58.2	38.8	38.4	34.4				
Population Change Factors (per	1,000 popu	lation)							
- Increase from births	11.1	12	15.2	13.1	9.6				
- Decrease from deaths	9.8	10.3	6.9	10.4	9.5				
- Net migration inflow	3.4	0.9	11.8	1.8	3.1				

**Q3** Assuming that there are no other population factors than those shown in the table, what will be the annual population change of the five countries combined?

(A) 143,900
(B) 167,550
(C) 225,340
(D) 368,200
(E) 44.7 million

**Step 1** – Calculate each country's change in population due to the population factors Population change = increase from births – decrease from deaths + net migration

Belgium = 11.1 - 9.8 + 3.4 = 4.7Denmark = 12.0 - 10.3 + 0.9 = 2.6Ireland = 15.2 - 6.9 + 11.8 = 20.1Hungary = 13.1 - 10.4 + 1.8 = 4.5Greece = 9.6 - 9.5 + 3.1 = 3.2

Step 2 – Calculate the change per 1,000 members of population

Belgium =  $4.7 \times 10,400 = 48,880$ Denmark =  $2.6 \times 5,400 = 14,040$ Ireland =  $20.1 \times 4,100 = 82,410$ Hungary =  $4.5 \times 10,100 = 45,450$ Greece =  $3.2 \times 10,800 = 34,560$ 

**Step 3** – Sum the figures for each country to calculate the population change 48,880 + 14,040 + 82,140 + 45,450 + 34,560 = 225,340

Thus the correct answer is (C) 225,340

Total EU population (1 <sup>st</sup> Jan 2012) = 480 million									
	Belgium	Denmark	Ireland	Hungary	Greece				
Total Population (millions)	10.4	5.4	4.1	10.1	10.8				
Pecentage of Population in Employment (by gender)									
- Female	37.4	34.6	41.4	39.5	36.8				
- Male	35.6	58.2	38.8	38.4	34.4				
Population Change Factors (per	1,000 popu	lation)							
- Increase from births	11.1	12	15.2	13.1	9.6				
- Decrease from deaths	9.8	10.3	6.9	10.4	9.5				
- Net migration inflow	3.4	0.9	11.8	1.8	3.1				

**Q4** If the population of Belgium increases at the same %age rate as shown for 2012, in what year will the population reach 10.6 million?

(A) 2015
(B) 2016
(C) 2017
(D) 2018
(E) 2019

**Step 1** – Calculate change in population due to the population factors Population change = increase from births – decrease from deaths + net migration. For Belgium this is: 11.1 - 9.8 + 3.4 = 4.7 (per thousand of the population) So  $4.7 \times 10,400 = 48,880$  extra people in 2012.

The next step is to work this out as a percentage increase, not just take the number 48,880 and add it to each year.

48,880 ÷ 10,400,000 x 100 = 0.47% increase.

**Step 2** – Calculate the population for subsequent years using this percentage growth. 2013: 10,400,000 + 48,880 = 10,448,880 2014: 10,448,880 x 1.0047 = 10,497,990 2015: 10,497,990 x 1.0047 = 10,547,330 2016: 10,547,330 x 1.0047 = 10,596,903 2017: 10,596,903 x 1.0047 = 10,696,748

So on day one of 2017 the population is 10,696,748, which means the 10.6m barrier must have been achieved during 2016.

Thus the correct answer is (B) 2016.

Total EU population (1 <sup>st</sup> Jan 2012) = 480 million									
	Belgium	Denmark	Ireland	Hungary	Greece				
Total Population (millions)	10.4	5.4	4.1	10.1	10.8				
Pecentage of Population in Employment (by gender)									
- Female	37.4	34.6	41.4	39.5	36.8				
- Male	35.6	58.2	38.8	38.4	34.4				
Population Change Factors (per	1,000 popu	lation)							
- Increase from births	11.1	12	15.2	13.1	9.6				
- Decrease from deaths	9.8	10.3	6.9	10.4	9.5				
- Net migration inflow	3.4	0.9	11.8	1.8	3.1				

**Q5** Which country has the largest absolute difference in the number of people dying compared to the number of people being born?

(A) Belgium
(B) Denmark
(C) Ireland
(D) ) Hungary
(E) ) Greece

**Step 1** - Calculate the difference in the birth rate and the mortality rate for four countries (ignoring Greece which has a negligible difference between the two figures): Belgium = 11.1 - 9.8 = 1.3Denmark = 12.0 - 10.3 = 1.7Ireland = 15.2 - 6.9 = 8.3Hungary = 13.1 - 10.4 = 2.7

**Step 2** - Calculate the absolute difference for each country Belgium =  $1.3 \times 10,400 = 13,520$ Denmark =  $1.7 \times 5,400 = 9,180$ Ireland =  $8.3 \times 4,100 = 34,030$ Hungary =  $2.7 \times 10,100 = 27,270$ 

Thus the correct answer is (C) Ireland



Q6 In which month were PT Drinks sales one-third that of total sales?

(A) January(B) February(C) March(D) April(E) May

**Step 1** – Calculate for each month the fraction of PT Drinks sales compared to the total sales January = 53 / (53 + 59 + 49) = 0.329February = 74 / (74 + 76 + 56) = 0.359March = 80 / (80 + 60 + 86) = 0.354April = 98 / (98 + 108 + 68) = 0.358May = 114 / (114 + 120 + 108) = 0.333

Thus the correct answer is (E) May



**Q7** If Kurnels continued to increase its sales at the same percentage rate as between April and May, what would Kurnels' sales be in August (to the nearest \$1,000)?

(A) \$272,000
(B) \$372,000
(C) \$432,000
(D) \$2,720,000
(E) \$4,320,000

Step 1 - Calculate the % rate of increase between April - May

 $100\% \times (108 - 68) / 68 = 100\% \times 40 / 68 = 58.8\%$ Alternatively,  $108 \div 68 = 1.588$  which is an increase of 58.8%.

Step 2 – Calculate the future monthly sales figures for Kurnels

June: 108,000 x 1.588 = 171,504 July: 171,504 x 1.588 = 272,348 August: 272,348 x 1.588 = 432,489 Step 2 – to the nearest \$1,000 \$432,489 = \$432,000

Thus the correct answer is (C) \$432,000



## **Q8** What was the difference between the total sales of Kurnels and those of Diapon between February-May?

- (A) Kurnels smaller by \$46,000
- (B) Kurnels smaller by \$36,000
- (C) Kurnels greater by \$26,000
- (D) Kurnels greater by \$36,000
- (E) Kurnels greater by \$46,000

**Step 1** – Calculate the total sales for Kurnels between February-May 56 + 86 + 68 + 108 = 318

**Step 2** - Calculate the total sales for Diapon between February-May 76 + 60 + 108 + 120 = 364

**Step 3** – Calculate the difference between the two totals 318 – 364 = \$46,000 less

Thus the correct answer is (A) Kurnels smaller by \$46,000



## **Q9** Between which months did Kurnels show the greatest change in its proportion of total sales?

(A) January - February
(B) February - March
(C) March - April
(D) April - May
(E) ) Can't tell from the data

**Step 1** – Calculate Kurnels sales as a proportion of total sales for each month January = 49 / (49 + 59 + 53) = 0.304February = 56 / (74 + 76 + 56) = 0.272March = 86 / (80 + 60 + 86) = 0.381April = 68 / (98 + 108 + 68) = 0.248May = 108 / (108 + 120 + 114) = 0.316

**Step 2** – Calculate the differences between consecutive months January – February = 0.032 decrease February – March = 0.109 increase March – April = 0.133 decrease April – May = 0.068 increase

Thus the correct answer is (C) March - April



**Q10** If the three soft drinks manufacturers experience the same proportional increases in sales between May-June as between April-May, what will be the combined sales for the three soft drinks manufacturers in June (to the nearest \$1,000)?

(A) \$133,000
(B) \$171,000
(C) \$410,000
(D) \$437,000
(E) Can't tell from the data

Step 1 – Calculate the proportional increase for each soft drinks manufacturer between April-May Kurnels: 108 ÷ 68 = 1.588 = 58.8% increase Diapon = 120 ÷ 108 = 1.111 = 11.1% increase PT Drinks = 114 ÷ 98= 1.163 = 16.3% increase

**Step 2** - Calculate the June sales for each soft drinks manufacturer Kurnels = 158.8% x 108 = 171,529 Diapon = 111.1% x 120,000 = 133,333 PT Drinks = 116.3% x 114,000 = 132,612

**Step 3** – Calculate the combined sales for the three soft drinks manufacturers in June 171,529 + 133,333 + 132,612 = \$437,474 To the nearest \$1,000 = \$437,000

Thus the correct answer is (D) \$437,000

Share Price (£)	Yesterday's price	Today's Price	Highest Price (Figures fo	Lowest Price r this month)	Highest Price (Figures	Lowest Price this year)
LPC Ltd	2.6	2.4	3.14	2.42	3.15	2.3
Hydro Tools	1.62	1.5	1.68	1.42	1.95	1.37
Gyromanic	3.1	3.28	3.99	2.59	4.52	2.51
Flyer Travel	2.27	2.5	3.43	2.1	3.96	2.05
Gel Products	1.9	1.72	2.1	1.6	2.28	1.45

**Q11** A trader bought 150,000 shares in Hydro Tools at this month's low and 250,000 shares in Gel Products at this month's high. What is the trader's profit or loss if he sells all the shares at today's prices? (Assume that there are no dealing charges).

(A) £655,000 loss
(B) £120,500 loss
(C) £83,000 loss
(D) ) £120,500 profit
(E) ) £655,000 profit

**Step 1** – Calculate the cost of purchasing the 150,000 shares in Hydro Tools at this month's low

 $150,000 \times 1.42 = 213,000$ 

**Step 2** - Calculate the cost of purchasing the 250,000 shares in Gel Products at this month's high

250,000 x 2.10 = 525,000

**Step 3** – Calculate the sales value of 150,000 shares in Hydro Tools at today's price  $150,000 \times 1.50 = 225,000$ 

**Step 4** – Calculate the sales value of 250,000 shares in Gel Products at today's price  $250,000 \times 1.72 = 430,000$ 

**Step 5** – Calculate the profit/loss 225,000 + 430,000 - 213,000 - 525,000 = - £83,000

Thus the correct answer is (C) £83,000 loss

Share Price (£)	Yesterday's price	Today's Price	Highest Price (Figures fo	Lowest Price r this month)	Highest Price (Figures	Lowest Price this year)
LPC Ltd	2.6	2.4	3.14	2.42	3.15	2.3
Hydro Tools	1.62	1.5	1.68	1.42	1.95	1.37
Gyromanic	3.1	3.28	3.99	2.59	4.52	2.51
Flyer Travel	2.27	2.5	3.43	2.1	3.96	2.05
Gel Products	1.9	1.72	2.1	1.6	2.28	1.45

**Q12** Yesterday, which share was the furthest from its yearly low in absolute terms?

- (A) ) LPC Ltd(B) Hydro Tools
- (C) ) Gyromanic
- (D) Flyer Travel

(E) ) Gel Products

**Step 1** – Calculate the difference between yesterday's share price and the yearly low for each share.

LPC Ltd: 2.60 - 2.30 = 0.30Hydro Tools: 1.62 - 1.37 = 0.25Gyromanic: 3.10 - 2.51 = 0.59Flyer Travel: 2.27 - 2.05 = 0.22Gel Products: 1.90 - 1.45 = 0.45

Thus the correct answer is (C) Gyromanic

Share Price (£)	Yesterday's price	Today's Price	Highest Price (Figures fo	Lowest Price r this month)	Highest Price (Figures	Lowest Price this year)
LPC Ltd	2.6	2.4	3.14	2.42	3.15	2.3
Hydro Tools	1.62	1.5	1.68	1.42	1.95	1.37
Gyromanic	3.1	3.28	3.99	2.59	4.52	2.51
Flyer Travel	2.27	2.5	3.43	2.1	3.96	2.05
Gel Products	1.9	1.72	2.1	1.6	2.28	1.45

- **Q13** How many shares of LPC Ltd and Flyer Travel Ltd can a trader buy today who spends £2.1 million and splits the value of the shares in the ratio of 2:5 respectively (ignoring any other taxes or charges incurred)?
  - (A) ) 350,000 shares (LPC Ltd), 500,000 shares (Flyer Travel Ltd)
  - (B) 300,000 shares (LPC Ltd), 504,000 shares (Flyer Travel Ltd)
  - (C) ) 250,000 shares (LPC Ltd), 600,000 shares (Flyer Travel Ltd)
  - (D) 200,000 shares (LPC Ltd), 500,000 shares (Flyer Travel Ltd)
  - (E) ) 150,000 shares (LPC Ltd), 600,000 shares (Flyer Travel Ltd)

**Step 1** – Split the £2.1 million in to the ratio of 2:5 LPC Ltd: £2.1 million x 2/7 = £0.6 million Flyer Travel Ltd: £2.1 million x 5/7 = £1.5 million

**Step 2** – Calculate the number of LPC Ltd shares  $\pm 0.6$  million /  $\pm 2.40 = 250,000$ 

**Step 3** – Calculate the number of Flyer Travel Ltd shares  $\pounds 1.5$  million /  $\pounds 2.50 = 600,000$ 

Thus the correct answer is (C) 250,000 shares (LPC Ltd), 600,000 shares (Flyer Travel Ltd)

Share Price (£)	Yesterday's price	Today's Price	Highest Price (Figures fo	Lowest Price r this month)	Highest Price (Figures	Lowest Price this year)
LPC Ltd	2.6	2.4	3.14	2.42	3.15	2.3
Hydro Tools	1.62	1.5	1.68	1.42	1.95	1.37
Gyromanic	3.1	3.28	3.99	2.59	4.52	2.51
Flyer Travel	2.27	2.5	3.43	2.1	3.96	2.05
Gel Products	1.9	1.72	2.1	1.6	2.28	1.45

**Q14** How much would the loss be from buying 125,000 Gyromanic shares at this month's high, then selling all the shares at this month's low?

(A) £63,750
(B) £175,000
(C) £225,750
(D) £251,250
(E) None of these

**Step 1** – Calculate the cost of purchasing 125,000 Gyromanic shares at this month's high  $125,000 \times 3.99 = \pounds 498,750$ 

**Step 2** - Calculate the revenue from selling 125,000 Gyromanic shares at this month's low  $125,000 \times 2.59 = \text{\pounds}323,750$ 

**Step 3** – Calculate the potential loss £498,750 - £323,750 = £175,000

Thus the correct answer is (B) £175,000

Share Price (£)	Yesterday's price	Today's Price	Highest Price (Figures fo	Lowest Price or this month)	Highest Price (Figures	Lowest Price this year)
LPC Ltd	2.6	2.4	3.14	2.42	3.15	2.3
Hydro Tools	1.62	1.5	1.68	1.42	1.95	1.37
Gyromanic	3.1	3.28	3.99	2.59	4.52	2.51
Flyer Travel	2.27	2.5	3.43	2.1	3.96	2.05
Gel Products	1.9	1.72	2.1	1.6	2.28	1.45

- **Q15** Yesterday, Trader A spent £650,000 purchasing LPC Ltd shares and Trader B spent the same amount on Flyer Travel shares. If Trader A and Trader B each sold their entire shareholding today, how much more profit would Trader B make than Trader A?
  - (A) £11,692
    (B) £115,859
    (C) £39,796
    (D) £139,796
    (E) £65,859

**Step 1** – Calculate the profit (or loss) for Trader A LPC Ltd:  $2.4 \times \pounds 650,000 / 2.6 = \pounds 600,000$  from selling the shares. Less the 650,000 spent on buying the shares =  $\pounds 50,000$  loss

**Step 2** - Calculate the profit (or loss) for Trader B Flyer Travel:  $2.5 \times \pounds 650,000 / 2.27 = \pounds 715,859$  from selling the shares. Less the 650,000 spent on buying the shares =  $\pounds 65,859$  profit

**Step 3** – Calculate the difference £65,859 + £50,000 = £115,859

Thus the correct answer is (B) £115,859



- **Q16** Which competitor, or competitors, are predicted in the Next Quarter to achieve sales of less than its average over Quarters 1-4?
  - (A) Competitor B
  - (B) ) Competitors B and C
  - (C) ) Competitors A and C
  - (D) ) Competitors C and D
  - (E) Competitor D

**Step 1** – Calculate the average for each competitor Competitor A: 40/4 = 10Competitor B: 41/4 = 10.25Competitor C: 53/4 = 13.25Competitor D: 44/4 = 11Competitor E: 40/4 = 10

**Step 2** – Which is greater than Next Quarter's predictions? Competitors B and C

Thus the correct answer is (B) Competitors B and C



- Q17 Assuming that the Next Quarter's projection is accurate, but that in all subsequent Quarters sales drop by 5% each quarter, by how much will Competitor D's sales in Year 2 exceed those of Year 1 (to the nearest \$10,000)?
  - (A) \$520,000
    (B) \$620,000
    (C) \$720,000
    (D) \$820,000
    (E) \$920,000

**Step 1** – Sum Competitor D's sales for Year 1 11 + 15 + 8 + 10 = \$44 million

**Step 2** - Calculate Competitor D's sales for Year 2  $12 + (12 \times 0.95) + (12 \times 0.95 \times 0.95) + (12 \times 0.95 \times 0.95 \times 0.95)$  = 12 + 11.4 + 10.83 + 10.29= \$44.52 million

**Step 3** – Calculate the difference 44.52 - 44 = 0.52 million

Thus the correct answer is (A) \$520,000



- Q18 Competitor C operates 18 stores compared to Competitor E's 15 stores. How much more sales revenue would Competitor E have needed to make to match Competitor C's average sales per store in Quarter 1?
  - (A)) \$1 million
  - (B)) \$2 million
  - (C)) \$3 million
  - (D)) \$4 million
  - (E)) \$5 million

**Step 1** – Calculate Competitor C's average sales in Quarter 1 12 / 18 = 0.67

**Step 2** – Calculate what Competitor E's sales would have needed to be in Quarter 1  $0.67 \times 15 = 10$ Additional sales = \$1 million

Thus the correct answer is (A) \$1 million



**Q19** In the Next Quarter Competitors A and B merge their sales operations, and in response Competitors C and D decide to operate together. Competitors A and B exceed their projected quarterly sales by 2/9ths. Next Quarter's sales for Competitors C and D are in line with their averages over the previous 4 quarters. What is the value of the combined sales of Competitors A-E for the Next Quarter, to the nearest \$million ? (Assume that Competitor E's projected sales for the next quarter are correct).

(A) ) \$11 million
(B) ) \$16 million
(C) ) \$26 million
(D) ) \$61 million
(E) ) Can't tell from data

**Step 1** – Calculate the value of Competitor A and B's sales  $21 + (21 \times 2/9) = 25.67$ 

**Step 2** - Calculate the average sale for Competitor C 53/4 = 13.25

**Step 3** - Calculate the average sale for Competitor D 44/4 = 11

**Step 4** - Calculate the total sales, including Competitor E 25.67 + 13.25 + 11 + 11 =\$60.92 million

Step 5 – To the nearest \$million = \$61 million

Thus the correct answer is (D) \$61 million



Q20 Which competitor has a ratio of 4:5 Quarter 4 : Quarter 3 sales?

- (A) Competitor A
- (B) ) Competitor B
- (C) ) Competitor C
- (D) ) Competitor D
- (E) Competitor E

Step 1 – Calculate the ratios for each competitor

Competitor A: 13/9 = 0.62Competitor B: 12/10 = 1.25Competitor C: 12/15 = 0.8 = 4/5Competitor D: 10/8 = 1.20Competitor E: 8/13 = 1.44

Thus the correct answer is (C) Competitor C

PRODUCTCODE	BEC 1A	BEC 5C	FLAC 3X	FLAC 9Y	FLAC 4T			
Number of units sold Number of units produced	6,500 9,000	4,800 6,500	3,500 5,200	5,500 6,800	4,500 6,000			
PRODUCTION COSTS (£ per 100 units produced)								
Labour cost Design cost	180 84	172 92	160 74	150 101	164 105			
Misc costs	62	74	94	108	94			
Sales price - per unit sold (£)	4.25	4.15	4.8	4.65	4.95			

- **Q21** What was the difference in the value of FLAC product sales compared to BEC product sales?
  - (A) £14,650
    (B) £17,105
    (C) £27,545
    (D) £47,545
    (E) £64,650

**Step 1** – Calculate FLAC product sales (3,500 x £4.80) + (5,500 x £4.65) + (4,500 x £4.95) = £16,800 + £25,575 + £22,275 = £64,650

**Step 2** – Calculate BEC product sales (6,500 x £4.25) + (4,800 x £4.15) = £27,625 + £19,920 = £47,545

**Step 3** – Calculate the difference £64,650 - £47,545 = £17,105

Thus the correct answer is (B) £17,105

PRODUCTCODE	BEC 1A	BEC 5C	FLAC 3X	FLAC 9Y	FLAC 4T
Number of units sold Number of units produced	6,500 9,000	4,800 6,500	3,500 5,200	5,500 6,800	4,500 6,000
PRODUCTION COSTS (£ per	100 units	produced	)	450	404
Design cost	180 84	92	160 74	150	164
Misc costs	62	74	94	108	94
Sales price - per unit sold (£)	4.25	4.15	4.8	4.65	4.95

- **Q22** Which product code has the highest profit margin? (Assume Profit margin = Sales price Production costs).
  - (A) BEC 1A
    (B) BEC 5C
    (C) FLAC 3X
    (D) FLAC 9Y
    (E) FLAC 4T

Step 1 – Sum the 3 Production costs for each product code

BEC 1A: 180 + 84 + 62 = 326 BEC 5C: 172 + 92 + 74 = 338 FLAC 3X: 160 + 74 + 94 = 328 FLAC 9Y: 150 + 101+ 108 = 359 FLAC 4T: 164 + 105 + 94 = 363

**Step 2** – Calculate the profit per unit for each product code Profit per unit = Sales value – production cost

BEC 1A: 4.25 - 3.26 = 0.99 BEC 5C: 4.15 - 3.38 = 0.77 FLAC 3X: 4.80 - 3.28 = 1.52 FLAC 9Y: 4.65 - 3.59 = 1.06 FLAC 4T: 4.95 - 3.63 = 1.32

Thus the correct answer is (C) FLAC 3X

PRODUCTCODE	BEC 1A	BEC 5C	FLAC 3X	FLAC 9Y	FLAC 4T
Number of units sold Number of units produced	6,500 9,000	4,800 6,500	3,500 5,200	5,500 6,800	4,500 6,000
PRODUCTION COSTS (£ per	100 units	produced	)	450	404
Design cost	180 84	92	160 74	150	164
Misc costs	62	74	94	108	94
Sales price - per unit sold (£)	4.25	4.15	4.8	4.65	4.95

- **Q23** What would have been the additional sales revenue on BEC 5C units if all those that had been produced in January were sold?
  - (A) £27,625
    (B) £25,428
    (C) £15,655
    (D) £11,700
    (E) £7,055

**Step 1** – Calculate the difference between number of units produced and sold. 6,500 - 4,800 = 1,700 units

**Step 2** – Calculate the additional sales revenue for 1,700 units  $1,700 \times \pounds 4.15 = \pounds 7,055$ 

Thus the correct answer is (E) £7,055

*Tip*: this is actually quite an easy question. Don't fall into the trap of working out the profit based on (sale price – production costs) because these extra 1,700 have already been produced. It is a sunk cost and therefore any sales are profit.

PRODUCTCODE	BEC 1A	BEC 5C	FLAC 3X	FLAC 9Y	FLAC 4T			
Number of units sold Number of units produced	6,500 9,000	4,800 6,500	3,500 5,200	5,500 6,800	4,500 6,000			
PRODUCTION COSTS (£ per 100 units produced)								
Design cost Misc costs	84 62	92 74	74 94	101 108	105 94			
Sales price - per unit sold (£)	4.25	4.15	4.8	4.65	4.95			

- **Q24** If the labour, design and Misc costs for producing the FLAC 9Y decrease by 5%, 7.5% and 12.5% respectively, what will be the profit when selling 25,000 FLAC 9Y units?
  - (A) £116,250.50
    (B) £85,442.00
    (C) £48,296.25
    (D) £33,642.50
    (E) £19,450.50

**Step 1** – Calculate the new costs Labour:  $95\% \times 150 = \pounds 142.50$  per 100 units Design:  $92.5\% \times 101 = \pounds 93.43$  per 100 units Misc costs:  $87.5\% \times 108 = \pounds 94.50$  per 100 units

**Step 2** – Sum the new costs £142.50 + £93.43 + £94.50 = £330.43 per 100 units

**Step 3** – Calculate the sales value 25,000 x 4.65 = £116,250

**Step 4** – Calculate the profit £116,250 – (£330.43 x 25,000 / 100) = £116,250 - £82,607.50 = £33,642.50

Thus the correct answer is (D) £33,642.50

PRODUCTCODE	BEC 1A	BEC 5C	FLAC 3X	FLAC 9Y	FLAC 4T			
Number of units sold Number of units produced	6,500 9,000	4,800 6,500	3,500 5,200	5,500 6,800	4,500 6,000			
PRODUCTION COSTS (£ per 100 units produced)								
Design cost Misc costs	84 62	92 74	74 94	101 108	105 94			
Sales price - per unit sold (£)	4.25	4.15	4.8	4.65	4.95			

**Q25** An order valued at £14,350 is placed for FLAC 4T units at a sales price that is £0.85 below the norm. What is the profit on this order?

(A) £1,945
(B) £1,845
(C) £1,645
(D) £1,745
(E) Can't tell from data

**Step 1** – Calculate the new FLAC 4T sales price  $\pounds 4.95 - \pounds 0.85 = \pounds 4.10$ 

**Step 2** – Calculate the number of units sold £14,350 / £4.10 = 3,500

**Step 3** – Calculate the production costs 3,500 x (164 + 105 + 94)/100 = £12,705

**Step 4** – Calculate the profit  $\pounds 14,350 - \pounds 12,705 = \pounds 1,645$ 

Thus the correct answer is (C) £1,645



- **Q26** For the company which achieved the highest sales per number of their stores in France, what was their sales value across the five countries combined?
- (A) ) €40 million
  (B) €85 million
  (C) ) €110 million
  (D) ) €140 million

(E) €155 million

**Step 1** – Calculate the average sales per store in France Welllings:  $20/3 = 6.67 \leftarrow$  Wellings achieved the highest sales per store Seacombe: 25/6 = 4.18Tillings Ltd: 15/3 = 5Kingleys: 25/5 = 5Astors: 5/11 = 0.45

**Step 2** – Sum the sales for Welllings across all five countries  $35 + 25 + 20 + 15 + 15 = \notin 110$  million

Thus the correct answer is (C) €110 million



- **Q27** The economic recession is predicted to decrease the total retail sales in Germany, Ireland and Italy by 7.2%, 9% and 4.6% respectively. What total sales value is predicted in Germany, Ireland and Italy combined?
  - (A) ) €302.5 million
    (B) ) €307.6 million
    (C) ) €310.4 million
    (D) ) €322.4 million
    (E) ) €330.6 million

**Step 1** – Calculate the total sales for the 3 countries Germany: 15 + 30 + 20 + 25 + 10 = 100Ireland: 25 + 15 + 20 + 15 + 30 = 105Italy: 15 + 30 + 35 + 20 + 25 = 125

**Step 2** – Calculate the decreased sales for each of the 3 countries Germany: €100 x 92.8% = 92.8 Ireland: €105 x 91% = 95.55 Italy: €125 x 95.4% = 119.25

**Step 3** – Sum the decreased sales for each of the 3 countries 92.8 + 95.55 + 119.25 = 307.60

Thus the correct answer is (B) €307.6 million



**Q28** Which two countries have the same average sales across the five retail companies?

(A) ) UK, Ireland(B) Ireland, France(C) Italy, Germany(D) ) Germany, UK(E) France, UK

**Step 1** – Calculate the total sales per country (this will give you the country with the "highest average sales per country" since each figure will need to be divided by 5) UK: 35 + 10 + 20 + 10 + 15 = 90Ireland: 25 + 15 + 20 + 15 + 30 = 105France: 20 + 25 + 15 + 25 + 5 = 90Germany: 15 + 30 + 20 + 25 + 10 = 100Italy: 15 + 30 + 35 + 20 + 25 = 125

Thus the correct answer is (E) France, UK


**Q29** What would be the value of the UK and the French sales in  $\pounds$  (assume an

exchange rate of  $\pounds$ 1.25 to the  $\pounds$ )?

- (A) ) £144 million
  (B) ) £112.5 million
  (C) ) £80 million
- (D) ) £72 million (E) ) £60 million

**Step 1** – Calculate the UK sales 35 + 10 + 20 + 10 + 15 = 90

**Step 2** - Calculate the French sales 20 + 25 + 15 + 25 + 5 = 90

**Step 3** – Convert the total into £ 180 / 1.25 = £144 million

Thus the correct answer is (A) £144 million



- Q30 Wellings Ltd sells off its Italian stores and then takes over Seacombe's stores except those in Ireland. The merged Wellings Seacombe Ltd sets a target to increase total sales across the European stores by 20% a year for the next three years. What will the total sales be in three years' time (to the nearest million)?
  - (A) ) €33 million
    (B) ) €190 million
    (C) ) €290 million
    (D) ) €328 million
    (E) €382 million

**Step 1** – Calculate the total sales for the Wellings Seacombe Ltd operation Wellings (UK, Ireland, France, Germany) = 35 + 25 + 20 + 15 = 95Seacombe (UK, France, Germany, Italy) = 10 + 25 + 30 + 30 = 95Total sales =  $\in$ 190 million

**Step 2** – Calculate the increase in sales over the next 3 years  $\notin$  190 million x 1.2 x 1.2 x 1.2 = £328.32 million

**Step 3** – To the nearest million =  $\pounds$ 328 million

Thus the correct answer is (D) £328 million

# NUMERICAL REASONING TEST 7

# Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 

		Exchan	ge Rate (t	o the £)
Week 1	Week 2	Week 3	Week 4	Week 5
1.2	1.26	1.3	1.34	1.28
1.64	1.69	1.74	1.84	1.76
123.2	128.6	134.8	135	128.4
13.4	13.8	13.2	13.6	14.2
	Week 1 1.2 1.64 123.2 13.4	Week 1 Week 2 1.2 1.26 1.64 1.69 123.2 128.6 13.4 13.8	ExchangeWeek 1Week 2Week 31.21.261.31.641.691.74123.2128.6134.813.413.813.2	Exchange Rate (tWeek 1Week 2Week 3Week 41.21.261.31.341.641.691.741.84123.2128.6134.813513.413.813.213.6

# Q1 What was a Japanese Yen worth in Euros in Week 3?

(A) €0.01
(B) €0.05
(C) €0.10
(D) €0.15
(E) €1.00

**Step 1** – Convert from Yen in to £ 1 = 1/134.8 = £0.00742

**Step 2** – Convert from £ in to Euro 0.00742 x 1.3 = €0.01

Thus the correct answer is (A), €0.01

# Q2 How much is 5,000 South African Rand worth in Week 4 in US \$?

(A) \$199.81
(B) \$367.65
(C) \$476.65
(D) \$599.18
(E) \$676.48

**Step 1** – Convert from Rand in to £ 5,000 / 13.6 = 367.65

**Step 2** – Convert from £ in to US \$ 367.65 x 1.84 = \$676.48

Thus the correct answer is (E), \$676.48

			Exchan	ige Rate (	to the £)
	Week 1	Week 2	Week 3	Week 4	Week 5
Euro €	1.2	1.26	1.3	1.34	1.28
US \$	1.64	1.69	1.74	1.84	1.76
Japanese Yen	123.2	128.6	134.8	135	128.4
South African Rand	13.4	13.8	13.2	13.6	14.2

- **Q3** In Week two 10,000 Japanese Yen is converted into £. In Week 5 this is converted into what value in Euros?
  - (A) €110.00
    (B) €104.82
    (C) €99.53
    (D) €77.76
    (E) €60.75

**Step 1** – Convert into £ (using Week 2 figures) 10,000 / 128.6 = £77.76

**Step 2** – Convert into Euros (using Week 5 figures)  $\pounds$ 77.76 x 1.28 =  $\notin$ 99.53

Thus the correct answer is (C), €99.53

			Exchan	ige Rate (	to the £)
	Week 1	Week 2	Week 3	Week 4	Week 5
Euro €	1.2	1.26	1.3	1.34	1.28
US \$	1.64	1.69	1.74	1.84	1.76
Japanese Yen	123.2	128.6	134.8	135	128.4
South African Rand	13.4	13.8	13.2	13.6	14.2

Q4 During Week 1 a traveller splits £2,100 equally into US \$, Japanese Yen and

South African Rand. How many £ does the traveller have on Week 3 if all the currencies are converted back into £ and he is charged a 5% fee for each transaction from one currency into another (to the nearest £100)?

(A) £1,700 (B) £1,800 (C) £1,900 (D) £2,000 (E) £2,100

**Step 1** - splits £2,100 equally into US \$, Japanese Yen and South African Rand  $\pounds 2,100/3 = \pounds 700$ 

**Step 2** – Calculate the amount of US \$, Japanese Yen and South African Rand (Week 1) US \$:  $\pounds$ 700 x 1.64 = \$1,148 Japanese Yen:  $\pounds$ 700 x 123.2 = 86,240 Yen South African Rand:  $\pounds$ 700 x 13.4 = 9,380 Rand

**Step 3** – Deduct a 5% charge for each currency \$1,148 x .95 = \$1,090.6 86,240 Yen x .95 = 81,928 Yen 9,380 Rand x .95 = 8,911 Rand

```
Step 4 – Convert back into £ (Week 3)
$1,090.6 / 1.74 = \pounds 626.78
81928 Yen / 134.8 = \pounds 607.77
8911 Rand / 13.2 = \pounds 675.08
Total = £1,909.626.
Deduct a second 5% for the transaction fee. £1,909.63 x 0.95 = £1,814 = £1,800 (to the nearest £100)
```

Thus the correct answer is (B), £1,800

			Exchan	ige Rate (	to the £)
	Week 1	Week 2	Week 3	Week 4	Week 5
Euro €	1.2	1.26	1.3	1.34	1.28
US \$	1.64	1.69	1.74	1.84	1.76
Japanese Yen	123.2	128.6	134.8	135	128.4
South African Rand	13.4	13.8	13.2	13.6	14.2

**Q5** Which currency has shown the greatest proportionate change in value between Weeks 1 and 4?

(A) Euro
(B) US \$
(C) ) Japanese Yen
(D) South African Rand
(E) ) Can't tell from data

Step 1 – Calculate the % change in value for each currency between Weeks 1 and 4

Euro: (1.34 - 1.20) / 1.20 = 0.117. Note: some people find it quicker to calculate 1.34 / 1.2 but both methods produce the percentage. US \$: (1.84 - 1.64) / 1.64 = 0.122Japanese Yen: (135.0 - 123.2) / 123.2 = 0.096South African Rand: (13.6 - 13.4) / 13.4 = 0.015

Thus the correct answer is (B), US \$



- **Q6** Next Year's turnover projection for Consultancies A-E combined represents what proportional change on Year 4's turnover for Consultancies A-E?
  - (A) 3.6%
    (B) 4.2%
    (C) 4.6%
    (D) 5.2%
    (E) 5.6%

Step 1 - Calculate Year 4's total

24 + 35 + 24 + 22 + 26 = 131Step 2 – Calculate Next Year's Projected total turnover 22 + 26 + 35 + 24 + 30 = 137Step 3 – Calculate the % increase 6 / 131 = 4.6%

So the correct answer is (C) 4.6%



**Q7** If, in Year 3, Consultancies A to E represent 60% of the marketplace by value of sales, what is the value of the marketplace excluding Consultancies A-E?

(A) €8.5 million (B) €8.6 million (C) ) €8.7 million (D) ) €8.8 million (E) ) Can't tell from the data

**Step 1** – Calculate the total sales for Consultancies A to E in Year 3 26 + 28 + 30 + 18 + 27 = 129

**Step 2** – Calculate the part of the market that excludes Consultancies A-E We are told that 129 = 60%So  $100\% = 129/60 \times 100 = 215$ Now 215 - (26 + 28 + 30 + 18 + 27) = €86 (100,000s) = €8.6 million

Thus the correct answer is (B), €8.6 million



- **Q8** The turnover target for Consultancy B over the 5 year period shown is €16.5 million. By how much does turnover need to exceed Next Year's Projected turnover in order for the target to be met?
  - (A) ) €1.0 million (B) ) €1.1 million (C) ) €1.2 million (D) ) €1.3 million (E) ) None of these

**Step 1** - Calculate the total Consultancy B turnover over the 5 year period 30 + 33 + 28 + 35 + 26 = 152Step 2 - Calculate the total discrepancy with the target figure  $\notin 16.5$  million -  $\notin 15.2$  million =  $\notin 1.3$  million

So the correct answer is (D), €1.3 million



# **Q9** Next year, which company is projecting the smallest percentage change in its turnover?

- (A) ) Consultancy A
- (B) ) Consultancy B
- (C) ) Consultancy C
- (D) ) Consultancy D
- (E) ) Consultancy E

**Step 1** – Calculate the % change in turnover projected for each company Consultancy A:  $2/24 \times 100\% = 8.3\%$ Consultancy B:  $9/35 \times 100\% = 25.7\%$ Consultancy C:  $11/24 \times 100\% = 45.8\%$ Consultancy D:  $2/22 \times 100\% = 9\%$ Consultancy E:  $4/26 \times 100\% = 15.4\%$ 

*Tip:* just by inspecting the data you could probably see that the answer is going to be either Consultancy A or D, so you could save time by calculating just these.

Thus the correct answer is (A), Consultancy A

# **Q10** What is the ratio of Year 3's Consultancy C's turnover to Consultancy E's turnover?

(A) 2 : 5 (B) 4 : 7 (C) 5 : 7 (D) 10 : 9 (E) 5 : 2

Consultancy C : Consultancy E = 30 : 27 = 10 : 9

Thus the correct answer is (D), 10:9



	Online Sales (2011)	High Street Sales (2011)
Cameras	£553,000	£336,000
DVD Players	£808,000	£483,000
IPods	£852,000	£644,000
Plasma TVs	£325,000	£456,000
Misc	£575,000	£678,000
Total	£3,113,000	£2,597,000

- Q11 What % of total plasma TV sales are made online?
  - (A) 25%
    (B) 28%
    (C) 30%
    (D) 38%
    (E) 42%

**Step 1** – Calculate the total sales for plasma TVs using both the table and the graph.  $\pounds$ 325,000 +  $\pounds$ 456,000 + ( $\pounds$ 250,000 x 30%) =  $\pounds$ 856,000

**Step 2** – Calculate the % of sales that are made online  $\pounds$ 325,000 /  $\pounds$ 856,000 = 38%

Thus the correct answer is (D), 38%

**Note:** 42% is deliberately used as a distractor because some people will miss the graph and calculate  $325,000 \div (325,000 + 456,000)$ 



	Online Sales (2011)	High Street Sales (2011)
Cameras	£553,000	£336,000
DVD Players	£808,000	£483,000
IPods	£852,000	£644,000
Plasma TVs	£325,000	£456,000
Misc	£575,000	£678,000
Total	£3,113,000	£2,597,000

- **Q12** What is the difference in value between total sales for IPods compared to cameras?
  - (A) £912,000
    (B) £812,000
    (C) £712,000
    (D) £612,000
    (E) £512,000

**Step 1** – Calculate the total sales for IPods £852,000 + £644,000 + (18% x £250,000) = £1,541,000

**Step 2** – Calculate the total sales for cameras £336,000 + £553,000 + (16% x £250,000) = £929,000

**Step 3** – Calculate the difference £1,541,000 - £929,000 = £612,000

Thus the correct answer is (D), £612,000



	Online Sales (2011)	High Street Sales (2011)
Cameras	£553,000	£336,000
DVD Players	£808,000	£483,000
IPods	£852,000	£644,000
Plasma TVs	£325,000	£456,000
Misc	£575,000	£678,000
Total	£3,113,000	£2,597,000

- **Q13** If the High Street and Catalogue sales of DVD Players had been made online, what % of total Online sales would DVD Players represent?
  - (A) 28% (B) 30% (C) 32% (D) 34%
  - (E) 36%

**Step 1** – Calculate the value of catalogue sales of DVDs  $\pounds 250,000 \times 12\% = \pounds 30,000$ 

**Step 2** – Sum the High Street and catalogue sales of DVD players  $\pounds$ 30,000 +  $\pounds$ 483,000 =  $\pounds$ 513,000

**Step 3** – Calculate the % of DVD player sales that are online £808,000 + £513,000 / (£852,000 + £808,000 + £513,000 + £553,000 + £325,000 + £575,000) = £1,321,000 / £3,626,000

Thus the correct answer is (E), 36%



	Online Sales (2011)	High Street Sales (2011)
Cameras	£553,000	£336,000
DVD Players	£808,000	£483,000
IPods	£852,000	£644,000
Plasma TVs	£325,000	£456,000
Misc	£575,000	£678,000
Total	£3,113,000	£2,597,000

Q14 In 2012 total Catalogue sales are forecast to increase by 1/4, total Online

sales to increase by a 1/5th, and High Street sales to decrease by 12%. What will be the 2012 sales for Catalogue, Online and High Street combined (to the nearest £1,000)?

(A) £5,597,000 (B) £6,285,000 (C) £6,333,000 (D) £6,433,000 (E) £6,613,000

**Step 1** – Calculate the total 2011 sales (Online and for the High Street) Online: £852,000 + £808,000 + £553,000 + £325,000 + £575,000 = £3,113,000 High Street: £644,000 + £483,000 + £336,000 + £456,000 + £678,000 = £2,597,000

**Step 2** – Calculate the total 2012 sales (Online and for the High Street) Online: £3,113,000 x 1.2 = £3,735,600 High Street: £2,597,000 x 88% = £2,285,360

**Step 3** – Calculate the total 2012 sales (Catalogue) £250,000 x 1.25 = £312,500

**Step 4** – Sum the total January sales (Online, Catalogue and High Street)  $\pounds$ 3,735,600 +  $\pounds$ 2,285,360 +  $\pounds$ 312,500 =  $\pounds$ 6,333,460 =  $\pounds$ 6,333,000 (to the nearest  $\pounds$ 1,000)

Thus the correct answer is (C), £6,333,000



	Online Sales (2011)	High Street Sales (2011)
Cameras	£553,000	£336,000
DVD Players	£808,000	£483,000
IPods	£852,000	£644,000
Plasma TVs	£325,000	£456,000
Misc	£575,000	£678,000
Total	£3,113,000	£2,597,000

**Q15** The profit made from selling cameras online compared to the High Street is in

the ratio 9:7, and 15% of online camera sales is profit. What is the 2011 profit for High Street camera sales?

(A) £36,291
(B) £64,517
(C) £66,980
(D) £72,428
(E) £82,950

**Step 1** – Calculate the profit for online camera sales 15% x £553,000 = £82,950

**Step 2** – Calculate the profit for High Street camera sales  $\pounds 82,950 \times 7/9 = \pounds 64,517$ 

Thus the correct answer is (B), £64,517

**Tip**: don't fall for the trap of answering A) £36,291. The wording of the question is important. If the question had said something like "the sales were split between High Street and Online in the ratio 9:7" then you would be correct to multiply £82,950 by 7/(9+7). But the ratio is given as one number in relation to another, so it is simply a case of multiplying by 7/9.

Expenses by Department	epartment Number of		Quarter			
(£)	staff	1	2	3	4	Budget
HR	3	1,053	1,680	1,305	1,346	6,500
Marketing	6	4,790	3,706	3,652	4,309	16,000
Sales	12	6,825	6,021	5,091	5,245	22,500
π	5	1,160	1,042	938	956	4,500
Finance	7	4,257	4,830	4,545	4,463	20,000
R&D	4	1,169	1,009	1,755	1,821	6,000

Q16 Which Department has the highest expense budget per member of staff?

- (A) HR(B) Marketing(C) Sales
- (D) IT
- (E) Finance

**Step 1** – Have a quick look at the data to see if this can be seen by inspection. In this case, it is unlikely you can 'see' the answer before doing some number-crunching. Calculate the expense budget per member of staff for each department.

 $6,500/3 = \pounds 2,167$   $16,000/6 = \pounds 2,667$   $22,500/12 = \pounds 1,875$   $4,500/5 = \pounds 900$  $20,000/7 = \pounds 2,857$ 

Thus the correct answer is (E), Finance

Expenses by Department	s by Number of Quarter			Annual Expense		
(£)	staff	1	2	3	4	Budget
HR	3	1,053	1,680	1,305	1,346	6,500
Marketing	6	4,790	3,706	3,652	4,309	16,000
Sales	12	6,825	6,021	5,091	5,245	22,500
π	5	1,160	1,042	938	956	4,500
Finance	7	4,257	4,830	4,545	4,463	20,000
R&D	4	1,169	1,009	1,755	1,821	6,000

**Q17** If the annual expense budget was evenly allocated for each Quarter, which Department is under budget by the highest amount in Quarter 4?

(A) HR(B) Marketing(C) Sales(D) Finance(E) R&D

**Step 1** – Calculate the quarterly expense budgets for each Department (excluding IT which is not shown in the answer options) HR: 6,500/4 = 1,625Marketing: 16,000/4 = 4,000Sales: 22,500/4 = 5,625Finance: 20,000/4 = 5,000R&D: 6,000/4 = 1,500

**Step 2** – Compare to the Quarter 4 figures for each Dept. HR:  $1,625 - 1,346 = \pounds 279$ Marketing is over budget Sales:  $5,625 - 5,245 = \pounds 380$ Finance:  $5,000 - 4,463 = \pounds 537$ R&D is over budget

Thus the correct answer is (D), Finance

Expenses by Department	nses by Number ofQuarter			Annual Expense		
(£)	staff	1	2	3	4	Budget
HR	3	1,053	1,680	1,305	1,346	6,500
Marketing	6	4,790	3,706	3,652	4,309	16,000
Sales	12	6,825	6,021	5,091	5,245	22,500
π	5	1,160	1,042	938	956	4,500
Finance	7	4,257	4,830	4,545	4,463	20,000
R&D	4	1,169	1,009	1,755	1,821	6,000

**Q18** 60% of the Sales Department's budgets for Quarters 1 and 4 was for attending a Sales Conference. The remainder of the budget was split equally between accommodation and travel costs. What were the Sales Department's travel costs for Quarters 1 and 4 combined?

(A) £2,414
(B) £2,500
(C) £3,500
(D) £4,828
(E) Can't tell from the data

**Step 1** – Although the annual expense budget is provided, we are not told what the quarterly expense budget is. The table provides data for the annual expense budget and the quarterly expenses, without any mention of what the quarterly expense budget may be, since it cannot be assumed that the annual budget is spread equally over each quarter. Therefore we cannot accurately ascertain 60% of the quarterly budget based on the data provided.

Thus the correct answer is (E), Can't tell from the data

### **Q19** The Finance Department has receipts for £14,476 of its annual expenses.

What percentage of the Finance Department's annual expenses do not have receipts?

(A) 5% (B) 10% (C) 15% (D) 20% (E) 25%

**Step 1** – Total the Finance Department's expenses for all 4 quarters 4,257 + 4,830 + 4,545 + 4,463 = 18,095

**Step 2** – Calculate the % for which there are receipts 14,476 / 18,095 = 80%Step 3 - Calculate the % for which there are no receipts 100 - 20 = 20%

Expenses by Department	Number of	Quarter				Annual Expense
(£)	staff	1	2	3	4	Budget
HR	3	1,053	1,680	1,305	1,346	6,500
Marketing	6	4,790	3,706	3,652	4,309	16,000
Sales	12	6,825	6,021	5,091	5,245	22,500
π	5	1,160	1,042	938	956	4,500
Finance	7	4,257	4,830	4,545	4,463	20,000
R&D	4	1,169	1,009	1,755	1,821	6,000

Q20 If the percentage changes in expenses that each Department exhibited

between Quarters 3-4 continued into the first quarter of the next year, what would be that quarter's total expenses (to the nearest £100)?

(A) £17,100
(B) £19,100
(C) £19,600
(D) £20,600
(E) None of these

**Step 1** – Calculate the % change by Department between Quarters 3-4 HR: (1,346 - 1,305) / 1,305 = 3.14%. Note: some people find it quicker to calculate  $1,346 \div 1,305 = 1.0314$ Marketing: (4,309 - 3,652) / 4,309 = 17.99%Sales: (5,245 - 5,091) / 5,245 = 3.02%IT: (956 - 938) / 956 = 1.92%Finance: (4,463 - 4,545) / 4,463 = -1.80%R&D: (1,821 - 1,755) / 1,821 = 3.76%

**Step 2** – Calculate the next quarter's expenses for each department HR:  $103.14\% \times 1,346 = 1,388$ Marketing:  $4,309 \times 117.99\% = 5,084$ Sales:  $5,245 \times 103.02\% = 5,403.7$ IT:  $956 \times 101.92\% = 974$ Finance:  $4,463 \times 98.2\% = 4,383$ R&D:  $1,821 \times 103.76\% = 1,889$ 

**Step 3** - Calculate the next quarter's total expenses 1,388 + 5,084 + 5,404 + 974 + 4,383 + 1,889 = £19,122

Thus the correct answer is (B), £19,100



- **Q21** What was Year 2's decrease in the amount invested in North American and European Equities compared to Year 1?
  - (A) \$10,000
    (B) \$100,000
    (C) \$110,000
    (D) \$111,000
    (E) \$111,100

**Step 1** – Calculate Year 2's investments in North American and European Equities North American: \$4.5million x 8% = \$360,000 European: \$4.5million x 12% = \$540,000

**Step 2** - Calculate Year 2's decrease compared to Year 1 North American change + European change = (\$400,000 - \$360,000) + (\$600,000 - \$540,000) = \$100,000

Thus the correct answer is (B), \$100,000



**Q22** Which type of investment shows the largest difference between Year 1 and Year 2 in the proportion it contributed to the total Growth Fund?

(A) ) Gilts(B) Fixed interest(C) ) North American Equities

- (D) ) UK Equities
- (E) Pacific Rim Equities

**Step 1** – calculate the proportion of the fund that each investment made up in Year 1 Gilts = 0.2 / 4.8 = 4.17%Fixed Interest = 0.8 / 4.8 = 16.67%North American Equities = 0.4 / 4.8 = 8.33%European Equities = 0.6 / 4.8 = 12.5%UK Eequities = 1.6 / 4.8 = 33.33%Pacific Rim Equities = 1.2 / 4.8 = 25%

**Step 2** – compare these figures to the % figures shown in Year 2's pie-chart Gilts = 4.17% vs. 4% Fixed Interest = 16.67% vs. 14% North American Equities = 8.33% vs. 8% European Equities = 12.5% vs. 12% UK Equities = 33.33% vs. 40% Pacific Rim Equities = 25% vs. 22%

Thus the correct answer is (D), UK Equities



- **Q23** If the proportional change in the Growth Fund between Year 1 and Year 2 continued over subsequent years, what would be the projected Growth Fund value in Year 6?
  - (A) ) \$3.48 million
    (B) ) \$3.51 million
    (C) ) \$3.71 million
    (D) ) \$5.73 million
    (E) ) \$5.95 million

**Step 1** – Calculate the proportional change in the Growth Fund between Year 1 and 2 (4.8 - 4.5) / 4.8 = -6.25%

**Step 2** – Apply this % to calculate the growth Fund value each year up to Year 6 Year 3: 93.75% x 4.5 = 4.2188 Year 4: 93.75% x 4.2188 = 3.955 Year 5: 93.75% x 3.955 = 3.708 Year 6: 93.75% x 3.708 = \$3.476 million

Thus the correct answer is (A), \$3.48 million



Q24 If in Year 2 the amount invested in Year 1's Fixed Interest fund had been sold

and converted into European Equity funds, what is the value of European Equity funds in Year 2? (Assume no charges are incurred).

(A) \$540,000
(B) \$700,000
(C) \$800,000
(D) ) \$1.24 million
(E) ) \$1.34 million

**Step 1** – Calculate the Year 2 amount of European Equity funds European Equity: 12% x \$4.5 million = \$540,000

**Step 2** - Sum the Year 1 Fixed Interest and Year 2 European Equity investments \$800,000 + \$540,000 = \$1,340,000

Thus the correct answer is (E), \$1.34 million



**Q25** In Year 3 the percentage of the Growth Fund held in each investment type is the same as in Year 1. The total value of the Growth Fund increases by 14% of the Year 2 value. What is the value of Year 3's holding in UK Equities?

(A) \$1,530,000 (B) \$1,170,000 (C) \$1,710,000 (D) \$2,040,000 (E) \$2,030,000

**Step 1** – Calculate the percentage holding in UK Equities 1.6 / 4.8 = 33.33%

**Step 2** – Calculate the increased Growth Fund value \$4.5 million x 114% = \$5,130,000

**Step 3** – Calculate the value of the holding in UK Equities \$5,130,000 x 33.33% = \$1,710,000

Thus the correct answer is (C), \$1,710,000

£	Jan	Feb	March	April	May
Total sales	136,000	135,000	136,500	156,000	145,000
Operating expenses	61,000	63,000	65,000	50,000	55,000
Income	£75,000	£72,000	£71,500	£106,000	£90,000
Current assets Property assets	66,500 36,000	63,000 35,500	65,000 36,000	68,000 38,000	66,000 36,500
Fixed assets	38,000	34,000	32,000	45,000	40,000
Total assets	£140,500	£132,500	£133,000	£151,000	£142,500
Liabilities	34,400	35,600	33,000	35,000	33,500

Working Capital to Total Assets ratio = (Current Assets - Liabilities)/ Total Assets

### Q26 Which month has the lowest asset turnover value? (Use the formula Asset

Turnover = Total Sales / Fixed Assets)

(A) January(B) February(C) March(D) April(E) May

Calculate Asset Turnover = Total Sales / Fixed Assets for each month Jan: 136,000 / 38,000 = 3.58 Feb: 135,000 / 34,000 = 3.97 March: 136,500 / 32,000 = 4.27 April: 156,000 / 45,000 = 3.47 May: 145,000 / 40,000 = 3.63

Thus the correct answer is (D), April

£	Jan	Feb	March	April	May
Total sales	136,000	135,000	136,500	156,000	145,000
Operating expenses	61,000	63,000	65,000	50,000	55,000
Income	£75,000	£72,000	£71,500	£106,000	£90,000
Current assets Property assets	66,500 36.000	63,000 35,500	65,000 36.000	68,000 38.000	66,000 36,500
Fixed assets	38,000	34,000	32,000	45,000	40,000
Total assets	£140,500	£132,500	£133,000	£151,000	£142,500
Liabilities	34,400	35,600	33,000	35,000	33,500

Working Capital to Total Assets ratio = (Current Assets - Liabilities)/ Total Assets

- **Q27** Compared to May's figures, Total sales for June show an increase of 8% and Operating expenses show a decrease of 7%. What is June's Income?
  - (A) £105,450
    (B) £95,450
    (C) £85,450
    (D) £75,450
    (E) Can't tell from the data

**Step 1** – The table shows that Income = Total sales – Operating expenses

**Step 2** – Calculate June's values for Total sales and Operating expenses Total sales =  $145,000 \times 108\% = 156,600$ Operating expenses =  $55,000 \times 93\% = 51,150$ 

**Step 3** – Apply the formula Income = Total sales – Operating expensesIncome = 156,600 - 51,150 = £105,450

Thus the correct answer is (A), £105,450

£	Jan	Feb	March	April	May
Total sales	136,000	135,000	136,500	156,000	145,000
Operating expenses	61,000	63,000	65,000	50,000	55,000
Income	£75,000	£72,000	£71,500	£106,000	£90,000
Current assets Property assets	66,500 36,000	63,000 35,500	65,000 36,000	68,000 38,000	66,000 36,500
Fixed assets	38,000	34,000	32,000	45,000	40,000
Total assets	£140,500	£132,500	£133,000	£151,000	£142,500
Liabilities	34,400	35,600	33,000	35,000	33,500

Working Capital to Total Assets ratio = (Current Assets - Liabilities)/ Total Assets

Q28 Which month has the highest Working capital to Total assets ratio?

- (A) January
- (B) February
- (C) March
- (D) April
- (E) May

**Step 1** – Use the equation provided to calculate the working capital for each month Working Capital to Total Assets ratio = (Current Assets – Liabilities) / Total Assets January: (66,500 – 34,400) / 140,500 = 0.23 February: (63,000 – 35,600) / 132,500 = 0.21 March: (65,000 – 33,000) / 133,000 = 0.24 April: (68,000 – 35,000) / 151,000 = 0.22 May: (66,000 – 33,500) / 142,500 = 0.23

Thus the correct answer is (C), March

# Q29 If the average value of Total assets between the months of April to June is

£150,000, what is the value of Total assets in June?

(A) £154,500
(B) £155,000
(C) £155,500
(D) £156,000
(E) £156,500

Enter the Total assets figures for April to June into an equation, where z = Total assets in June.  $151,000 + 142,500 + z = 150,000 \times 3$ z = 450,000 - 151,000 - 142,500 = 156,500

Thus the correct answer is (E), £156,500

£	Jan	Feb	March	April	May
Total sales	136,000	135,000	136,500	156,000	145,000
Operating expenses	61,000	63,000	65,000	50,000	55,000
Income	£75,000	£72,000	£71,500	£106,000	£90,000
Current assets Property assets	66,500 36,000	63,000 35,500	65,000 36,000	68,000 38,000	66,000 36,500
Fixed assets	38,000	34,000	32,000	45,000	40,000
Total assets	£140,500	£132,500	£133,000	£151,000	£142,500
Liabilities	34,400	35,600	33,000	35,000	33,500

Working Capital to Total Assets ratio = (Current Assets - Liabilities)/ Total Assets

- **Q30** If the average monthly sales for the first five months of the year was the same for the months of June to December, what was the total annual sales?
  - (A) £1,500,400 (B) £1,600,400 (C) £1,700,400 (D) £1,800,400 (E) £1,900,400

**Step 1** – Calculate the total sales for Jan – May 136,000 + 135,000 + 136,500 + 156,000 + 145,000 = 708,500

**Step 2** – Since the monthly average is the same, multiply this figure by 12/5 708,500 x 12/5 = £1,700,400

Thus the correct answer is (C), £1,700,400

# NUMERICAL REASONING TEST 8

# Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 



	Brand A Sales Turnover and Profit	
	(third month of 4th quarter)	Estimate
Sales Turnover	23,000	25,000
Sales Tax (14%)	3,220	3,500
Net Turnover	19,780	21,500
Variable Costs	5,500	5,900
Fixed Costs	3,300	3,400
Profit	10,980	12,200

**Q1** If Howards and Makepeace's annual sales target for Brand B was £690,000, what fraction of this were actual Brand B sales?

(A) 1/3
(B) 22/70
(C) 3/5
(D) 2/5

The information that we need is shown in the graph Clothing brand sales.

**Step 1** – Calculate the total annual Brand b sales by adding the 4 quarters 65 + 60 + 78 + 73 = 276

**Step 2** – Calculate the fraction compared to the annual sales target 276 / 690 = 2/5

Thus the correct answer is (D) 2/5



	Brand A Sales Turnover and Profit (third month of 4th quarter)	Estimate
Sales Turnover	23,000	25,000
Sales Tax (14%)	3,220	3,500
Net Turnover	19,780	21,500
Variable Costs	5,500	5,900
Fixed Costs	3,300	3,400
Profit	10,980	12,200

# Q2 What are the average sales per quarter for each brand (in the order Brand C;

B; A)?

(A) 70,500; 69,000; 61,250
(B) 7,050; 6,900; 6,125
(C) 61,250; 69,000; 70,500
(D) 61; 71; 69

The information that we need is shown in the graph Clothing brand sales.

**Step 1** - Calculate the total clothing sales, as follows; Brand a = 59 + 58 + 75 + 53 = 245Brand b = 65 + 60 + 78 + 73 = 276Brand c = 74 + 72 + 70 + 66 = 282

**Step 2** - Calculate the average sales per quarter, as follows; Brand a (245 / 4) = 61.25 i.e. 61,250Brand b (276 / 4) = 69 i.e. 69,000Brand c (282 / 4) = 70.5 i.e. 70,500

Thus the correct answer is (A) 70,500, 69,000, 61,250



Brand A Sales Turnover and Profit (third month of 4th quarter)	Estimate
23,000	25,000
3,220	3,500
19,780	21,500
5,500	5,900
3,300	3,400
10,980	12,200
	Brand A Sales Turnover and Profit (third month of 4th quarter) 23,000 3,220 19,780 5,500 3,300 10,980

Q3 What was Brand A's total sales turnover for the first and second month in Quarter 4?

- (A) £30,000
- (B) £28,000
- (C) £25,000
- (D) £23,000

The information that we need is shown in the table Previous month's sales turnover and profit and the graph Clothing brand sales.

**Step 1** - From the table Previous month's sales turnover and profit ... ...Previous month's sales turnover = 23,000

Step 2 - From the graph Clothing brand sales, obtain the quarter's sales for Brand a (53000)

**Step 3** – Calculate the difference 53,000 – 23,000 = 30,000

Thus the correct answer is (A) £30,000



	Brand A Sales Turnover and Profit (third month of 4th quarter)	Estimate
Sales Turnover	23,000	25,000
Sales Tax (14%)	3,220	3,500
Net Turnover	19,780	21,500
Variable Costs	5,500	5,900
Fixed Costs	3,300	3,400
Profit	10,980	12,200

# **Q4** If the variable costs had been 5% higher for the previous month then what would have been the impact on Brand A's profit?

- (A) £165 increase
- (B) £275 decrease
- (C) £275 increase
- (D) No effect on profit

The information that we need is shown in Previous month's sales turnover and profit. We are told this table gives data for the previous month, which is Quarter 4, month 3.

**Step 1** - Calculate the 5% increase in variable costs for the previous month.  $5,500 \times 5/100 = \pounds 275$ 

**Step 2** – As shown in the table Previous month's sales turnover and profit as the variable costs increase so profit decreases by the same amount.

Thus the correct answer is (B) £275 decrease



	Brand A Sales Turnover and Profit (third month of 4th quarter)	Estimate
Sales Turnover	23,000	25,000
Sales Tax (14%)	3,220	3,500
Net Turnover	19,780	21,500
Variable Costs	5,500	5,900
Fixed Costs	3,300	3,400
Profit	10,980	12,200

**Q5** The sales tax was calculated incorrectly for Quarter 4 Month 3 and should

have been 16.5%. The mistake caused the Net Turnover for Brand A to be reported as being what?

- (A) £575 too high
- (B) £1650 too low
- (C) 16.5% too high
- (D) £575 too low

The information that we need is shown in the Table; Previous month's sales turnover and profit.

**Step 1** – Calculate the difference in sales tax. 16.5 - 14 = 2.5%

**Step 2** – Calculate the difference in tax due.  $23000 \times 2.5/100 = \text{\pounds}575$ 

**Step 3** - The Sales tax is actually higher so the mistake would have made the Net Turnover appear higher than in truth.

Thus the correct answer is (A) £575 too high.

Callz Ltd	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	4	38,200	35,000
Internet	4	42,500	40,000
Catalogue	2	43,800	45,000
Telephone	1	55,400	60,000
CF plc	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	5	38,200	40,000
Internet	4	42,000	45,000
Catalogue	2	47,800	50,000
Telephone	2	64,000	60,000

# Q6 Which operation achieved the highest sales per Sales and Support staff?

- (A) Telephone (CF plc)
- (B) Catalogue (CF plc)
- (C) High Street (CF plc)
- (D) Telephone (Callz Ltd)

The information that we need is shown in the monthly sales figure tables for CF plc and Callz Ltd.

**Step 1** - It would take a long time to work out the average sales achieved for each operation across CF plc and Callz Ltd. If you focus on the sales and support staff numbers (compared to the monthly sales achieved) it becomes clear that the highest sales per Sales and Support staff will be either Telephone (Callz Ltd) or Telephone (CF plc). Then, since there is only one sales/support staff member at Callz Ltd (55,400 / 1 = 55,400) this must be higher than CF's (64,000 / 2 = 32,000)

Thus the correct answer is (D) Telephone (Callz Ltd)
Callz Ltd	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	4	38,200	35,000
Internet	4	42,500	40,000
Catalogue	2	43,800	45,000
Telephone	1	55,400	60,000
CF plc	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	5	38,200	40,000
Internet	4	42,000	45,000
Catalogue	2	47,800	50,000
Telephone	2	64,000	60,000

Q7 Callz Ltd plans to reduce its staff headcount by two. The remaining staff will

be split across an online team and an offline team to a ratio of 1:2. If the online group sales target is £180,000, what is the average target per member of the online team?

(A)	£50,000
(B)	£60,000
(C)	£40,000
(D)	£35,000

The information that we need is shown in the Callz Ltd table.

**Step 1 -** A simple equation needs to be solved to determine the size of the online team = X + 2X = 11 (current headcount) – 2 (reduction in headcount) = 9 3X = 9, so X = 3 i.e. 3 staff members in the online team.

**Step 2** – Calculate the new sales target per member of the online team  $180,000 \div 3 = \pounds 60,000$ 

Thus the correct answer is (B) £60,000

Callz Ltd	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	4	38,200	35,000
Internet	4	42,500	40,000
Catalogue	2	43,800	45,000
Telephone	1	55,400	60,000

CF plc	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	5	38,200	40,000
Internet	4	42,000	45,000
Catalogue	2	47,800	50,000
Telephone	2	64,000	60,000

Across both companies, which retail operation had the lowest absolute Q8 difference between monthly sales and sales target?

- Internet (Callz Ltd) (A)
- (B)
- Catalogue (CF plc) High Street (Callz Ltd) (Ċ)
- Catalogue (Callz Ltd) (D)

The information that we need is shown in both tables.

Step 1 - The calculation for each company is shown in the tables below (with the answer marked in bold):

Callz

High Street	38200 - 35000 = 3200
Internet	42500 - 40000 = 2500
Catalogue	43800 - 45000 = -1200

CF PLC

High Street	38200 - 40000 = -1800
Internet	42000 - 45000 = -3000
Catalogue	47800 - 50000 = -2200
Telephone	64000 - 60000 = 4000

Thus the correct answer is (D) Catalogue (Callz)

Callz Ltd	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	4	38,200	35,000
Internet	4	42,500	40,000
Catalogue	2	43,800	45,000
Telephone	1	55,400	60,000

CF plc	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	5	38,200	40,000
Internet	4	42,000	45,000
Catalogue	2	47,800	50,000
Telephone	2	64,000	60,000

**Q9** What is the ratio of CF plc's actual monthly telephone sales to overall monthly CF plc sales?

(A) 1:3

(B) 1:30 (C) 1:4

(D) 1:5

The information that we need is shown in the CF plc table.

Step 1 - Calculate total sales = 192,000

**Step 2** – Calculate telephone sales as a ratio to total sales 64000:192000 = 1:3

Thus the correct answer is (A) 1:3

Callz Ltd	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	4	38,200	35,000
Internet	4	42,500	40,000
Catalogue	2	43,800	45,000
Telephone	1	55,400	60,000
CF plc	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	5	38,200	40,000
Internet	4	42,000	45,000
Catalogue	2	47,800	50,000
Telephone	2	64,000	60,000

Q10 Following a merger, the four retail operations are combined with each other

across Callz Ltd and CF plc. The targets are also combined for each retail operation, with 5% added to each target for each staff member that works in the combined retail operation. Which combined retail operation has a sales target of  $\pounds119,000?$ 

- (A) High Street
- (B) Internet
- (C) Catalogue
- (D) Cannot say

The information that we need is shown in both tables.

**Step 1** – Calculate the combined sales target per retail operation across the two stores, as follows: High Street = 75,000 Internet = 85,000 Catalogue = 95,000 Telephone = 120,000

Step 2 – Calculate the increased sales target based upon the combined number of
employees (5% increase for each employee).

Retail operation	Combined no. Employees	Increased sales target
High Street	9	75,000 x 145% = £108,750
Internet	8	85,000 x 140% = £119,000
Catalogue	4	95,000 x 120% = £114,000
Telephone	3	$120,000 \times 115\% = \pounds 138,00$

Thus the correct answer is (B) Internet



- **Q11** The US operations exceeded their sales target for 2009 by 25%. If the target was split equally across 4 American regions, what was the individual sales target for each region?
  - (A) ) None of these
  - (B)) £1.03 million
  - (C)) £0.58 million
  - (D)) £0.15 million

The information that we need is shown in the bar chart Tamcer Inc.

**Step 1** - US sales =  $51.5 (\pounds 100,000)$ Ignore the  $\pounds 100,000$  during the calculation.

Step 2 - 51.5 / 4 = 12.875 per American region.

**Step 3** - 12.875 represents 125% Individual regional target = 100 x 12.875 / 125 = 10.3

**Step 4** - 10.3 (£100,000) = £1.03 million

Thus the correct answer is (B) £1.03 million



- **Q12** In 2009, which categories of electrical goods each sold more than £0.75 million in the UK?
  - (A) Misc
  - (B) Misc, Computers and DVD players
  - (C) Misc and DVD players
  - (D) ) Computers and DVD players

The information that we need is shown in the graph and pie chart.

**Step 1** – The Tamcer Inc – Sales 2009 graph gives the total UK sales =  $\pounds$ 2.91 million

**Step 2** – The UK sales of electrical goods pie chart gives the % sales breakdown for each type of electrical good. Calculate the actual sales for each type of electrical good, as follows: Computers (25%) = 0.73 million DVD players (29%) = 0.84 million Cameras (12%) = 0.35 million Misc (26%) = 0.76 million Games (8%) = 0.23 million

Thus the correct answer is (C) Misc and DVD players



- Q13 Tamcer Inc's Russian business is split into 2 regions: Eastern Region and Western Region. Eastern Region's sales were the equivalent of 300% of the Western Region's sales. What were the Eastern Region's sales?
  - (A) £275,000
    (B) £1,275,000
    (C) £825,000
    (D) None of these

The information that we need is shown in the graph Tamcer Inc.

**Step 1** - Russian sales = 11 (£100,000) = £1,100,000

**Step 2** - Eastern Region sales + Western Region sales = £1,100,000 = 300% + 100% 1% = £1,100,000 / 400 = £2750

Step 3 - Eastern Region's sales = 300% = £2750 x 300 = £825,000

Thus the correct answer is (C) £825,000



- **Q14** If the absolute level of computers, games and cameras sold in France mirrors that of the UK, what is the total value of DVD players and Misc electrical goods sold in Tamcer's French operations?
  - (A) £2,280,500
    (B) £1,309,500
    (C) £1,909,500
    (D) ) Can't tell from the data

The information that we need is shown in the graph and pie-chart.

**Step 1** – Calculate the French sales of computers, games and cameras (using UK figures). Computers =  $\pounds$ 727,500 Cameras =  $\pounds$ 349,200 Games =  $\pounds$ 232,800 TOTAL =  $\pounds$ 1,309,500

**Step 2** – Calculate the difference between this figure and total electrical goods sold in France  $\pounds$ 3,590,000 -  $\pounds$ 1,309,500 =  $\pounds$ 2,280,500

Thus the correct answer is (A) £2,280,500



**Q15** The total worldwide sales for Tamcer Inc. are £29 million. What level of sales is accounted for by countries other than those shown?

- (A)) £19.6 million
- (B)) £9.6 million
- (C) ) £10.6 million
- (D)) £9.4 million

The information that we need is shown in the graph Tamcer Inc.

Step 1 - Calcu	late the total sales shown:
UK	29.1
France	35.9
Germany	48.3
US	51.5
Spain	18.2
Russia	11
TOTAL	= 194

**Step 2** - 194 (£100,000's) = £19.4 million

**Step 3** - £29 million - £19.4 million = £9.6 million.

Thus the correct answer is (B) £9.6 million



Jackons and simpson co. Sincetor salaries				
Country of Operations	Director Salary average for this year (£)	Budget Increase for next year (%)		
United Kingdom	92,000	4		
France	94,500	8		
Germany	118,000	6		
United States	115,000	6		
Spain	84,000	5		

Q16 If instead of being introduced in full next year, the budget salary increases

are phased in over the next three years (at a rate of 2% per year), what will be the average United States Director's salary in 2 years time?

(A) £119,646
(B) £121,900
(C) £119,600
(D) £122,000

The information that we need is shown in the table Jackson and Simpson Co. Director salaries.

**Step 1** - Calculate increases in average Director salary over two years Year  $1 = \pounds 115,000 + 2\% = 115,000 \times 102\% = \pounds 117,300$ Year  $2 = \pounds 117,300 + 2\% = 117,300 \times 102\% = \pounds 119,646$ 

Thus the correct answer is (A) £119,646



Jackens and simpson co. Sincetor salares				
Country of Operations	Director Salary average for this year (£)	Budget Increase for next year (%)		
United Kingdom	92,000	4		
France	94,500	8		
Germany	118,000	6		
United States	115,000	6		
Spain	84,000	5		

**Q17** Next year the rise in budget for a Spanish Director's average salary will be achieved through two consecutive pay-rises. If the first pay-rise is an increase of 2%, what will the second percentage increase have to be?

(A) 2.5%
(B) 2.6%
(C) 2.9%
(D) 3.0%

The information that we need is shown in the table Jackson and Simpson Co. Director salaries.

**Step 1** – Calculate the Spanish Director salary after the first increase of 2%  $\pounds 84,000 \times 1.02 = \pounds 85,680$ 

**Step 2** – Calculate the budgeted salary for the end of next year (5% increase).  $\pounds$ 84,000 x 105% =  $\pounds$ 88,200

**Step 3** – Calculate the percentage increase required to get from 85,680 to 88,200. 88,200 ÷ 85,680 = 1.0294 i.e. an increase of 2.94%.

Thus the correct answer is (C) 2.9%



Country of Operations	Director Salary average for this year (£)	Budget Increase for next year (%)		
United Kingdom	92,000	4		
France	94,500	8		
Germany	118,000	6		
United States	115,000	6		
Spain	84,000	5		

Q18 Directors and managers are allowed to purchase company shares (price =

£4.50) in place of salary next year. Which country's average Director can buy the most number of shares, and which country has the most managers who can buy shares?

- (A) ) United States, United States
- (B) ) United States, Germany
- (C) ) Germany, United States
- (D) ) Germany, Germany

The information that we need is shown in the table Jackson and Simpson Director salaries.

**Step 1** – The question is actually asking you to calculate which country's Directors will be paid the most next year. So calculate next year's Director salaries for each country.  $UK = \pounds 92,000 + 4\% = \pounds 95,680$ France =  $\pounds 104,500 + 8\% = \pounds 112,860$ Germany =  $\pounds 118,000 + 6\% = \pounds 125,080$ United States =  $\pounds 115,000 + 6\% = \pounds 121,900$ Spain =  $\pounds 84,000 + 5\% = \pounds 88,200$  **Step 2** – Calculate the country that has the most managers who can buy shares This is the country with the largest number of male and female managers United States = 250 + 290 = 540

Thus the correct answer is (C) Germany, United States



Jackons and Simpson co. Sincetor Salaries				
Country of Operations	Director Salary average for this year (£)	Budget Increase for next year (%)		
United Kingdom	92,000	4		
France	94,500	8		
Germany	118,000	6		
United States	115,000	6		
Spain	84,000	5		

#### **Q19** Put the countries in order of decreasing numbers of managers.

- (A) ) United States, Spain, Germany, France, United Kingdom
- (B) Spain, United States, Germany, France, United Kingdom
- (C) ) United States, Germany, Spain, United Kingdom, France
- (D) ) United States, Germany, Spain, France, United Kingdom

The information that we need is shown in the two pie charts.

Step 1 - Calculate the total number of male and female managers working in each country, as follows: United Kingdom = 160 + 180 = 340France = 175 + 210 = 385Germany = 245 + 230 = 475United States = 250 + 290 = 540Spain = 225 + 240 = 465

Thus the correct answer is (D) United States, Germany, Spain, France, United Kingdom



	1	
Country of Operations	Director Salary average for this year (£)	Budget Increase for next year (%)
United Kingdom	92,000	4
France	94,500	8
Germany	118,000	6
United States	115,000	6
Spain	84,000	5

# **Q20** Which two countries have the same absolute difference in the number of female and male managers?

- (A) ) United Kingdom and United States
- (B) ) Germany and Spain
- (C) ) Germany and France
- (D) France and Spain

The information that we need is shown in the two pie-charts.

**Step 1** - Calculate the difference in female and male managers for each country, as shown in the following table (with the answers marked in bold):

	Female	Male	
	Managers	Managers	Difference
United			
Kingdom	160	180	20
France	175	210	35
Germany	245	230	15
United			
States	250	290	40
Spain	225	240	15

Thus the correct answer is (B) Germany and Spain

	Marketing	Finance	Research	Sales	HR
Full-time employee	34	45	35	52	56
Part-time employee	12	21	14	15	20
Freelance employee	20	32	11	24	38

Shevinshaw's Ltd staff numbers by function		
	Previous Year	Next Year Projection
Marketing	62	76
Finance	104	90
Research	74	72
Sales	82	94
HR	122	96

- **Q21** The HR Director at Shevinshaw's Ltd conducts a survey. An eighth of the fulltime HR employees state that they would prefer to work part-time. If this occurred and other staff numbers remained the same, what would be the total number of part-time employees for this year?
  - (A) 37
  - (B) 89
  - (C) 27
  - (D) ) 56

The information that we need is shown in the graph Staff numbers by function.

**Step 1** - An eighth of the full-time HR employees =  $1/8 \times 56 = 7$ 

**Step 2** - Total part-time workers = previous total part-time employees + 7. 12 + 21 + 14 + 15 + 20 (+ 7) = 89.

Thus the correct answer is (B) 89

	Marketing	Finance	Research	Sales	HR
Full-time employee	34	45	35	52	56
Part-time employee	12	21	14	15	20
Freelance employee	20	32	11	24	38

Shevinshaw's Ltd staff numbers by function			
	Previous Year	Next Year Projection	
Marketing	62	76	
Finance	104	90	
Research	74	72	
Sales	82	94	
HR	122	96	

## Q22 Which function is forecast to lose the same number of employees as it lost

last year?

(A) ) None of these

(B) Finance

(C) ) Research

(D) Sales

The information that we need is shown in both the graph and the table Shevinshaw's Ltd Staff Numbers by Function.

**Step 1** - The total employee numbers for the current year need to be calculated, as follows (next year's projections are shown in brackets): Marketing = 20 + 12 + 34 = 66 (76) Finance = 32 + 21 + 45 = 98 (90) Research = 11 + 14 + 35 = 60 (72) Sales = 24 + 15 + 52 = 91 (94) HR = 38 + 20 + 56 = 114 (96)

**Step 2** - Comparing these to the previous year's employee numbers shown in the table, none of the functions is forecast to lose the same number of employees as it lost last year.

Thus the correct answer is (A) None of these

	Marketing	Finance	Research	Sales	HR
Full-time employee	34	45	35	52	56
Part-time employee	12	21	14	15	20
Freelance employee	20	32	11	24	38

Shevinshaw's Ltd staff numbers by function			
	Previous Year	Next Year Projection	
Marketing	62	76	
Finance	104	90	
Research	74	72	
Sales	82	94	
HR	122	96	

# **Q23** Which function has the lowest ratio of full-time employees compared to part-

time employees and freelance employees combined?

(A) Marketing(B) Finance

(C) Research

(D) HR

(-)....

The information that we need is shown in the graph. The calculations for each function are shown in the table below:

	Marketing	Finance	Research	Sales	HR
Step 1 – Full-time employees total	34	45	35	52	56
Step 2 - Part-time and freelance total	32	53	25	39	58
Step 3 - Full-time / Part-time and					
freelance total	1.06	0.84	1.4	1.33	0.97

Thus the correct answer is (B) Finance

	Marketing	Finance	Research	Sales	HR
Full-time employee	34	45	35	52	56
Part-time employee	12	21	14	15	20
Freelance employee	20	32	11	24	38

Shevinshaw's Ltd staff numbers by function		
	Previous Year	Next Year Projection
Marketing	62	76
Finance	104	90
Research	74	72
Sales	82	94
HR	122	96

# Q24 Which of the following statements is true?

- (A) ) Finance has the most employees
- (B) ) Total Sales employees outnumber total HR
- (C) ) Research has the most employees
- (D) HR has the most freelance employees

The information that we need is shown in the table attached to the graph.

**Step 1** - Go through each option to test if it is true or false. Only the last option is true; HR has the highest number of freelance (38) and full-time employees (56).

Thus the correct answer is (D) HR has the highest number of freelance and full-time employees

	Marketing	Finance	Research	Sales	HR
Full-time employee	34	45	35	52	56
Part-time employee	12	21	14	15	20
Freelance employee	20	32	11	24	38

Shevinshaw's Ltd staff numbers by function		
	Previous Year	Next Year Projection
Marketing	62	76
Finance	104	90
Research	74	72
Sales	82	94
HR	122	96

# Q25 Weekend overtime is paid at a rate of double pay for Marketing and

Research employees, with other employees receiving time and a half. Which function will work the second highest number of overtime hours – assuming that each employee works 8 days per year overtime – next year?

- (A) Research
- (B) Marketing
- (C) Finance
- (D) Sales

The information that we need is shown in the table Shevinshaw's Ltd Staff Numbers by Function.

**Step 1** - The number of days worked overtime each year is irrelevant since this is the same for each employee. Another distracter in the question is the overtime rate of pay. The question is actually asking for the department with the second highest number of employees. The table below shows the projected staff numbers for next year and the second highest number of employees is shown in bold;

	Projection for next Year
Marketing	76
Finance	90
Research	72
Sales	94
HR	96

Thus the correct answer is (D) Sales



Property type	Average price (£) - end of June
Studio flat	£140,000
2-bedroom flat	£208,000
3-bedroom flat	£260,000
4-bedroom house	£365,000
5-bedroom house	£450,000

Q26 In which month shown did house prices change the most, and the least,

respectively?

- (A) March, May
- (B) May, January
- (C) May, March
- (D) March, January

The information that we need is shown in the graph House price inflation.

**Step 1** - The most and the least changes in house price are shown by the highest (2.4% in March) and the lowest (0.4% in January) rates of inflation. This question can be done simply by inspection of the graph and is one of the easier questions.

Thus the correct answer is (D) March, January



Property type	Average price $(f)$ – end of June
Studio flat	£140,000
2-bedroom flat	£208,000
3-bedroom flat	£260,000
4-bedroom house	£365,000
5-bedroom house	£450,000

## **Q27** Which two property prices are in the ratio of 4:5?

- (A) 4-bedroom house: 3-bedroom flat
- (B) 2-bedroom flat: studio flat
- (C) Studio flat: 2-bedroom flat
- (D) ) 2-bedroom flat: 3-bedroom flat

The information that we need is shown in the Property type table.

**Step 1** - The 4:5 ratio needs to be tested on each of the prices given i.e. what the "other" property price would be if it was 4/5ths of the price (except the lowest price 2-bedroom flat).

2-bedroom flat	£208,000 x 4/5 =	£166,400
3-bedroom flat	£260,000 x 4/5 =	$\pounds 208,000 = \cos t \text{ of } 2\text{-bedroom flat}$
4-bedroom house	£365,000 x 4/5 =	£292,000
5-bedroom house	£450,000 x 4/5 =	£360,000

Thus the correct answer is (D) 2-bedroom flat: 3-bedroom flat



Property type	Average price $(f)$ – end of June
Studio flat	£140,000
2-bedroom flat	£208,000
3-bedroom flat	£260,000
4-bedroom house	£365,000
5-bedroom house	£450,000

Q28 At the end of June, a property speculator buys three 2-bedroom flats at the

average price and rents each one out at £900 profit per month. If she sells the properties eighteen months later with house prices having risen 15% since purchase, how much profit, before costs, has she made?

(A) £140,850
(B) £165,600
(C) £142,200
(D) £48,600

The information that we need is shown in the table Property type.

**Step 1** – Calculate the increase in property value £208,000 x 15/100 x 3 = £93,600

**Step 2** – Calculate the rental income £900 x 3 x 18 = £48,600

**Step 3** – Calculate the total profit £93,600 + £48,600 = £142,200

Thus the correct answer is (C) £142,200



Property type	Average price (£) - end of June
Studio flat	£140,000
2-bedroom flat	£208,000
3-bedroom flat	£260,000
4-bedroom house	£365,000
5-bedroom house	£450,000

Q29 If the cost of a 4-bedroom house continues at the same monthly rate of

inflation as July, what will the cost be at the end of October?

(A) £385,522
(B) £381,300
(C) £381,327
(D) £381,237

The information that we need is shown in both the graph and the table.

**Step 1** - Monthly rate of inflation (July) = 1.1% = Aug, Sept and Oct rate of inflation Calculate the monthly increase, as follows: Price (end of June) = £365,000 Price (end of July) = £365,000 x 1.011 = £369,015 Price (end of August) = £369,015 x 1.011 = £373,074 Price (end of Sept) = £373,074 x 1.011 = £377,178 Price (end of Oct) = £377,178 x 1.011 = £381,327

Thus the correct answer is (C) £381,327



Property type	Average price $(f)$ – end of June
Studio flat	£140,000
2-bedroom flat	£208,000
3-bedroom flat	£260,000
4-bedroom house	£365,000
5-bedroom house	£450,000

**Q30** If a newly decorated studio flat was worth £141,400 at the start of the year, what was its value at the end of February?

(A) £141,679
(B) £142,000
(C) £140,834
(D) £139,679

The information that we need is shown in both the graph and the table.

**Step 1** - Price at the end of Jan =  $\pounds$ 141,400 decrease by 0.4% =  $\pounds$ 140,834 Price at the end of Feb =  $\pounds$ 140,834 increase by 0.6% =  $\pounds$ 141,679.

Or you could just enter straight into your calculator: 141400 x (0.996) x (1.006) = 141679.4

Thus the correct answer is (A) £141,679

# NUMERICAL REASONING TEST 9

# Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. The test will start on the next page.

		Sales (£millions)									
	US (Jan-June)	US (July-Dec)	Annual US Sales Target	EU (Jan-June)	EU (July-Dec)	Annual EU Sales Target	Worldwide Sales (Jan-Dec)				
Product A	54.5	50.5	110	90.5	91.4	180	320				
Product B	61.1	59.2	120	72.2	77.8	160	300				
Product C	60.5	58	120	88	92.2	180	330				
Product D	76.5	74.1	150	105.3	98.2	200	380				
Product E	72.7	78.2	150	89.2	94.8	190	350				
	Leales tax:	24% on the	a first £120	million of a		horoafter					

US annual sales tax: 24% on the first £130 million of sales, 0% thereafter. EU annual sales tax: 22% on all sales.

Q1 If worldwide sales comprise US sales, EU sales and Far Eastern sales,

which products had the highest annual Far Eastern Sales?

- (A) Product A
- (B) Product B
- (C) Product C
- (D) Product D
- (E) Product E

Step 1 - Sum the half-yearly US and the EU sales to get the annual sales for each product:

	US annual sales	EU annual sales	US annual sales + EU annual sales
Product A	105	181.9	286.9
Product B	120.3	150	270.3
Product C	118.5	180.2	298.7
Product D	150.6	203.5	354.1
Product E	150.9	184	334.9

**Step 2** – Calculate Far Eastern sales for each product (= worldwide sales - US annual sales + EU annual sales)

Product A	320 - 286.9 = 33.1
Product B	300 - 270.3 = 29.7
Product C	330 - 298.7 = 31.3
Product D	380 - 354.1 = 25.9
Product E	350 - 334.9 = 15.1

**Tip:** in practice, when the time is ticking, you wouldn't bother writing down the sums; you'd just enter the numbers for each product straight into your calculator and write down the Far Eastern Sales. You're also less likely to make a data-entry mistake this way.

Thus the correct answer is (A) Product A

	Sales (£millions)									
	US	US	Annual US Sales	EU	EU	Annual EU Sales	Worldwide Sales			
	(Jan-June)	(July-Dec)	Target	(Jan-June)	(July-Dec)	Target	(Jan-Dec)			
Product A	54.5	50.5	110	90.5	91.4	180	320			
Product B	61.1	59.2	120	72.2	77.8	160	300			
Product C	60.5	58	120	88	92.2	180	330			
Product D	76.5	74.1	150	105.3	98.2	200	380			
Product E	72.7	78.2	150	89.2	94.8	190	350			
US annua	l sales tax:	24% on the	e first £130	million of s	ales, 0% t	hereafter.				

EU annual sales tax: 22% on all sales.

Q2 For the five products combined there was a difference between total annual

Sales and the total annual Sales Target. How did this difference compare for the US and the EU?

 $\begin{array}{l} (A) \ ) \ \pounds 27.1 \ million \ (US); \ \pounds 25.8 \ million \ (EU) \\ (B) \ ) \ \pounds 638.3 \ million \ (US); \ \pounds 908.2 \ million \ (EU) \\ (C) \ ) \ \pounds 4.7 \ million \ (US); \ \pounds 10.4 \ million \ (EU) \\ (D) \ ) \ \pounds 271.7 \ million \ (US); \ \pounds 258.2 \ million \ (EU) \\ \end{array}$ 

(E) ) Can't tell

**Step 1** – Sum the Jan-June sales (US) and the July-Dec sales (US)  $325.3 + 320 = \pounds 645.3$  million

**Step 2** – Calculate the difference compared to the US target (£650 million)  $650-645.3 = \pounds 4.7$  million

**Step 3** – Sum the Jan-June (European) and the July-Dec sales (EU) 445.2 + 454.4 = £899.6 million

**Step 4** – Calculate the difference compared to the European target (£910 million)  $910 - 899.6 = \pm 10.4$  million

**Tip** - In this question, it would have been possible to answer the question after working out just the US difference, but this is often not the case.

Thus the correct answer is (C) £4.7 million (US); £10.4 million (EU)

	Sales (£millions)										
	US	US	Annual US	EU	EU	Annual EU	Worldwide				
	(Jan-June)	(July-Dec)	Sales Target	(Jan-June)	(July-Dec)	Sales Target	Sales (Jan-Dec)				
Product A	54.5	50.5	110	90.5	91.4	180	320				
Product B	61.1	59.2	120	72.2	77.8	160	300				
Product C	60.5	58	120	88	92.2	180	330				
Product D	76.5	74.1	150	105.3	98.2	200	380				
Product E	72.7	78.2	150	89.2	94.8	190	350				
US annua	l sales tax:	24% on the	∋ first £130	million of s	ales, 0% t	hereafter.					

EU annual sales tax: 22% on all sales.

Q3 If the annual EU sales for Products B and C both comprise online: offline

sales in a ratio of 2:3 then what are the online EU sales for Products B and C combined?

(A) £198,120,000
(B) £19,812,000
(C) £13,208,000
(D) £132,080,000
(E) None of These

**Step 1** – Calculate the EU sales for Products B and C 88.0 + 92.2 + 72.2 + 77.8 = 330.2 (£million)

**Step 2** – Use the ratio to find online sales. online: offline = 2:3 330.2 = 2x + 3x = 5xx = 330.2/5 = 66.04online sales = 2x = 132.08

Tip - In practice it's quicker to just multiply 330.2 by (2/5) to obtain the ratio.

Thus the correct answer is (D) £132,080,000

	Sales (£millions)										
	US	US	Annual US Sales	EU	EU	Annual EU Sales	Worldwide Sales				
	(Jan-June)	(July-Dec)	Target	(Jan-June)	(July-Dec)	Target	(Jan-Dec)				
Product A	54.5	50.5	110	90.5	91.4	180	320				
Product B	61.1	59.2	120	72.2	77.8	160	300				
Product C	60.5	58	120	88	92.2	180	330				
Product D	76.5	74.1	150	105.3	98.2	200	380				
Product E	72.7	78.2	150	89.2	94.8	190	350				
US annua	l sales tax:	24% on the	e first £130	million of s	ales. 0% t	hereafter.					

US annual sales tax: 24% on the first £130 million of sales, 0% thereafter. EU annual sales tax: 22% on all sales.

# **Q4** How much US and EU annual sales tax is due for Products B, C and D combined (to the nearest £million)?

- (A) £244 million
- (B) £211 million
- (C) £149 million
- (D) £243 million
- (E) £120 million

#### Step 1 - Calculate the US sales tax for Products B, C, D combined.

	US annual sales	US Sales tax on first £130 million
Products B,	120.3 + 118.5 + 150.6 = 389.4	
C, D		130 x 0.24 = 31.2 (£million)
Total	US sales $tax = £31.2$ million	

#### Step 2 - Calculate the European sales tax

	EU annual sales	EU sales tax
Products B, C, D	150 + 180.2 + 203.5 = 533.7	533.7 x 0.22 = 117.414 (£million)
Total EU s	sales tax = $\pounds117.414$ million	

**Step 3** – Calculate the total sales tax 31.2 + 117.414 = 148.614

**Tip -** Notice as long as you check the US sales are over £130 million, you don't actually have to calculate the total because there is no tax on sales over £130 million.

Thus the correct answer is (C) £149 million

	Sales (£millions)									
	US (Jan-June)	US (July-Dec)	Annual US Sales Target	EU (Jan-June)	EU (July-Dec)	Annual EU Sales Target	Worldwide Sales (Jan-Dec)			
Product A	54.5	50.5	110	90.5	91.4	180	320			
Product B	61.1	59.2	120	72.2	77.8	160	300			
Product C	60.5	58	120	88	92.2	180	330			
Product D	76.5	74.1	150	105.3	98.2	200	380			
Product E	72.7	78.2	150	89.2	94.8	190	350			
110		0.407	C 1 0100		0.07					

US annual sales tax: 24% on the first £130 million of sales, 0% thereafter. EU annual sales tax: 22% on all sales.

## **Q5** Which of the following represents the smallest amount?

- (A) Product B's change in EU sales between Jan-June and July-Dec
- (B) 7% of Product D's US sales (Jan-June)
- (C) Product E's change in US sales between Jan-June and July-Dec
- (D) Average US Product A sales per month (July-Dec)
- (E) Average US Product C sales per month (Jan-June)

Step 1 - Calculate each figure as follows;

 $77.8 - 72.2 = \pounds 5.6$  million  $76.5 \times 0.07 = \pounds 5.355$  million  $78.2 - 72.7 = \pounds 5.5$  million  $50.5 / 6 = \pounds 8.42$  million 60.5 / 6 = 10.08 million

*Tip:* Remember to quickly re-scan the question because some people will put down the LARGEST value (E) not the SMALLEST (B).

Thus the correct answer is (B) 7% of Product D's US sales (Jan-June)

Share	Dividend paid (pence per Company Share)	Previous Day's Company Value* <i>(£million)</i>	Total Number of Company Shares <i>(million)</i>	Current Price Per Share <i>(£)</i>	Previous share Low (pence)	month's price: High <i>(pence)</i>
Relf plc	14	240	80	2.75	241	275
Studt Systems	8	171	55	3	238	352
Tombe	10	840	460	1.85	170	203
Xan Inc.	15	28	12	2.28	218	249
IWE Ltd	5	200	114	1.48	160	178

**Q6** A rights issue brings an additional 10% of Studt Systems shares to the

market. If the current price per share drops by 8%, what is Studt Systems' new company value (to the nearest £million)?

(A) £166 million
(B) £167 million
(C) £16.6 million
(D) £1,670,000
(E) £169 million

**Step 1** – Calculate the new number of company shares  $55 \times 110\% = 60.5$  million shares

**Step 2** – Calculate the new price 300 x 92% = £2.76

**Step 3** – Calculate the Company Value  $\pounds 2.76 \times 60.5$  million =  $\pounds 166.98$  million =  $\pounds 167$  million (to the nearest million)

Thus the correct answer is (B) £167 million

Share	Dividend paid (pence per Company Share)	Previous Day's Company Value* <i>(Emillion)</i>	Total Number of Company Shares <i>(million)</i>	Current Price Per Share <i>(£)</i>	Previous share Low (pence)	month's price: High <i>(pence)</i>
Relf plc	14	240	80	2.75	241	275
Studt Systems	8	171	55	3	238	352
Tombe	10	840	460	1.85	170	203
Xan Inc.	15	28	12	2.28	218	249
IWE Ltd	5	200	114	1.48	160	178

Q7 At current prices, if the owner of 150,000 Studt Systems shares collected the

dividend then sold the shares, how many Tombe shares could they buy with the proceeds (to the nearest 10,000)?

(A) 290,000
(B) 280,000
(C) 270,000
(D) 260,000
(E) 250,000

**Step 1** – Calculate the Company Share value including the dividend  $150,000 \times (3.00 + 0.08) = \pounds 462,000$ 

**Step 2** – Calculate the number of Tombe shares 462,000/1.85 = 249,730

Thus the correct answer is (E) 250,000

Share	Dividend paid (pence per Company Share)	Previous Day's Company Value* <i>(£million)</i>	Total Number of Company Shares <i>(million)</i>	Current Price Per Share <i>(£)</i>	Previous share Low (pence)	month's price: High <i>(pence)</i>
Relf plc	14	240	80	2.75	241	275
Studt Systems	8	171	55	3	238	352
Tombe	10	840	460	1.85	170	203
Xan Inc.	15	28	12	2.28	218	249
IWE Ltd	5	200	114	1.48	160	178

**Q8** Which share has changed in price by the largest amount since the previous

day?

- (A) Relf plc
- (B) Studt Systems
- (C) Xan Inc
- (D) IWE Ltd
- (E) Cannot Say

**Step 1** – Calculate the Previous Day's Price for each share listed as an answer option. Previous Day's Price = Previous Day's Company Value / Total number of Company Shares.

Relf plc= 240 / 80 = £3.00Studt Systems = 171 / 55 = £3.11Xan Inc. = 28 / 12 = £2.33IWE Ltd = 200 / 114 = £1.75

**Step 2** – Calculate the difference with the Current price for each share, as follows; Relf plc = 3.00 - 2.75 = 0.25Studt Systems = 3.11 - 3.00 = 0.11Xan Inc. = 2.33 - 2.28 = 0.05IWE Ltd = 1.75 - 1.48 = 0.27

Thus the correct answer is (D) IWE Ltd

Share	Dividend paid (pence per Company Share)	Previous Day's Company Value* <i>(£million)</i>	Total Number of Company Shares <i>(million)</i>	Current Price Per Share <i>(£)</i>	Previous share Low (pence)	month's price: High <i>(pence)</i>
Relf plc	14	240	80	2.75	241	275
Studt Systems	8	171	55	3	238	352
Tombe	10	840	460	1.85	170	203
Xan Inc.	15	28	12	2.28	218	249
IWE Ltd	5	200	114	1.48	160	178

Q9 A day trader bought 50,000 Tombe shares at last month's low, received the

Tombe dividend and then sold all these shares at last month's high. What was the approximate percentage gain or loss?

- (A) 25.3%profit
- (B) 19.4%profit
- (C) 25.3% loss
- (D) 20.5%loss
- (E) 20.5% profit

**Step 1** – Calculate the cost to buy the shares 50,000 x £1.70 = £85,000

**Step 2** – Calculate the profit from the change in share price  $\pounds 2.03 \times 50,000 = \pounds 101,500$  $\pounds 101,500 - \pounds 85,000 = \pounds 16,500$ 

**Step 3** – Add the dividend £16,500 + (0.10 x 50,000) = £21,500

**Step 4** – Calculate the % 21,500/85,000 = 25.3%

*Tip:* notice that one of the multiple choice options is the answer if you forgot to add the dividend (19.4% profit). This is called a distractor.

Thus the correct answer is (A) 25.3% profit

Share	Dividend paid (pence per Company Share)	Previous Day's Company Value* <i>(£million)</i>	Total Number of Company Shares (million)	Current Price Per Share <i>(£)</i>	Previous share Low (pence)	month's price: High <i>(pence)</i>
Relf plc	14	240	80	2.75	241	275
Studt Systems	8	171	55	3	238	352
Tombe	10	840	460	1.85	170	203
Xan Inc.	15	28	12	2.28	218	249
IWE Ltd	5	200	114	1.48	160	178

Q10 A trader has £185,000 to invest and decides to invest this money equally

across the 5 shares shown. How many Tombe and IWE Ltd shares does the trader purchase at current prices?

- (A) 2,000 Tombe shares; 2,250 IWE Ltd shares
- (B) 20,000 Tombe shares; 225 IWE Ltd shares
- (C) 20,000 Tombe shares; 25,000 IWE Ltd shares
- (D) 2,000 Tombe shares; 225,000 IWE Ltd shares
- (E) None of these

**Step 1** – Calculate the amount invested per share  $\pounds 185,000/5 = \pounds 37,000$ 

**Step 2** – Calculate the number of Tombe shares 37,000/1.85 =20,000

**Step 3** – Calculate the number of IWE Ltd shares 37 000/1.48 = 25,000

Thus the correct answer is (C) 20,000 Tombe shares; 25,000 IWE Ltd shares
### Number of new mobile phone packages sold (over the previous 12 months)

IK-Connections Ltd	Platinum	Gold	Silver	Bronze
Central Region stores	4,540	4,854	5,083	5,425
Northern Region stores	4,725	5,005	5,382	5,846
Southern Region stores	4,584	5,123	5,759	5,428
Western Region stores	4,682	4,759	4,956	4,869
Eastern Region stores	4,884	5,256	4,982	4,592
Price of package (per month)	£40	£35	£30	£25

**Q11** Which regional store sold the second highest number of new mobile phone

contracts for the Platinum and Gold packages combined (over the previous 12 months)?

- (A) Central
- (B) Northern
- (C) Southern
- (D) Eastern
- (E) Western

**Step 1** - Calculate the combined Platinum and Gold packages for each of IK-Connections Ltd's regional stores:

Platinum package	Gold package	Total
4,540	4,854	9,394
4,725	5,005	9,730
4,584	5,123	9,707
4,682	4,759	9,441
4,884	5,256	10,140

Thus the correct answer is (B) Northern

	Number of ne (over the pre	ew mobile p evious 12 mo	none packag onths)	es sola
IK-Connections Ltd	Platinum	Gold	Silver	Bronze
Central Region stores	4,540	4,854	5,083	5,425
Northern Region stores	4,725	5,005	5,382	5,846
Southern Region stores	4,584	5,123	5,759	5,428
Western Region stores	4,682	4,759	4,956	4,869
Eastern Region stores	4,884	5,256	4,982	4,592
Price of package (per month)	£40	£35	£30	£25

. ..

. .

Q12 If the price of each package was a one-off payment and not a monthly charge,

what would be the difference in revenue between the package with the lowest number of sales and the package with the highest number of sales over the 12 month period, across all regions combined?

(A) £151,740
(B) £101,750
(C) £15,400
(D) £5,747
(E) Cannot Say

**Step 1** – Find the highest selling and the lowest selling number of new mobile phone contracts by totaling sales across all 5 regional stores for each package

	Platinum package	Gold package	Silver package	Bronze package
Central	4,540	4,854	5,083	5,425
Northern	4,725	5,005	5,382	5,846
Southern	4,584	5, 123	5,759	5,428
Western	4,682	4,759	4,956	4,869
Eastern	4,884	5,256	4,982	4,592
TOTAL	23,415	24,997	26,162	26,160

**Step 2** – Calculate the difference in sale values between the Silver and Platinum packages Silver package =  $26,162 \times £30 = £784,860$ Platinum package =  $23,415 \times £40 = £936,600$ Difference = £936,600 - £784,860 = £151,740

Thus the correct answer is (A) £151,740

Number of new mobile phone packages sold
(over the previous 12 months)

IK-Connections Ltd	Platinum	Gold	Silver	Bronze
Central Region stores	4,540	4,854	5,083	5,425
Northern Region stores	4,725	5,005	5,382	5,846
Southern Region stores	4,584	5,123	5,759	5,428
Western Region stores	4,682	4,759	4,956	4,869
Eastern Region stores	4,884	5,256	4,982	4,592
Price of package (per month)	£40	£35	£30	£25

Q13 What is the difference in average monthly sale values between the most and

the least expensive packages? Referring to the initial cost of the package only and not subsequent monthly payments.

- (A) £1,850
- (B) £2,745
- (C) £23,550
- (D) £27,450
- (E) Cannot Say

**Step 1** – The table shows the most (£40 per month) and least expensive packages (£25 per month)

Step 2 - Calculate the difference in monthly average monthly packages sold

	Platinum package	Bronze package
Central	4,540	5,425
Northern	4,725	5,846
Southern	4,584	5,428
Western	4,682	4,869
Eastern	4,884	4,592
ANNUAL TOTAL	23,415	26,160
MONTHLY AVERAGE	1951.25	2180
VALUE	1951.25 x £40 = £78,050	2180 x £25 = £54,500

 $Difference = \pounds78,050 - \pounds54,500 = \pounds23,550$ 

Thus the correct answer is (C) £23,550

	Number of ne (over the pre	ew mobile p evious 12 mo	none packag onths)	es sold
IK–Connections Ltd	Platinum	Gold	Silver	Bronze
Central Region stores	4,540	4,854	5,083	5,425
Northern Region stores	4,725	5,005	5,382	5,846
Southern Region stores	4,584	5,123	5,759	5,428
Western Region stores	4,682	4,759	4,956	4,869
Eastern Region stores	4,884	5,256	4,982	4,592
Price of package (per month)	£40	£35	£30	£25

**Q14** Assuming the only costs are those of the monthly package, what was the annual cost saving for a customer who switched from the Gold to the Bronze package?

- (A) £10
- (B) £50
- (C) £75
- (D) £120
- (E) £180

This is a relatively easy one. **Step 1** – Calculate the monthly difference  $\pounds 35 - \pounds 25 = \pounds 10$ 

**Step 2** – Calculate the annual difference  $\pounds 10 \times 12 = \pounds 120$ 

Thus the correct answer is (D) £120

	Number of ne (over the pre	ew mobile p evious 12 mo	hone packag onths)	es sold
IK-Connections Ltd	Platinum	Gold	Silver	Bronze
Central Region stores	4,540	4,854	5,083	5,425
Northern Region stores	4,725	5,005	5,382	5,846
Southern Region stores	4,584	5,123	5,759	5,428
Western Region stores	4,682	4,759	4,956	4,869
Eastern Region stores	4,884	5,256	4,982	4,592
Price of package (per month)	£40	£35	£30	£25

- **Q15** Over the next twelve months the number of Bronze package sales increases by 12.5% and 25% for the Eastern and Southern regional stores respectively, whilst other sales remain the same. What are the total Bronze package sales for the next twelve months across all IK-Connections stores?
  - (A) 28,091
  - (B) 28,951
  - (C) 30,091
  - (D) 31,951
  - (E) 30,020

**Step 1** – Calculate the increase for the Eastern and Southern regional stores, then add the number of packages sold for the other 3 regional stores, as shown below;

	Original Bronze package	Increase	New Value
Central			5,425
Northern			5,846
Southern	5,428	5,428 x 125% = 6,785	6,785
Western			4,869
Eastern	4,592	4,592 x 112.5% = 5,166	5,166
			Total = 28,091

Thus the correct answer is (A) 28,091





# **Q16** What is the average quarterly turnover for Syballe Sons compared to the Competitor Consultancy Firm across Quarters 1-4?

- (A) £90,000 Syballe Sons; £197,500 Competitor Consultancy Firm
- (B) £96,000 Syballe Sons; £200,000 Competitor Consultancy Firm
- (C) £90,000 Syballe Sons; £25,750 Competitor Consultancy Firm
- (D) £90,000 Syballe Sons; £19,750 Competitor Consultancy Firm
- (E) £96,000 Syballe & Sons; £20,000 Competitor Consultancy Firm

**Step 1** – Calculate the average turnover for Syballe Sons  $(11 + 8 + 7 + 10)/4 = \text{\pounds}90,000$ 

**Step 1** – Calculate the average turnover for the Competitor Consultancy Firm  $(22 + 18 + 19 + 20)/4 = \pounds 197,500$ 

Thus the correct answer is (A) £90,000 Syballe Sons; £197,500 Competitor Consultancy Firm

Tip: be careful not to include data for Next Quarter, as the question asked for just Q1-4.





Q17 Between which two quarters was there the same percentage change in

turnover for both Syballe Sons and the Competitor Consultancy Firm?

- (A) Quarter 1 Quarter 2
- (B) Quarter 2 Quarter 3
- (C) Quarter 3 Quarter 4
- (D) Quarter 4 Next Quarter
- (E) Cannot Say

**Step 1** - Calculate the % change for each quarter for Syballe Sons and the Competitor Consultancy Firm

	% change for each quarter
Quarter 1 – Quarter 2	(11-8)/11 = 27.3%
Quarter 2 – Quarter 3	(8-7)/8 = 12.5%
Quarter 3 – Quarter 4	(7-10)/7 = 42.9%
Quarter 4 – Next Quarter	(10-12)/10=20%

Step 2 - Calculate the % increase for each quarter for the Competitor Consultancy Firm

Quarter 1 – Quarter 2	(22-18)/22 = 18.2%
Quarter 2 – Quarter 3	(18-19)/18 = 5.6%
Quarter 3 – Quarter 4	(19-20)/19 = 5.3%
Quarter 4 – Next Quarter	(24-20)/20=20%

**Tip**: In practice, the fastest way would be to enter into your calculator  $8 \div 11$  (Syballe's Q1-Q2 turnover), and see if the value on the screen changes when you enter  $18 \div 22$  (Competitor's Q1-Q2 turnover). Repeat for each quarter, and you get to Q4-Next Quarter.

Thus the correct answer is (D) Quarter 4 – Next Quarter





Q18 The quarter immediately following the period shown will see Syballe Sons'

cost and turnover both increase by the same absolute amounts as between Quarter 4 and Next Quarter. What will be the difference between their turnover and costs in that following quarter?

(A) No difference

(B) £1,500

- (C) £1,000
- (D) £500
- (E) £2,000

In £10,000s we have:

Step 1 – Turnover increases by 2, costs increase by 3.

**Step 2** – Add these to the last data shown in the graph and we have turnover of 2 + 12 = 14 and costs of 3 + 11 = 14.

Thus the correct answer is (A) No difference





Q19 In the Next Quarter a new competitor enters the market and takes 1/10<sup>th</sup> of

Syballe Sons' turnover, as well as 1/8<sup>th</sup> of the Competitor Consultancy's turnover. What is the turnover for this new competitor in the Next Quarter?

(A) £14,000
(B) £16,000
(C) £42,000
(D) £168,000
(E) £179,000

**Step 1** – Add 1/10<sup>th</sup> of Syballe Sons turnover to  $1/8^{th}$  of their Competitor Consultancy's turnover  $(12 \times 1/10^{th}) + (24 \times 1/8^{th}) = 1.2 + 3 = 4.2$ 

Step 2 - Convert to £10,000s

Thus the correct answer is (C) £42,000





Q20 If Gross Profit is Turnover minus Costs, what was the absolute difference in

the Gross Profit between Syballe Sons and the Competitor Consultancy Firm for Quarters 1-4 inclusive?

(A) Can't Tell
(B) £110,000
(C) £147,000
(D) £47,000
(E) £11,000

**Step 1** – Calculate the Gross Profit for Syballe Sons for Quarters 1-4 (11 + 8 + 7 + 10) - (9 + 6 + 6 + 8) = 7 = £70,000

**Step 2** – Calculate the Gross Profit for the Competitor Consultancy Firm (22 + 18 + 19 + 20) - (13 + 15 + 17 + 16) = 18 = £180,000

**Step 3** – Calculate the difference £70,000 - £180,000 = £110,000 less

Thus the correct answer is (B) £110,000



	Total Gross Revenue * (£million)	Pre-Tax Profit (£million)	Earnings per share (pence)
2006	40	8.5	85
2007	42.7	8.7	104.7
2008	44.4	9	120
2009	50	9.6	120.3
2010 Projection	48.7	10.1	119.8

Q21 What was Brand 2's gross revenue in 2008?

(A) £10,000,000
(B) £4,440,000
(C) £44,400,000
(D) £9,100,000
(E) £100,000,000

**Step 1** – Refer to the table to obtain the Total Gross Revenue for 2008 (£44.4 million). Then refer to the graph to obtain the % of this figure that relates to Brand 2

**Step 2** – Calculate Brand 2's gross revenue in 2008  $\pounds$ 44.4 million x 10% =  $\pounds$ 4.44 million =  $\pounds$ 4,440,000

Thus the correct answer is (B) £4,440,000



	Total Gross Revenue * (£million)	Pre-Tax Profit (£million)	Earnings per share (pence)
2006	40	8.5	85
2007	42.7	8.7	104.7
2008	44.4	9	120
2009	50	9.6	120.3
2010	48.7	10.1	119.8
Projection			

**Q22** Which Brand's gross revenue has increased in value by the largest amount between 2006 and 2008?

- (A) Brand 1
- (B) Brand 2
- (C) Brand 3
- (D) Brand 4
- (E) Cannot Say

Step 1 - Calculate the Gross Revenue for each Brand in 2006 and 2008. In millions we have:

	Brand 1	Brand 2	Brand 3	Brand 4
2006	40 x 25% = 10	40 x 15% = 6	40 x 35% = 14	40 x 25% = 10
2008	44.4 x 30% =13.32	44.4 x 10% = 4.44	44.4 x 25% = 11.1	44.4 x 35% = 15.54

Step 2 - Calculate the change in Gross Revenue for each Brand in 2007-2009

	Brand 1	Brand 2	Brand 3	Brand 4
2006-2008	3.32	1.56 decrease	2.9 decrease	5.54 increase
	increase			

Thus the correct answer is (D) Brand 4



	Total Gross Revenue * (£million)	Pre-Tax Profit (£million)	Earnings per share (pence)
2006	40	8.5	85
2007	42.7	8.7	104.7
2008	44.4	9	120
2009	50	9.6	120.3
2010 Projection	48.7	10.1	119.8

**Q23** If Earnings per share = Pre-tax profit / Number of shares issued, how many

shares were issued in 2008 compared to 2006?

- (A) 2,500,000 less
- (B) 2,250,000 less
- (C) 25,000 more
- (D) 2,500,000 more
- (E) 250,000 less

**Step 1** – Calculate the Number of shares issued in 2008 Earnings per share = Pre-tax profit / Number of shares issued 1.2 = 9,000,000 / Number of shares issued Number of shares issued = 9,000,000 / 1.2 = 7,500,000

**Step 2** – Calculate the Number of shares issued in 2006 0.85 = 8,500,000 / Number of shares issued Number of shares issued = 8,500,000 / 0.85 = 10,000,000

**Step 3** – Calculate the difference 7,500,000 - 10,000,000 = 2,500,000 less

Thus the correct answer is (A) 2,500,000 less



	Total Gross Revenue * (£million)	Pre-Tax Profit (£million)	Earnings per share (pence)
2006	40	8.5	85
2007	42.7	8.7	104.7
2008	44.4	9	120
2009	50	9.6	120.3
2010	48.7	10.1	119.8
Projection			

Q24 For the average annual pre-tax profit (for the years 2007-2009) to equal the

average annual pre-tax profit (for the years 2007-2010), what must be the new 2010 Projection?

(A) £895,000
(B) £910,000
(C) £1,150,000
(D) £8,950,000
(E) £9,100,000

**Step 1** – Calculate the average annual Pre-tax profit between 2007-2009 (8.7 + 9.0 + 9.6)/3 = 9.1

**Step 2** – Create an equation where X = 2010 Projection and the average annual pre-tax profit (2007-2010) = 9.1

**Step 3** - 9.1 = (X + 8.7 + 9.0 + 9.6)/4 X = (9.1 x 4) - 8.7 - 9.0 - 9.6 = 9.1 million

Thus the correct answer is (E) £9,100,000



	Total Gross Revenue * (£million)	Pre-Tax Profit (£million)	Earnings per share (pence)
2006	40	8.5	85
2007	42.7	8.7	104.7
2008	44.4	9	120
2009	50	9.6	120.3
2010	48.7	10.1	119.8
Projection			

Q25 In which year was pre-tax profit less than 20% of total gross revenue?

- (A) 2006
- (B) 2007
- (C) 2008
- (D) 2009
- (E) None of these

Step 1 - Calculate the % of pre-tax profit for each year;

	Total Gross Revenue	Pre-Tax Profit	Pre-Tax profit/total gross revenue
2006	40	8.5	21.25%
2007	42.7	8.7	20.4%
2008	44.4	9.0	20.3%
2009	50	9.6	19.2%

Thus the correct answer is (D) 2009

	Average Earnings (Euros per head of the working population)	Male Population (millions)	Female Population (millions)	Working Population (% of total population)
Netherlands	34,000	8.9	9.1	55
Germany	29,000	<u>39.8</u>	40.2	50
France	30,000	31.1	31.4	48
Spain	25,000	24.2	23.8	45
UK	33,000	27.9	28.1	52

Q26 What are the total earnings for the working population in Spain?

- (A) 54 million Euros
- (B) 540 billion Euros
- (C) 540 million Euros
- (D) 54 billion Euros
- (E) Cannot Say

**Step 1** – Calculate the total Spanish population by adding the male and female population 24.2 + 23.8 = 48 million

**Step 2** - Calculate the total working Spanish population 48 million x 45% = 21.6 million

**Step 3** – Calculate the total earnings for the working population in Spain Average Earnings (Euros per head of the population) = 25,000 25,000 x 21.6 million = 540 billion Euros

Thus the correct answer is (B) 540 billion Euros

	Average Earnings (Euros per head of the working population)	Male Population (millions)	Female Population (millions)	Working Population (% of total population)
Netherlands	34,000	8.9	9.1	55
Germany	29,000	39.8	40.2	50
France	30,000	31.1	31.4	48
Spain	25,000	24.2	23.8	45
UK	33,000	27.9	28.1	52

Q27 If the annual birth rates for Germany and Spain are 5.4 births (per 500

population) and 6.4 births (per 500 population) respectively, what is the difference between the number of Spanish and German babies born each year?

- (A) 24,960 more Spanish babies
- (B) 100,000 more German babies
- (C) 249,600 more German babies
- (D) 1,233,000 more Spanish babies
- (E) 123,300 less Spanish babies

**Step 1** – Calculate the number of German births per year 39.8 + 40.2 = 80 million 5.4 x 80 million /500 = 864,000

**Step 2** – Calculate the number of Spanish births per year 24.2 + 23.8 = 48 million 6.4 x 48 million /500 = 614,400

**Step 3** – Calculate the difference 864,000 - 614,400 = 249,600

Thus the correct answer is (C) 249,600 more German babies

	Average Earnings (Euros per head of the working population)	Male Population (millions)	Female Population (millions)	Working Population (% of total population)
Netherlands	34,000	8.9	9.1	55
Germany	29,000	<u>39.8</u>	40.2	50
France	30,000	31.1	31.4	<mark>4</mark> 8
Spain	25,000	24.2	23.8	45
UK	33,000	27.9	28.1	52

Q28 Which of the following countries has a non-working population that is closest

in number to the UK's non-working population?

- (A) Netherlands
- (B) Germany
- (C) France
- (D) Spain
- (E) Cannot Say

**Step 1** - Calculate the populations for each country by adding the male and female population. Then calculate the non-working population for each country, including the UK, as shown below;

	Total Population	Non Working Population	
	(millions)	(% of total population)	
Netherlands	8.9 + 9.1 = 18	100 - 55 = 45%	45% x 18 = 8.1
Germany	39.8 + 40.2 = 80	100 - 50 = 50%	50% x 80 = 40
France	31.1 + 31.4 = 62.5	100 - 48 = 52%	52% x 62.5 = 32.5
Spain	24.2 + 23.8 = 48	100 - 45 = 55%	55% x 48 = 26.4
UK	27.9 +28.1 = 56	100 - 52 = 48%	48% x 56 = 26.88

Thus the correct answer is (D) Spain

	Average Earnings (Euros per head of the working population)	Male Population (millions)	Female Population (millions)	Working Population (% of total population)
Netherlands	34,000	8.9	9.1	55
Germany	29,000	39.8	40.2	50
France	30,000	31.1	31.4	<mark>4</mark> 8
Spain	25,000	24.2	23.8	45
UK	33,000	27.9	28.1	52

- **Q29** If the ratio of French unemployed in urban to rural areas is 7:8 and the French unemployment rate is 12% of the working population, how many French unemployed are there in urban areas?
  - (A) 1,050,000
    (B) 1,332,000
    (C) 1,680,000
    (D) 2,500,000
    (E) 373,200

**Step 1** – Calculate the total population 31.1 + 31.4 = 62.5 million

**Step 2** – Calculate the working population 62.5 x 48% = 30 million

**Step 3** – Apply the unemployment rate 30 million x 12% = 3.6 million

**Step 4** – Apply the urban to rural areas ratio 3.6 million = 7:8 Urban areas unemployed =  $3,600,000 \times 7/15 = 1,680,000$ 

Thus the correct answer is (C) 1,680,000

	Average Earnings (Euros per head of the working population)	Male Population (millions)	Female Population (millions)	Working Population (% of total population)
Netherlands	34,000	8.9	9.1	55
Germany	29,000	39.8	40.2	50
France	30,000	31.1	31.4	48
Spain	25,000	24.2	23.8	45
UK	33,000	27.9	28.1	52

Q30 If the ratio of France:Belgium average earnings per head of working

population is 2:5, then what is Belgium's average earnings in £, at an exchange rate of 1.15 Euros to the £ (to the nearest £100)?

(A) £124,000
(B) £86,000
(C) £86,300
(D) £124,800
(E) £65,200

**Step 1** – Apply the ratio 30,000: Belgian average earnings = 2:5 Belgian average earnings =  $(5 \times 30,000)/2 = \notin 75,000.$ 

**Step 2** – Convert into £ 75,000 ÷ 1.15 = 65,217.4 = £65,200 (to the nearest £100)

Thus the correct answer is (E) £65,200

## NUMERICAL REASONING TEST 10

### Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 

	Number of Employees				
Parent Company's 5 subsidiary companies	2005	2006	2007	2008	2009
Subsidiary 1	1,538	1,584	1,573	1,585	1,614
Subsidiary 2	1,107	1,084	1,060	1,068	962
Subsidiary 3	1,340	1,384	1,393	1,398	1,412
Subsidiary 4	1,505	1,495	1,528	1,548	1,583
Subsidiary 5	1,010	980	946	997	1,029
Parent company: Employees working part-time (%)	12.0	8.1	8.0	5.4	5.0

#### Q1 Between which three years was there an average of 1,553 employees for

one of the Subsidiary Companies?

- (A) ) 2005-2007 Subsidiary 1
- (B) ) 2006-2008 Subsidiary 1
- (C) ) 2007-2009 Subsidiary 4
- (D) ) 2007-2009 Subsidiary 1
- (E) ) None of these

**Step 1** – Looking at the employee totals there are only two Subsidiary Companies that could have an average of 1,553 employees across three years: Subsidiary Companies 1 and 4. The answer options include Subsidiary Companies 1 and 4, as well as (E) None of these.

**Step 2** - Calculate the average number of employees for answer options (A) - (D)2005-2007 Subsidiary 1 = 1,565 2006-2008 Subsidiary 1 = 1,581 2007-2009 Subsidiary 4 = 1,553 2007-2009 Subsidiary 1 = 1,591

Thus the correct answer is (C) 2007-2009 Subsidiary 4

	Number of Employees				
Parent Company's 5 subsidiary companies	2005	2006	2007	2008	2009
Subsidiary 1	1,538	1,584	1,573	1,585	1,614
Subsidiary 2	1,107	1,084	1,060	1,068	962
Subsidiary 3	1,340	1,384	1,393	1,398	1,412
Subsidiary 4	1,505	1,495	1,528	1,548	1,583
Subsidiary 5	1,010	980	946	997	1,029
Parent company: Employees working part-time (%)	12.0	8.1	8.0	5.4	5.0

**Q2** In 2008 subsidiary company 4 comprised 2 regions with double the number

of employees in one region compared to the other. If the ratio of male:female employees in the smaller region was 1:1.15, what was this region's number of male employees?

(A) 240
(B) 828
(C) 414
(D) 224

(D) 394

(E) 360

Step 1 – Calculate the number of employees in the smaller region 1,548/3= 516 employees

Step 2 – Apply the 1:1.15 Male: Female ratio 516/2.15 = 240 male employees

Thus the correct answer is (A) 240

	Number of Employees				
Parent Company's 5 subsidiary companies	2005	2006	2007	2008	2009
Subsidiary 1	1,538	1,584	1,573	1,585	1,614
Subsidiary 2	1,107	1,084	1,060	1,068	962
Subsidiary 3	1,340	1,384	1,393	1,398	1,412
Subsidiary 4	1,505	1,495	1,528	1,548	1,583
Subsidiary 5	1,010	980	946	997	1,029
Parent company: Employees working part-time (%)	12.0	8.1	8.0	5.4	5.0

Q31 in 15 of the parent company's part-time employees were managers in

2005, and 1 in 13 part-time employees were managers in 2007. What was the difference in the number of part-time managers in 2005 compared to 2007?

- (A) ) 14 less (B) 12 more
- (C) ) 12 less
- (D) ) 13 more
- (E) ) Cannot Say

		2005	2007
		1,538	1,573
		1,107	1,060
		1,340	1,393
		1,505	1,528
		1,010	946
Step 1	Total employees for each year =	6,500	6,500
Step 2	Part-time employees =	$6,500 \times 12\% = 780$	6,500 x 8% = 520
Step 3	Managers =	780 / 15 = 52	520 / 13 = 40

**Step 4** Difference = 52 - 40 = 12

Thus the correct answer is (B) 12 more

	Number of Employees				
Parent Company's 5 subsidiary companies	2005	2006	2007	2008	2009
Subsidiary 1	1,538	1,584	1,573	1,585	1,614
Subsidiary 2	1,107	1,084	1,060	1,068	962
Subsidiary 3	1,340	1,384	1,393	1,398	1,412
Subsidiary 4	1,505	1,495	1,528	1,548	1,583
Subsidiary 5	1,010	980	946	997	1,029
Parent company: Employees working part-time (%)	12.0	8.1	8.0	5.4	5.0

Q4 What % of the Parent Company's total employees worked for Subsidiary 5 in

2006 (to the nearest whole %)?

(A) 12%
(B) 10%
(C) 18%
(D) 15%
(E) 9%

**Step 1** - Calculate the total number of employees across all 5 Subsidiaries i.e. the Parent Company's number of employees = 6,527

Step 2 – Calculate the % of Subsidiary 5 employees 980/6527 = 15.01%

Thus the correct answer is (D) 15%

	Number of Employees				
Parent Company's 5 subsidiary companies	2005	2006	2007	2008	2009
Subsidiary 1	1,538	1,584	1,573	1,585	1,614
Subsidiary 2	1,107	1,084	1,060	1,068	962
Subsidiary 3	1,340	1,384	1,393	1,398	1,412
Subsidiary 4	1,505	1,495	1,528	1,548	1,583
Subsidiary 5	1,010	980	946	997	1,029
Parent company: Employees working part-time (%)	12.0	8.1	8.0	5.4	5.0

Q5 In 2009 what was the absolute difference between the Parent Company's

full-time employees and part-time employees (if Number of employees = Fulltime employees + part-time employees)?

(A) 6,270
(B) 90
(C) 4,733
(D) 6,600
(E) 5,940

**Step 1** – Calculate the total employees in 2009 1,614 + 962 + 1,412 + 1,583 + 1,029 = 6,600

**Step 2** – Calculate the number of full-time employees Number of employees = Full-time employees + part-time employees 6,600 = 100% = x% + 5%Full-time employees = 95%

**Step 3** – Calculate the difference in the % of part-time employees to full-time employees 95% - 5% = 90%

**Step 4** – Calculate the difference 6,600 x 90% = 5,940

Thus the correct answer is (E) 5,940

	COS	sτs		Sale price as
Laptop	Manufacturing	Design cost	UK Price	fraction of
model	cost (£)	(£)	(£)	price
Adelphi	165	60	400	1/2
Adele	140	90	350	3/4
Faze	120	60	380	2/5
Stunn	145	115	420	1/2
Brete	195	130	650	2/3

**Q6** For which laptop, or laptops, is the difference between the manufacturing cost and the design cost less than 20% of the manufacturing cost?

(A) Brete

(B) Stunn and Adelphi

(C) Adelphi

(D) Stunn

(E) ) None of these

**Step 1** - Calculate the % difference between the manufacturing cost and the design cost (relative to manufacturing cost) for each laptop as shown below:

Faze	(120 - 60)/120 = 50%
Brete	(195 - 130)/195 = 33%
Adele	(140 - 90)/140 = 36%
Stunn	(145 - 115)/145 = 21%
Adelphi	(165 - 60)/165 = 64%

Thus the correct answer is (E) None of these

	COS	TS		Sale price as
Laptop	Manufacturing	Design cost	UK Price	fraction of
model	cost (£)	(£)	(£)	price
Adelphi	165	60	400	1/2
Adele	140	90	350	3/4
Faze	120	60	380	2/5
Stunn	145	115	420	1/2
Brete	195	130	650	2/3

**Q7** Put the laptop models in order of increasing mark-up (Mark-up = Price - Costs).

- (A) Adele, Adelphi, Stunn, Faze, Brete
- (B) Adele, Stunn, Brete, Adelphi, Faze
- (C) Adele, Stunn, Adelphi, Faze, Brete
- (D) Stunn, Adele, Adelphi, Brete, Faze
- (E) Adele, Stunn, Adelphi, Brete, Faze

**Step 1** – For each laptop model calculate the total costs, then deduct this from the price, as shown below:

	Total Cost	Mark-up
Adelphi	165 + 60 = 225	400 - 225 = 175
Adele	140 + 90 = 230	350 - 230 = 120
Faze	120 + 60 = 180	380 - 180 = 200
Stunn	145 + 115 = 260	420 - 260 = 160
Brete	195 + 130 = 325	650 - 325 = 325

Thus the correct Answer is (C) Adele, Stunn, Adelphi, Faze, Brete

	COS	TS		Sale price as
Laptop	Manufacturing	Design cost	UK Price	fraction of
model	cost (£)	(£)	(£)	price
Adelphi	165	60	400	1/2
Adele	140	90	350	3/4
Faze	120	60	380	2/5
Stunn	145	115	420	1/2
Brete	195	130	650	2/3

**Q8** If the same number of each model was sold last month and total sales were £220,000, how many of each model were sold?

(A) 200
(B) 2510
(C) 100
(D) 2150
(E) Cannot Say

**Step 1** – Calculate the total sales value of one of each type of laptop 400 + 350 + 380 + 420 + 650 = 2200

**Step 2** – Divide total monthly sales by this number 220,000/2200 = 100

Thus the correct answer is (C) 100

	COS	TS		Sale price as
Laptop	Manufacturing	Design cost	UK Price	fraction of
model	cost (£)	(£)	(£)	price
Adelphi	165	60	400	1/2
Adele	140	90	350	3/4
Faze	120	60	380	2/5
Stunn	145	115	420	1/2
Brete	195	130	650	2/3

**Q9** Which of the following would generate the highest total amount at the sale prices shown?

- (A) ) 75 Adele laptops on sale
- (B) ) 150 Adele laptops at a further 60% reduction to the sale price
- (C) ) 50 Faze and 50 Stunn laptops on sale
- (D) ) 45 Brete laptops on sale
- (E) ) 90 Stunn laptops on sale

**Step 1** – Calculate the sales price for the 4 laptops that are listed as possible answer options, using the column giving sale price fraction of normal price;

	Sale Price (£)
Adele	= 350 x 3/4 = 262.5
Faze	= 380 x 2/5 = 152
Stunn	= 420 x 1/2 = 210
Brete	$= 650 \times 2/3 = 433.33$

Step 2 – Go through answer options (A) to (E) calculating the total amount

(A) 75 Adele laptops = 75 x 262.5 = £19,687.50

- (B) 150 Adele laptops at a price further reduced by  $60\% = 40\% \times 150 \times 262.5 = \pounds 15,750$
- (C) 50 Faze and 50 Stunn laptops =  $50 \times (152 + 210) = \pounds 18,100$
- (D) 45 Brete laptops =  $45 \times 433.33 = \pounds 19,499.85$
- (E) 90 Stunn laptops =  $90 \times 210 = £18,900.00$

Thus the correct answer is (A) 75 Adele laptops

	COS	TS		Sale price as
Laptop	Manufacturing	Design cost	UK Price	fraction of
model	cost (£)	(£)	(£)	price
Adelphi	165	60	400	1/2
Adele	140	90	350	3/4
Faze	120	60	380	2/5
Stunn	145	115	420	1/2
Brete	195	130	650	2/3

**Q10** The current exchange rate for US Dollars to the Pound is 1.62 USD to 1

Pound. How much would it cost a customer in the USA to purchase a Faze laptop once a discount of 12% has been applied? Assuming that the overseas sale prices are equivalent to that in the UK.

(A) \$612.89
(B) \$590.47
(C) \$574.66
(D) \$541.73
(E) \$523.52

**Step 1** – Multiply the UK sale price for a Faze laptop by the exchange rate (1.62) in order to get the equivalent price in US Dollars.  $380 \times 1.62 = 615.6$ 

**Step 2** – Then multiply this figure by 0.88 to find the cost once the 12% discount has been applied.  $615.6 \times 0.88 = 541.728$ 

Thus the correct answer is (D) \$541.73

Online	Number of people	Total	% of people searching		
Monthly Average	searching (1000s)	Searches (millions)	Selling goods/services	Buying goods/services	
Australia	19,613	2,412	10	32	
Ireland	1,146	170	3	28	
UK	31,225	3,975	12	22	
Italy	14,850	1,855	6	8	
Sweden	16,204	9,578	21	42	

Goods/services bought online (%)	Household goods	Films/ music	Financial products	Tickets	Holidays
Australia	9	12	3	17	22
Ireland	3	9	2	10	18
Italy	9	8	2	8	9
Sweden	5	2	1	3	4

Q11 In which country was there the second highest number of people searching

who were buying goods/services online?

- (A) Australia
- (B) Ireland
- (C) ) UK
- (D) Italy
- (E) Sweden

**Step 1** - The first table shows the % of people searching buying goods/services, as well as the number of searches. Use these columns to find the total number of people buying per country, as follows:

	(1000's)
Australia	32% x 19,613 = 6,276.16
Ireland	28% x 1,146 = 320.88
UK	22% x 31,225 = 6,869.50
Italy	8% x 14,850 = 1,188
Sweden	42% x 16,204 = 6,805.68

Thus the correct answer is (E) Sweden

Buying ds/services
32
28
22
8
42

Goods/services bought online (%)	Household goods	Films/ music	Financial products	Tickets	Holidays
Australia	9	12	3	17	22
Ireland	3	9	2	10	18
UK	13	10	2	9	15
Italy	9	8	3	8	9
Sweden	5	2	1	3	4

**Q12** In which country was there the second lowest number of people searching

who were selling goods/services online?

(A) Australia

- (B) Ireland
- (C) ) UK
- (D) Italy
- (E) Sweden

**Step 1** - The first table shows the % of people searching buying goods/services, as well as the number of searches. Use these columns to find the total number of searchers per country – whilst ensuring that - unlike the previous question – you provide the second lowest number of Searchers.

	(1000's)
Australia	10% x 19,613 = 1,961.30
Ireland	3% x 1,146 = 34.38
UK	12% x 31,225 = 3,747.00
Italy	6% x 14,850 = 891.00
Sweden	21% x 16,204 = 3,402.84

Thus the correct answer is (D) Italy

Online	Number of people	Total	% of people searching		
Monthly Average	searching (1000s)	Searches (millions)	Selling goods/services	Buying goods/services	
Australia	19,613	2,412	10	32	
Ireland	1,146	170	3	28	
UK	31,225	3,975	12	22	
Italy	14,850	1,855	6	8	
Sweden	16,204	9,578	21	42	

Goods/services bought online (%)	Household goods	Films/ music	Financial products	Tickets	Holidays
Australia Ireland UK Italy Sweden	9 3 13 9 5	12 9 10 8 2	3 2 2 3 1	17 10 9 8 3	22 18 15 9 4

Q13 If in the UK each person searching online spends on average £1.50 per

month buying goods/services, approximately what is the annual spend from everyone in the UK buying goods/services online?

(A) ) £125 million
(B) ) £10 million
(C) ) £56 million
(D) ) £124 million
(E) ) £12.3 million

**Tip:** make sure you use the number of people actually buying goods/services, as opposed to people just searching.

**Step 1** - Calculate the number of people in the UK searching who bought goods/services online.

People searching	% of searchers Buying goods/services	
31,225,000	22	31,225,000 x 22% = 6,869,500

Step 2 - Calculate the annual spend  $\pounds 1.50 \times 6,869,500 \times 12 = \pounds 123,651,000 = \pounds 124$  million

Thus the correct answer is (D) £124 million

Online Monthly Average	Number of people searching (1000s)	Total Searches (millions)	% of people searching		
			Selling goods/services	Buying goods/services	
Australia	19,613	2,412	10	32	
Ireland	1,146	170	3	28	
UK	31,225	3,975	12	22	
Italy	14,850	1,855	6	8	
Sweden	16,204	9,578	21	42	

Goods/services bought online (%)	Household goods	Films/ music	Financial products	Tickets	Holidays
Australia Ireland UK Italy Sweden	9 3 13 9 5	12 9 10 8 2	3 2 2 3 1	17 10 9 8 3	22 18 15 9 4

**Q14** If the three countries *I.U.I.* (Ireland, UK, Italy) are grouped together and the other two countries *S.A.* (Sweden, Australia) are also grouped together, what is the difference between the number of people searching per *I.U.I.* country and the number of people searching per *S.A.* country?

(A) ) None of these
(B) ) 2,000 million
(C) ) 3,995 million
(D) ) 6,000 million
(E) ) 1,500 million

**Step 1** – Calculate the I.U.I. countries number of online searches 170 + 3,975 + 1,855 = 6,000

**Step 2** – Calculate the number of Internet searches for the S.A. countries 2,412 + 9,578 = 11,990

**Step 3** – Calculate the averages *I.U.I.* = 6,000 / 3 = 2,000 S.A. = 11,990 / 2 = 5,995

Step 4 – Calculate the difference between the averages 5,995 – 2,000 = 3,995

Thus the correct answer is (C) 3,995 million
Online	Number of people	Total	% of people searching		
Monthly Average	searching (1000s)	Searches (millions)	Selling goods/services	Buying goods/services	
Australia	19,613	2,412	10	32	
Ireland	1,146	170	3	28	
UK	31,225	3,975	12	22	
Italy	14,850	1,855	6	8	
Sweden	16,204	9,578	21	42	

Goods/services bought online (%)	Household goods	Films/ music	Financial products	Tickets	Holidays
Australia Ireland UK Italy Sweden	9 3 13 9 5	12 9 10 8 2	3 2 2 3 1	17 10 9 8 3	22 18 15 9 4

Q15 Which country has the lowest number of online searches per person

searching?

(A) Australia

(B) Ireland

(C) ) UK

(D) Italy

(E) Sweden

**Step 1** - Calculate the average number of searches per person searching for each of the countries, as follows:

	People searching (1000s)	Total Searches (millions)	Average number of searches per person (1000)
Australia	19,613	2,412	2,412,000/19,613 = 122.98
Ireland	1,146	170	170,000/1,146 = 148.3
UK	31,225	3,975	3,975,000/31,225 = 127.3
ltaly	14,850	1,855	1,855,000/14,850 = 124.92
Sweden	16,204	9,578	9,578,000/16,204 = 591.09

Thus the correct answer is (A) Australia





Q16 Which of the following two media are predicted together to generate £6.15

billion of advertising revenue in 2011?

- (A) ) Television and Radio
- (B) ) Newspaper and Radio
- (C) ) Out-of-home and Newspaper
- (D) ) Radio and Magazines
- (E) Magazines and Television

**Step 1** - Calculate the 2011 advertising revenue using the pie-chart data, look for the combinations which add up to 6.15

Television	21% x £20.5 billion = 4.305
Newspaper	30% x £20.5 billion = 6.15
Out-of-home	5% x £20.5 billion = 1.025
Radio	4% x £20.5 billion = 0.82
Magazines	9% x £20.5 billion = 1.845

Thus the correct answer is (E) Magazines and Television





**Q17** If the Internet advertising forecast for 2011 is expected to split into mobile:

display advertising in a 1:4 ratio, what is the mobile forecast?

- (A) ) £20.5 billion
  (B) ) £1.55 billion
  (C) ) £1.27 billion
- (D)) £31.00 billion
- (E)) £7.75 billion

The information that you need is shown in the pie-chart

**Step 1** – Calculate the Internet advertising forecast for 2011  $31\% \times \pounds0.5$  billion =  $\pounds6.355$  billion

**Step 2** – Apply the ratio 1:4, so mobile =  $1/5^{th}$  of £6.335 billion = £1.27 billion

Thus the correct answer is (C) £1.27 billion



Q18 If the same absolute trends in advertising revenue from 2009 to 2010

continue for 2010 to 2011, then what will be the 2011 advertising revenue for Television and Internet combined?

- (A) ) £8.1 billion (B) ) £16.2 billion
- (C) ) £21.2 billion
- (D)) £12 billion
- (E) ) £10.6 billion

**Step 1** – Calculate the 2009-2010 change in Television and Internet combined Television: 4.3 - 3.7 = 0.6 increase Internet: 6.3 - 5.5 = 0.8 increase Television and Internet combined = 1.4 increase

**Step 2** – Apply the same change to the 2010 total for Television and Internet combined 6.3 + 4.3 + 1.4 = 12

Thus the correct answer is (D) £12 billion





of the year's total advertising revenue?

- (A) ) Cannot Say
- (B) 2008 and 2006
- (C) 2006
- (D) 2009 and 2008
- (E) 2009

**Step 1** - Calculate Television's % of the total revenue for each of the four years given as answer options;

	Television Revenue	Total Revenue	% of total revenue
2006	3.1	13.6	22.8
2007	3.4	14.6	23.3
2008	3.5	15.3	22.9
2009	3.7	16.5	22.4

Thus the correct answer is (E) 2009





Q20 If in 2009 an external market force had reduced the year's advertising

revenue from Newspapers by 10% and from the Internet by 20%, then what was the total 2009 advertising revenue?

- (A) ) None of these
- (B)) £9.89 billion
- (C) ) £11.6 billion
- (D)) £10.44 billion
- (E)) £14.79 billion

**Step 1** – Calculate the adjusted Newspaper revenue 6.1 x 90% = 5.49

**Step 2** – Calculate the adjusted Internet revenue 5.5 x 80% = 4.4

**Step 3** – Calculate the adjusted total 2009 advertising revenue 5.49 + 4.4 + 3.7 (television) + 1.2 (radio) = 14.79

Thus the correct answer is (E) £14.79 billion



2009 Trade Balance*			
	Value (\$ million)		
China	18,400		
United Kingdom	1,825		
Japan	5,840		
South America	1,950		
Russia	1,200		
* Trade bal	ance =		

(Exports Value) - (Imports Value)

**Q21** Of the regions shown what was the difference between the highest and the lowest trade balance in 2008?

- (A) ) None of these
- (B)) \$5,100 million
- (C)) \$510 million
- (D)) \$5,400 million
- (E)) \$5,600 million

**Step 1** - Use the graph (i.e. 2008 figures) to calculate the trading balance (exports – imports) for each region

	Exports – imports (\$million)
China	30,000 - 22,800 = 7,200
United Kingdom	30,600 - 28,500 = 2,100
Japan	29,400 - 24,500 = 4,900
South America	32,000 - 30,400 = 1,600
Russia	31,300 - 29,500 = 1,800

**Step 2** – Calculate the difference between the highest and the lowest trading balance 7,200 - 1,600 = \$5,600 million

Thus the correct answer is (E) \$5,600 million



2009 Trade Balance*			
	Value (\$ million)		
China	18,400		
United Kingdom	1,825		
Japan	5,840		
South America	1,950		
Russia	1,200		
* Trade bala	ance =		

(Exports Value) - (Imports Value)

**Q22** If Japan's exports value increased by 1/5<sup>th</sup> between 2008 and 2009 then what was Japan's imports value in 2009?

- (A) ) Cannot Say
- (B)) \$29,400 million
- (C)) \$23,560 million
- (D)) \$25,560 million
- (E)) \$29,440 million

Step 1- Use the graph to obtain the 2008 exports value = 29,400

**Step 2** – Add 1/5<sup>th</sup> to find the 2009 exports value 29,400 x 1.2 = 35,280

**Step 3** - Use the table to obtain the 2009 trade balance = 5,840 Japan's imports value in 2009 = 35,280 - 5,840 = \$29,440 million

Thus the correct answer is (E) \$29,440 million



Q23 Compared to 2009, the UK's trade balance is expected to increase by 3.5% in

2010 and China's trading balance is expected to decrease by 4.4%. What is the difference between the 2010 trade balance forecasts for these countries (to the nearest \$million)?

(A) ) \$14,405 million
(B) ) \$15,000 million
(C) ) \$16,000 million
(D) ) \$15,702 million
(E) ) \$17,000 million

**Step 1** – Calculate the increase for the UK and the decrease for China UK: 103.5% x 1,825 = 1,888.875 China: 95.6% x 18,400 = 17,590.4

**Step 2** – Calculate the difference 17,590.4 - 1,888.875 = \$15,701.525 (million \$)

*Tip* - These numbers are already in million \$, so don't be tempted to round the answer to (C) \$16,000 million.

Thus the correct answer is (D) \$15,702 million



	Value (\$ million)	
China	18,400	
United Kingdom	1,825	
Japan	5 <mark>,</mark> 840	
South America	1,950	
Russia	1,200	
* Trade balance =		
(Exports Value) – (Imports Value)		

2009 Trade Balance\*

## **Q24** Which region or regions have experienced a decrease in their trade balance between 2008 and 2009?

- (A) South America, United Kingdom
- (B) ) United Kingdom, Russia
- (C) South America, Russia
- (D) South America
- (E) Russia

**Step 1** - Using the trade balance figures for 2008 from the earlier question, calculate the change in trade balances for each region between 2008 and 2009

China	18,400 – 7,200 = 11,200 increase	
United Kingdom	1,825 – 2,100 = 275 decrease	
Japan	5,840 – 4,900 = 940 increase	
South America	1,950 – 1,600 = 350 increase	
Russia	1,200 – 1,800 = 600 decrease	

Thus the correct answer is (B) United Kingdom, Russia



2009 Trade Balance*				
Value (\$ million)				
China	18,400			
United Kingdom	1,825			
Japan	5,840			
South America	1,950			
Russia	1,200			
* Trade balance = (Exports Value) – (Imports Value)				

**Q25** What is the trading balance range (highest minus lowest) for the five regions between 2008-2009?

- (A) ) \$1,200 million \$18,400 million
- (B)) \$5,400 million
- (C)) \$17,200 million
- (D) ) \$1,600 million \$18,400 million
- (E)) \$1,800 million \$7,200 million

**Step 1** - To save time you can use the trading balance figures for 2008 from the earlier question. Then calculate the range across both years.

	2008 (\$million)	2009 (\$million)
China	7,200	18,400
United Kingdom	2,100	1,825
Japan	4,900	5,840
South America	1,600	1,950
Russia	1,800	1,200

Step 2 - The lowest and the highest values are 1,200 and 18,400 respectively.

*Tip: remember the question defined the 'range' as highest minus lowest, as is often convention in finance and accounting professions. Answering with the highest and lowest numbers is not what the question asked for.* 

Thus the correct answer is (C) \$17,200 million

	Annual Birth rate	Annual births		Annual birth rate for sets of twins
	(per 1000 of total population)	Male	Female	(as a % of annual births)
COUNTRY				
Scotland	12.2	28,693	27,086	1.6
Northern Ireland	14.8	13,515	12,934	1.9
Wales	12.5	18,640	16,800	1.25
REGION				
Inner London	16.4	24,735	23,461	1.7
Outer London	15.1	35,811	34,189	2
South West	12	30,258	28,747	1.8
South East	12.3	53,141	50,099	1.8
East	12.1	34,745	32,564	2

Q26 If the number of annual births are distributed evenly across the year and they

remain constant at the levels shown, then how many months will it take for Outer London's population to increase by 245,000? (Ignoring death rate)

(A) 34
(B) 36
(C) ) 38
(D) ) 40
(E) 42

**Step 1** – Calculate the total annual births 35,811 + 34,189 = 70,000

**Step 2** – Calculate the number of years and months required to reach 245,000 245,000 / 70,000 = 3.5 years = 42 months

Thus the correct answer is (E) 42

	Annual Birth rate	Annual births		Annual birth rate for sets of twins
	(per 1000 of total population)	Male	Female	(as a % of annual births)
COUNTRY				
Scotland	12.2	28,693	27,086	1.6
Northern Ireland	14.8	13,515	12,934	1.9
Wales	12.5	18,640	16,800	1.25
REGION				
Inner London	16.4	24,735	23,461	1.7
Outer London	15.1	35,811	34,189	2
South West	12	30,258	28,747	1.8
South East	12.3	53,141	50,099	1.8
East	12.1	34,745	32,564	2

**Q27** Which country or countries shown have a population of less than 2.9 million people?

- (A) Wales, Scotland
- (B) ) Northern Ireland, Wales, Scotland
- (C) Scotland
- (D) ) Northern Ireland, Wales

(E) ) Cannot Say

**Step 1** - A country's population can be calculated using the Annual Birth rate - which is given per 1000 of total population – and the number of live births that when combined make up the annual birth rate.

	Annual Birth rate (per 1000 of total population)	Number of births	Population
Scotland	12.2	28,693 + 27,086 = 55,779	1000 x 55,779/12.2 = 4,572,049.1
Northern Ireland	14.8	13,515 + 12,934 = 26,449	1000 x 26,449/14.8 = 1,787,094.5
Wales	12.5	18,640 + 16,800 = 35,440	1000 x 35,440/12.5 = 2,835,200

Thus the correct answer is (D) Northern Ireland, Wales

	Annual Birth rate	Annual births		irth rate Annual birth		Annual birth rate for sets of twins
	(per 1000 of total population)	Male	Female	(as a % of annual births)		
COUNTRY						
Scotland	12.2	28,693	27,086	1.6		
Northern Ireland	14.8	13,515	12,934	1.9		
Wales	12.5	18,640	16,800	1.25		
REGION						
Inner London	16.4	24,735	23,461	1.7		
Outer London	15.1	35,811	34,189	2		
South West	12	30,258	28,747	1.8		
South East	12.3	53,141	50,099	1.8		
East	12.1	34,745	32,564	2		

**Q28** What is the population of Inner and Outer London combined (to the nearest 100,000)?

- (A) 8,000,000
- (B) 4,600,000
- (C) 3,000,000
- (D) 7,600,000
- (E) None of these

	Annual Birth rate (per 1000 of total population)	Number of births	Population
Inner	16.4	24,735 + 23,461	1000 x 48,196/16.4 =
London		= 48,196	2,938,780.4
Outer	15.1	35,811 + 34,189	1000 x 70,000/15.1 =
London		= 70,000	4,635,761.5

Step 1 - Inner and Outer London population = 2,938,780.4 + 4,635,761.5 = 7,574,541.9

Thus the correct answer is (D) 7,600,000

	Annual Birth rate	Annual births		Annual birth rate for sets of twins
	(per 1000 of total population)	Male	Female	(as a % of annual births)
COUNTRY				
Scotland	12.2	28,693	27,086	1.6
Northern Ireland	14.8	13,515	12,934	1.9
Wales	12.5	18,640	16,800	1.25
REGION				
Inner London	16.4	24,735	23,461	1.7
Outer London	15.1	35,811	34,189	2
South West	12	30,258	28,747	1.8
South East	12.3	53,141	50,099	1.8
East	12.1	34,745	32,564	2

Q29 How many babies are born on average as twin births in Wales over five

years? (Assume that the annual birth rate and number of births remains the same across the five years).

(A) 4,430
(B) 886
(C) 2,215
(D) 443
(E) Cannot Say

**Step 1** – Calculate the total number of births in Wales 18,640 + 16,800 = 35,440

**Step 2** – Calculate the annual number of twin births  $35,440 \times 1.25\% = 443$ 

**Step 3** – Number of babies over 5 years 443 x 2 x 5 = 4,430

Thus the correct answer is (A) 4,430

	Annual Birth rate	Annual births		Annual birth rate for sets of twins
	(per 1000 of total population)	Male	Female	(as a % of annual births)
COUNTRY				
Scotland	12.2	28,693	27,086	1.6
Northern Ireland	14.8	13,515	12,934	1.9
Wales	12.5	18,640	16,800	1.25
REGION				
Inner London	16.4	24,735	23,461	1.7
Outer London	15.1	35,811	34,189	2
South West	12	30,258	28,747	1.8
South East	12.3	53,141	50,099	1.8
East	12.1	34,745	32,564	2

Q30 What percent of births are male across the 5 Regions shown?

(A) 49.5%
(B) 50%
(C) 50.5%
(D) 51%
(E) 51.4%

**Step 1** – Calculate the total number of male births 24,735 + 35,811 +30,258 + 53,141 + 34,745 = 178,690

**Step 2** – Calculate the total births 178690 + 23,461 + 34,189 + 28,747 + 50,099 + 32,564 = 347,750

**Step 3** – Put into a % 100% x (178,690/347,750) = 51.4%

Thus the correct answer is (E) 51.4%

## NUMERICAL REASONING TEST 11

## Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 



- Q1 What are the combined sales of quarters 1 and 4?
  - (A) £850,000
  - (B) £852,250
  - (C) £854,250
  - (D) £856,000
  - (E) £858,000

The information that I need is shown in the pie-chart. **Step 1** – Calculate the total % for quarters 1 and 4 21% + 30% = 51%

**Step 2** – £1.675 million x 51% = £854,250

Thus the correct answer is (C) £854,250



- **Q2** If the profit margin for online sales is 1/8<sup>th</sup> of the sales value, what was the total profit for online sales in 2009?
  - (A) £460,850
    (B) £11,175
    (C) £100,875
    (D) £80,750
  - (E) £81,500

The information you need is shown in the graph Online vs High Street sales

**Step 1 -** Calculate total online sales = 27.4 + 26.8 + 16.3 + 10.2 = 80.7 (£10,000s) Profit to sales ratio = 1:8, so profit = 80.7/8 = 10.0875 (£10,000s)

Thus the correct answer is (C) £100,875



**Q3** What is the difference in sales between the best and worst performing quarters?

- (A) £335,000
- (B) £83,750
- (C) £418,750
- (D) £150,750
- (E) None of these

The most profitable and least profitable quarters are going to be those with the highest and lowest % sales respectively.

**Step 1** – Calculate the difference in these %'s 30% - 21% = 9%

**Step 2** – Calculate the % of total sales 9% x £1.675 million = £150,750

Thus the correct answer is (D) £150,750



Q4 What was the difference between Online and High Street sales (in £10,000s)?

- (A) 6.1
- (B) 6.8
- (C) 2.9
- (D) 6.9
- (E) 2.8

**Step 1** – Calculate the total sales for each High Street sales = 29 + 28.9 + 16.1 + 12.8 = 86.8 Online sales = 27.4 + 26.8 + 16.3 + 10.2 = 80.7

**Step 2** – Calculate the difference Difference = 86.8 - 80.7 = 6.1. Remember these numbers are in £10,000 as stated in the graph.

Thus the correct answer is (A) 6.1



- Q5 In 2010 there is a High Street CD and DVDs sale that results in an increase in the annual 2009 sales of each category by 11% and 14.5% respectively. What are the combined High Street DVD and CD sales for 2010?
  - (A) £480,500
  - (B) £514,118
  - (C) £652,840
  - (D) £0.56 million
  - (E) £65.4 million

**Step 1** – Calculate the % increases in each category High Street CD (2010) = 2009 sales + 11% = 28.9 x 1.11 = 32.079 High Street DVD (2010) = 2009 sales + 14.5% = 29 x 1.145 = 33.205

**Step 2** – Calculate the total 32.079 + 33.205 = £65.284 (10,000)

Step 3 - £652,840

Thus the correct answer is (C) £652,840



Q6 In which quarter did Sclics plc, Farlaz and Raik Ltd each experience an

increase in sales for the European Region?

- (A) Quarter 1
- (B) Quarter 2
- (C) Quarter 3
- (D) Quarter 4
- (E) None of these

**Step 1 -** From looking at the graph, there is no quarter in which Sclics plc, Farlaz and Raik Ltd each experience an increase. In quarter 3 Sclics plc and Raik Ltd experience increases, but Farlaz does not.

Thus the correct answer is (E) 'None of these'



**Q7** If the annual European sales for Raik Ltd represent 45% of worldwide sales, what is the level of sales worldwide?

- (A) £62.5 million
- (B) £52.4 million
- (C) £42.6 million
- (D) £28.8 million
- (E) £23.6 million

**Step 1** – Calculate the annual sales for Raik Ltd 5.3 + 5.8 + 6.2 + 6.3 = 23.6

**Step 2** – Calculate the worldwide sales  $100 \times 23.6 / 45 = \pounds 52.4$  million

Thus the correct answer is (B) £52.4 million



**Q8** How much did Sclics plc's European sales in quarters 1 and 2 differ from

Farlaz's European sales over the same period?

- (A) £3.6 million more
- (B) £3.6 million less
- (C) £2.2 million less
- (D) 2.2 million more
- (E) None of these

**Step 1** - Calculate the Q1 and Q2 differences Q1; 5 - 7.2 = 2.2 less Q2; 4.4 - 5.8 = 1.4 less

Step 2 – Calculate the total difference  $2.2 + 1.4 = \pm 3.6$  million

Thus the correct answer is (B) £3.6 million less



Q9 If the annual sales target for Raik Ltd was £29.5 million, by what fraction of this target did the company underperform?

- (A) 2/3
- (B) 1/5
- (C) 1/3
- (D) 1/2
- (E) 1/4

**Step 1** – Refer to your own rough notes for the annual sales for Raik Ltd (from question 7) = 23.6 (£millions)

**Step 2** – Calculate the difference compared to the annual sales target 29.5 - 23.6 = 5.9

**Step 3** – Calculate the fraction 5.9 / 29.5 = 1/5

Thus the correct answer is (B) 1/5



- **Q10** Next quarter's total sales projection represents what increase on Quarter 4's total sales for the three companies shown (to the nearest whole %)?
  - (A) 6.1% (B) 7.2%
  - (C) 6.2%
  - (D) 10%
  - (E) 6%

**Step 1** – Calculate Quarter 4's total 3.5 + 6.4 + 6.3 = 16.2

**Step 2** – Calculate the Projected Quarter's total 3.2 + 7.4 + 6.6 = 17.2

**Step 3** – Calculate the % increase 17.2 / 16.2 = 106.17%. The question asks for this to be rounded to the nearest percent.

Thus the correct answer is (E) 6%

UK Operations of Gills & Tines Ltd	Full Year ended 31 December (£million)					
	2009	2008	2007	2006		
Income Sources						
Net interest	325.2	309.5	319.7	313.8		
Other income	64.2	51.8	52	51.7		
Fair value gains	18.0	39.9	29.7	31.1		
Costs						
Admin costs	277.8	231	285.9	283.5		
Loan impairment	15.0	57.8	6.1	5.9		
costs						
Profit Before Tax	114.6	112.4	109.4	107.2		

Q11 What was the average annual income across the four years shown (to the

nearest million)?

- (A) £408 million
- (B) £407 million
- (C) £402 million
- (D) £403 million
- (E) £404 million

Step 1 - Calculate the annual income for each year

Income	2009	2008	2007	2006
Net interest	325.2	309.5	319.7	313.8
Other income	64.2	51.8	52	51.7
Fair value gains	18	39.9	29.7	31.1
TOTALS	407.4	401.2	401.4	396.6

**Step 2** - Calculate the average by dividing the overall total for all 4 years by 4 (407.4 + 401.2 + 401.4 + 396.6)/4 = 401.65

**Step 3** - To the nearest million =  $\pounds$ 402 million

Thus the correct answer is (C) £402 million

UK Operations of Gills & Tines Ltd	Full Year ended 31 December (£million)					
	2009	2008	2007	2006		
Income Sources						
Net interest	325.2	309.5	319.7	313.8		
Other income	64.2	51.8	52	51.7		
Fair value gains	18.0	39.9	29.7	31.1		
Costs						
Admin costs	277.8	231	285.9	283.5		
Loan impairment costs	15.0	57.8	6.1	5.9		
Profit Before Tax	114.6	112.4	109.4	107.2		

**Q12** Gills & Tines Ltd's target has been to increase Profit Before Tax by more than 2% each year. In which year, or years, has this been achieved?

- (A) 2008
- (B) 2007, 2008
- (C) 2007
- (D) 2007, 2008, 2009
- (E) None of the years shown

Step 1 – Calculate the % change in Profit Before Tax as shown in bold below;

2009	2008	2007
114.6	112.4	109.4
100% x (114.6 – 112.4)/112.4	100% x (112.4– 109.4)/109.4	100% x (109.4– 107.2)/107.2
= 1.96%	= 2.74%	= 2.05%

Thus the correct answer is (B) 2007, 2008

UK Operations of Gills & Tines Ltd	Ful	l Year ende (£mil	d 31 December 11ion)		
	2009	2008	2007	2006	
Income Sources					
Net interest	325.2	309.5	319.7	313.8	
Other income	64.2	51.8	52	51.7	
Fair value gains	18.0	39.9	29.7	31.1	
Costs					
Admin costs	277.8	231	285.9	283.5	
Loan impairment costs	15.0	57.8	6.1	5.9	
Profit Before Tax	114.6	112.4	109.4	107.2	

Q13 Admin costs are projected to increase by a quarter in 2010 and Net Interest to

increase by 2.5%, whilst all other costs and incomes are projected to remain constant. What is the projected Profit Before Tax for 2010 (in £million)?

(A) £53.28 million
(B) £69.45 million
(C) £113.2 million
(D) £144.6 million
(E) £118.9 million

**Step 1** – Calculate the increase in Admin costs  $277.8 \times .25 = 69.45$ 

**Step 2** – Calculate the increase in Net Interest  $325.2 \times 2.5\%/100 = 8.13$ 

**Step 3** – Calculate the new Profit Before Tax using the 2009 Profit Before Tax as the starting point 114.6 - 69.45 + 8.13 = 53.28

Thus the correct answer is (A) £53.28 million

UK Operations of Gills & Tines Ltd	Full Year ended 31 December (£million)			
	2009	2008	2007	2006
Income Sources				
Net interest	325.2	309.5	319.7	313.8
Other income	64.2	51.8	52	51.7
Fair value gains	18.0	39.9	29.7	31.1
Costs				
Admin costs	277.8	231	285.9	283.5
Loan impairment costs	15.0	57.8	6.1	5.9
Profit Before Tax	114.6	112.4	109.4	107.2

Q14 In which year did the combined Admin Costs and Loan Impairment Costs

decrease in value?

- (A) 2006
- (B) 2007
- (C) 2008
- (D) 2009
- (E) Cannot Say

Step 1 - The total Admin Costs and Loan Impairment Costs are as follows:

	2009	2008	2007	2006
Admin costs	277.8	231	285.9	283.5
Loan impairment costs	15	57.8	6.1	5.9
TOTALS	292.8	288.8	292	289.4

Thus the correct answer is (C) 2008

UK Operations of Gills & Tines Ltd	Full Year ended 31 December (£million)			
	2009	2008	2007	2006
Income Sources				
Net interest	325.2	309.5	319.7	313.8
Other income	64.2	51.8	52	51.7
Fair value gains	18.0	39.9	29.7	31.1
Costs				
Admin costs	277.8	231	285.9	283.5
Loan impairment costs	15.0	57.8	6.1	5.9
Profit Before Tax	114.6	112.4	109.4	107.2

Q15 If corporation tax of 21% was applied each year to the Profit Before Tax, what

was the average net profit across 2006-2009?

(A) £110.9 million
(B) £114.6 million
(C) £115.6 million
(D) £86.4 million
(E) £87.6 million

**Step 1** – Calculate the average Profit Before Tax across 2006-2009 (114.6 + 112.4 + 109.4 +107.2)/4 = 110.9

**Step 2** – Deduct the 21% tax 110.9 x 79%/100 = £87.6 million

Thus the correct answer is (E) £87.6 million

	Hours spent (March)				
	Team A	Team B	Team C	Team D	Team E
Admin tasks	33	42	25	19	21
Client work	402	370	419	434	404
Training	3	6	3	4	5
Meetings	40	72	32	18	56

**Q16** What was the total number of days spent on Client work in March using the

formula 1 day = 7 working hours (to the nearest whole day)?

(A) 300 days
(B) 290 days
(C) 280 days
(D) 270 days
(E) 260 days

**Step 1** – Calculate the total hours spent 402 + 370 + 419 + 434 + 404 = 2029

**Step 2** – Calculate the total days spent 2029 / 7 = 289.9 days

Thus the correct answer is (B) 290 days

	Hours spent (March)				
	Team A	Team B	Team C	Team D	Team E
Admin tasks	33	42	25	19	21
Client work	402	370	419	434	404
Training	3	6	3	4	5
Meetings	40	72	32	18	56

- **Q17** If there were 3 members within Team B, what was the average number of hours spent on non-client work during March?
  - (A) 37hours
    (B) 38 hours
    (C) 39 hours
    (D) 40 hours
    (E) 41 hours

**Step 1** – Calculate the number of non-client hours 42 + 6 + 72 = 120

**Step 2** – Divide by the 3 team members 120/3 = 40 hours

Thus the correct answer is (D) 40 hours

	Hours spent (March)				
	Team A	Team B	Team C	Team D	Team E
Admin tasks	33	42	25	19	21
Client work	402	370	419	434	404
Training	3	6	3	4	5
Meetings	40	72	32	18	56

**Q18** If Teams A-C bill clients at £75 per hour and less experienced Teams D and E bill clients at £55 per hour, what is the total client income for March (to the nearest £1,000)?

(A) £127,000
(B) £129,000
(C) £131,000
(D) £133,000
(E) £135,000

**Step 1** – Calculate the client bill for Teams A-C £75 x (402 + 370 + 419) = £89,325

**Step 2** – Calculate the client bill for Teams D and E  $\pounds 55 \times (434 + 404) = \pounds 46,090$ 

**Step 3** – Calculate the total client bill  $\pounds$ 89,325 +  $\pounds$ 46,090 =  $\pounds$ 135,000 (to the nearest  $\pounds$ 1,000)

Thus the correct answer is (E) £135,000

	Hours spent (March)				
	Team A	Team B	Team C	Team D	Team E
Admin tasks	33	42	25	19	21
Client work	402	370	419	434	404
Training	3	6	3	4	5
Meetings	40	72	32	18	56

Q19 If the monthly summary shown is representative of the time typically spent

each month over the course of a year (1 year = 12 months) then how many days (1 day = 8 working hours) do Teams A-E spend in meetings over the course of a year?

(A) 327 days
(B) 357 days
(C) 347 days
(D) 337 days
(E) 367 days

**Step 1** – Calculate the total time spent in meetings in March 40 + 72 + 32 + 18 + 56 = 218 hours

**Step 2** – Calculate the time per year  $218 \times 12 = 2616$  hours

**Step 3** – Put this figure into days 2616 / 8 = 327 days

Thus the correct answer is (A) 327 days
		Hours spent (March)						
	Team A	Team B	Team C	Team D	Team E			
Admin tasks	33	42	25	19	21			
Client work	402	370	419	434	404			
Training	3	6	3	4	5			
Meetings	40	72	32	18	56			

**Q20** Put the teams in increasing order of total hours worked in March (starting with the lowest number of total hours worked).

(A) D, A, C, B, E
(B) C, B, A, E, D
(C) D, A, C, E, B
(D) A, D, E, C, B
(E) A, D, C, E, B

Step 1 - Calculate the total hours worked;

Team A	Team B	Team C	Team D	Team E
478	490	479	475	486

Step 2 - Put teams into order of increasing numbers of hours worked.

Thus the correct answer is (C) D, A, C, E, B



**Q21** How much did Deus Bank income from new institutional investors differ from that of new private clients?

(A) \$85,250
(B) \$106,950
(C) \$109,500
(D) \$103,950
(E) \$114,500

**Step 1** - Calculate the totals 114,500 – 10,550 = 103,950

Thus the correct answer is (D) \$103,950



**Q22** What is the ratio of Fund P's sales to new private clients compared to new institutional investors?

- (A) 1:4
- (B) 1:5
- (C) 1:6
- (D) 1:7
- (E) 1:8

**Step 1** - Put the figures into a ratio 2,500 : 17,500 = 1:7

Thus the correct answer is (D) 1:7



- **Q23** What are Deus Bank's total new private client and institutional investor Fund sales (in £s) at an exchange rate of \$1.55 to the £?
  - (A) £73,871
    (B) £193,827
    (C) £80,677
    (D) £177,475
    (E) £43,774

Tip: make sure you don't include sales from Bonds; the question asks for Fund sales only.

**Step 1** – Total the Fund sales for new institutional investors and private client (17,500 + 21,000 + 23,000) + (2,500 + 2,250 + 1,600) = \$67,850

**Step 2** – Apply the exchange rate of \$1.55 to the £ \$67,850 / 1.55 = £43,774.2

Thus the correct answer is (E) £43,774



Q24 Deus Bank pays 6% and 8% commission on Bond U and Bond S sales

respectively over \$15,000. How much commission is paid for new Bond U and Bond S sales (across both private clients and institutional investors)?

(A) \$1,750
(B) \$2,505
(C) \$1,560
(D) \$2,103
(E) \$1,861

**Step 1** – Calculate the total Bond U and Bond S sales Bond U = 30,750Bond S = 26,450

**Step 2** – Deduct \$15,000 from each Bond U = 30,750 – 15,000 = \$15,750 Bond S = 26,450 – 15,000 = \$11,450

**Step 3** – Calculate commissions \$15,750 x 6% =\$945 \$11,450 x 8% = \$916 Total commission = \$1,861

Thus the correct answer is (E) \$1,861



**Q25** What % of total new private client and new institutional investor sales do

Bond U sales represent (to the nearest %)?

- (A) 21%
- (B) 22%
- (C) 23%
- (D) 24%
- (E) 25%

**Step 1** - Calculate the % of Bond U sales compared to total sales for new institutional investor sales and new private client sales, as shown below:

	New institutional investor sales	Private client sales	Total	% of total (125050)
Fund P	17500	2500	20000	16%
Fund F	21000	2250	23250	19%
Fund G	23000	1600	24600	20%
Bond U	29000	1750	30750	25%
Bond S	24000	2450	26450	21%

Thus the correct answer is (E) 25%

	2009 (£million)	2008 (£million)	<b>2007</b> (£million)
Assets at end of financial year			
Liquid Assets	10,214	11,300	10,735
Loans Made	24,600	23,130	21,974
Derivatives	512	540	513
Fixed Assets	614	570	542
Total Assets	35,940	35,540	33,763
Liabilities at end of financial year			
Reserve Liabilities	111.6	124.0	132
Borrowings	1,389.6	1,544.0	1,650
Share Liabilities	1,958.0	1,628.0	1,780
Other Liabilities	41.8	35.0	38
Total Liabilities	3,501.0	3,331.0	3,600

Q26 What was the approximate fraction of Fixed Assets to Loans Made at the end

of the financial year 2009?

- (A) 1/40
- (B) 1/45
- (C) 1/20
- (D) 1/60
- (E) 1/48

**Step 1** - The fraction is 614 ÷ 24,600 ≈ 1/40.

*Tip* - You should be able to recognise that your calculator answer of 0.02496 is approximately ten times smaller than 0.25 and thus from the available answers select 1/40.

Thus the correct answer is (A) 1/40

	2009 (£million)	2008 (£million)	<b>2007</b> (£million)
Assets at end of financial year			
Liquid Assets	10,214	11,300	10,735
Loans Made	24,600	23,130	21,974
Derivatives	512	540	513
Fixed Assets	614	570	542
Total Assets	35,940	35,5 <b>4</b> 0	33,763
Liabilities at end of financial year			
Reserve Liabilities	111.6	124.0	132
Borrowings	1,389.6	1,544.0	1,650
Share Liabilities	1,958.0	1,628.0	1,780
Other Liabilities	41.8	35.0	38
Total Liabilities	3,501.0	3,331.0	3,600

### **Q27** Which asset or assets have changed in value by more than 12% from 2007

to 2009?

- (A) Liquid Assets, Loans Made
- (B) Loans Made, Fixed Assets
- (C) Loans Made
- (D) Fixed Assets
- (E) Can't tell from data

**Step 1** - Calculate the % change in asset values, as shown below. Work out the figures for only the options given, to save time.

Assets at end of	2009	2007		
financial year	(£million)	(£million)	Difference	% change
Liquid Assets	10214	10735	521	- 4.85
Loans Made	24600	21973.5	2626.5	11.95
Fixed Assets	614	541.5	72.5	13.39

Thus the correct answer is (D) Fixed Assets

	2009 (£million)	2008 (£million)	2007 (£million)
Assets at end of financial year			
Liquid Assets	10,214	11,300	10,735
Loans Made	24,600	23,130	21,974
Derivatives	512	540	513
Fixed Assets	614	570	542
Total Assets	35,940	35,540	33,763
Liabilities at end of financial year			
Reserve Liabilities	111.6	124.0	132
Borrowings	1,389.6	1,544.0	1,650
Share Liabilities	1,958.0	1,628.0	1,780
Other Liabilities	41.8	35.0	38
Total Liabilities	3,501.0	3,331.0	3,600

Q28 In 2010, Loans Made are projected to decrease by an eighth and both

Derivatives and Fixed Assets are projected to increase by 5%. If other values stay the same what will be the impact on the 2010 Total Assets value (in £million)?

(A) 3,075.70 increase
(B) 3,018.70 decrease
(C) 3,000.00 decrease
(D) 3,095.70 decrease
(E) Can't tell from data

**Step 1** - Calculate the changes in 2009 figures for Loans Made; and both Derivatives and Fixed Assets Loans made; 24,600 / 8 = -3,075Derivatives;  $512 \times 5\% = +25.6$ Fixed Assets;  $614 \times 5\% = +30.7$ 

**Step 2** - Calculate the overall impact -3075 (Loans Made) + 25.6 (Derivatives) + 30.7 (Fixed Assets) = - 3,018.7

Thus the correct answer is (B) 3,018.70 decrease

	2009 (£million)	2008 (£million)	<b>2007</b> (£million)
Assets at end of			
financial year			
Liquid Assets	10,214	11,300	10,735
Loans Made	24,600	23,130	21,974
Derivatives	512	540	513
Fixed Assets	614	570	542
Total Assets	35,940	35,540	33,763
Liabilities at end of financial year			
Reserve Liabilities	111.6	124.0	132
Borrowings	1,389.6	1,544.0	1,650
Share Liabilities	1,958.0	1,628.0	1,780
Other Liabilities	41.8	35.0	38
Total Liabilities	3,501.0	3,331.0	3,600

# **Q29** Which liability or liabilities have experienced a 10% change in value between 2008 and 2009?

- (A) Reserve Liabilities
- (B) Borrowings, Reserve Liabilities
- (C) Borrowings
- (D) Other Liabilities, Borrowings
- (E) Other liabilities, Share liabilities

Step 1 - Calculate the % change in value between 2008-2009, as follows;

	2009	2008	% change
Reserve Liabilities	111.6	124	-10%
Borrowings	1389.6	1544	-10%
Share Liabilities	1958	1628	20%
Other Liabilities	41.8	35	19%

Thus the correct answer is (B) Borrowings, Reserve Liabilities

	2009 (£million)	2008 (£million)	<b>2007</b> (£million)
Assets at end of			
Liquid Assets	10.214	11.300	10,735
Loans Made	24,600	23,130	21,974
Derivatives	512	540	513
Fixed Assets	614	570	542
Total Assets	35,940	35,540	33,763
Liabilities at end of financial year			
Reserve Liabilities	111.6	124.0	132
Borrowings	1,389.6	1,544.0	1,650
Share Liabilities	1,958.0	1,628.0	1,780
Other Liabilities	41.8	35.0	38
Total Liabilities	3,501.0	3,331.0	3,600

Q30 What is the ratio of Reserve Liabilities (2008); Reserve Liabilities (2007)?

(A) 132:124

(B) 13:12

(C) 12:13

(D) 31:33 (E) 31:32

**Step 1** - Put the figures into a ratio: 124:132 = 31:33

Thus the correct answer is (D) 31:33

# NUMERICAL REASONING TEST 12

## Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 

Commodity	Performance	Volatility	Liquidity	Forecast	Price per Tonne
Wheat	9	8	2	10	£104.70
Oats	2	2	6	4	£152.60
Rice	3	10	3	3	£224.10
Corn	1	10	9	5	£103.80
Soybeans	1	6	7	9	£173.30

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High	Maximum
1	2	3	4	5	6	7	8	9	10

**Q1** You want to invest in the commodity with the highest combined rating of "Liquidity" and "Forecast". Which commodity should you invest in?

- (A) Wheat
- (B) Oats
- (C) Rice
- (D) Corn
- (E) Soybeans
- (F) None of the above

**Step 1** – Combine the ratings for "Liquidity" and "Forecast" and identify the largest combined rating.

Wheat = 2 + 10 = 12Oats = 6 + 4 = 10Rice = 10 + 3 = 13Corn = 8 + 5 = 14Soybeans = 7 + 9 = 16

Thus the correct answer is (E) Soybeans

Commodity	Performance	Volatility	Liquidity	Forecast	Price per Tonne
Wheat	3	6	2	1	£204.90
Oats	10	4	2	4	£113.00
Rice	10	3	3	6	£219.20
Corn	5	9	10	7	£116.00
Soybeans	8	7	8	7	£279.20

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High	Maximum
1	2	3	4	5	6	7	8	9	10

Q2 You select the commodities with no ratings at or below "Very Low". Of the

selected commodities, you choose the two cheapest per tonne. You then invest in the commodity with the fewest ratings at or below "Above Average". Which commodity do you invest in?

- (A) Wheat
- (B) Oats
- (C) Rice
- (D) Corn
- (E) Soybeans
- (F) None of the above

Step 1 – Select the commodities with no ratings at or below "Very low"

Wheat = 2 ratings at or below "Very Low" Oats = 1 rating at or below "Very Low" Rice = 0 ratings at or below "Very Low" Corn = 0 ratings at or below "Very Low" Soybeans = 0 ratings at or below "Very Low"

Step 2 – Of the applicable commodities, select the two cheapest commodities per tonne.

**Rice = £219.20 Corn = £116.00** Soybeans = £279.20

**Step 3** – Of the applicable commodities, select the commodity with the fewest ratings at or below "Above Average"

Rice = 3 ratings at or below "Above Average" Corn = 1 rating at or below "Above Average"

Thus the correct answer is (D) Corn

Commodity	Performance	Volatility	Liquidity	Forecast	Price per Tonne
Wheat	3	6	2	1	£204.90
Oats	10	4	2	4	£113.00
Rice	10	3	3	6	£219.20
Corn	5	9	10	7	£116.00
Soybeans	8	7	8	7	£279.20

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High	Maximum
1	2	3	4	5	6	7	8	9	10

**Q3** You only want to invest in a commodity with a "Liquidity" to "Forecast" ratings ratio of 1:1 or above. Which commodity do you invest in?

- (A) Wheat
- (B) Oats
- (C) Rice
- (D) Corn
- (E) Soybeans
- (F) None of the above

**Step 1** – Calculate the "Liquidity" to "Forecast" ratio for each commodity and identify the commodity with a ratio of 1:1 or above.

Wheat = 8 / 10 = 0.8 **Oats = 7 / 4 = 1.75** Rice = 7 / 10 = 0.7 Corn = 4 / 5 = 0.8 Soybeans = 1 / 9 = 0.9

Thus the correct answer is (B) Oats

*Tip*: you could save time on this question simply by looking at the data and seeing which one has a Liquidity rating higher than a Forecast rating.

Commodity	Performance	Volatility	Liquidity	Forecast	Price per Tonne
Wheat	3	6	2	1	£204.90
Oats	10	4	2	4	£113.00
Rice	10	3	3	6	£219.20
Corn	5	9	10	7	£116.00
Soybeans	8	7	8	7	£279.20

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High	Maximum
1	2	3	4	5	6	7	8	9	10

Q4 Of the commodities with a "Price per Tonne" lower than £200, you select the

commodity with the highest number of ratings between "Medium " and "High". Which commodity do you select?

- (A) Wheat
- (B) Oats
- (C) Rice
- (D) Corn
- (E) Soybeans
- (F) None of the above

Step 1 – Identify the commodities with a "Price per Tonne" lower than £200

Wheat = £164.20 Oats = £219.90 Rice = £241.30 Corn = £220.90 Soybeans = £180.30

**Step 2** – Of the applicable commodities, select the commodity with the highest number of ratings between "Medium" and "High".

Wheat = 3 ratings between "Medium" and "High" Soybeans = 1 rating between "Medium" and "High"

Thus the correct answer is (A) Wheat

Commodity	Performance	Volatility	Liquidity	Forecast	Price per Tonne
Wheat	3	6	2	1	£204.90
Oats	10	4	2	4	£113.00
Rice	10	3	3	6	£219.20
Corn	5	9	10	7	£116.00
Soybeans	8	7	8	7	£279.20

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High	Maximum
1	2	3	4	5	6	7	8	9	10

Q5 You want to invest in the commodity with both an average rating of "High" or

more across all features, and a rating of at least "High" for "Performance". Which commodity do you invest in?

- (A) Wheat
- (B) Oats
- (C) Rice
- (D) Corn
- (E) Soybeans
- (F) None of the above

Step 1 – Identify the commodities with an average rating of "High" across all features

Wheat = (8 + 4 + 7 + 3)/4 = 5.5Oats= (10 + 6 + 6 + 3)/4 = 6.25 **Rice=** (4 + 10 + 5 + 10)/4 = 7.25Corn= (1 + 1 + 4 + 2)/4 = 2Soybeans = (6 + 3 + 4 + 7)/4 = 5

**Step 2** – Of the applicable commodities, identify the commodity with a rating of "High" or more for "Performance"

Rice = rating of 4 for performance

Thus the correct answer is (F) None of the above

Commodity	Performance	Volatility	Liquidity	Forecast	Price per Tonne
Wheat	3	6	2	1	£204.90
Oats	10	4	2	4	£113.00
Rice	10	3	3	6	£219.20
Corn	5	9	10	7	£116.00
Soybeans	8	7	8	7	£279.20

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High	Maximum
1	2	3	4	5	6	7	8	9	10

Q6 You want to invest in the commodity with a "Price per Tonne" of less than £200 per Tonne, and with no ratings at or below "Low". Which commodity do you invest in?

- (A) Wheat
- (B) Oats
- (C) Rice
- (D) Corn
- (E) Soybeans
- (F) None of the above

Step 1 – Identify the commodities with a "Price per Tonne" of less than £200

Wheat = £191.90 Oats = £252.80 Rice = £215.90 Corn = £171.60 Soybeans = £270.60

**Step 2** – Of the applicable commodities, identify the commodities with no ratings at or below "Low"

#### Wheat = 0 ratings at or below "Low"

Corn = 2 ratings at or below "Low"

Thus the correct answer is (A) Wheat

Commodity	Performance	Volatility	Liquidity	Forecast	Price per Tonne
Wheat	3	6	2	1	£204.90
Oats	10	4	2	4	£113.00
Rice	10	3	3	6	£219.20
Corn	5	9	10	7	£116.00
Soybeans	8	7	8	7	£279.20

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High	Maximum
1	2	3	4	5	6	7	8	9	10

Q7 You do not want to invest in a commodity with a "Performance" rating lower

than its rating for "Forecast", a "Volatility" rating at or above "High", or a price per tonne of £200 or higher. Which commodity could you invest in?

- (A) Wheat
- (B) Oats
- (C) Rice
- (D) Corn
- (E) Soybeans
- (F) None of the above

Step 1 – identify the commodities with "Performance" ratings higher than its "Forecast" ratings

Wheat = 8 : 9 **Oats = 9 : 8 Rice = 8 : 7** Corn = 7 : 9 Soybeans = 2 : 10

**Step 2** – Of the applicable commodities, identify the commodities with a "Volatility" rating below "High".

Oats = 7Rice = 8

Thus the correct answer is (F) None of the above

Commodity	Performance	Volatility	Liquidity	Forecast	Price per Tonne
Wheat	3	6	2	1	£204.90
Oats	10	4	2	4	£113.00
Rice	10	3	3	6	£219.20
Corn	5	9	10	7	£116.00
Soybeans	8	7	8	7	£279.20

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High	Maximum
1	2	3	4	5	6	7	8	9	10

Q8 You want to either invest in a commodity with no ratings at or below

"Medium", or a commodity with an average "Performance" and "Liquidity" rating of "Above Average" or higher and a commodity with a "Price per Tonne" of £150 or lower. Which commodity do you invest in?

- (A) Wheat
- (B) Oats
- (C) Rice
- (D) Corn
- (E) Soybeans
- (F) None of the above

Step 1 – Identify a commodity with no ratings at or below "Medium"

Wheat = 2 ratings at or below "Medium" Oats = 2 ratings at or below "Medium" Rice = 1 rating at or below "Medium" Corn = 2 ratings at or below "Medium" Soybeans = 2 ratings at or below "Medium"

**Step 2** – Identify a commodity with an average "Performance" and "Liquidity" rating of "Above average" or higher.

Wheat = (6 + 6)/2 = 6Oats = (5 + 8)/2 = 6.5Rice = (5 + 7)/2 = 6Corn = (10 + 1)/2 = 5.5Soybeans = (5 + 7)/2 = 6 Wheat =  $\pounds 255.40$ Oats =  $\pounds 259.20$ Rice =  $\pounds 150.10$ Corn =  $\pounds 190.30$ Soybeans =  $\pounds 111.60$ 

Thus the correct answer is (E) Soybeans

Commodity	Performance	Volatility	Liquidity	Forecast	Price per Tonne
Wheat	7	8	5	10	£111.00
Oats	9	8	1	9	£196.40
Rice	4	8	5	2	£143.80
Corn	10	6	6	6	£141.40
Soybeans	3	7	9	5	£283.40

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High	Maximum
1	2	3	4	5	6	7	8	9	10

Q9 You consider "Performance" to be 50% more important than "Forecast",

which you consider to be 30% more important than either of the other two ratings. With this in mind, which commodity would have the highest weighted average across all four ratings?

- (A) Wheat
- (B) Oats
- (C) Rice
- (D) Corn
- (E) Soybeans
- (F) None of the above

Step 1 – Increase the "Forecast" rating by 30% for each commodity

Wheat =  $10 \times 1.3 = 13$ Oats =  $9 \times 1.3 = 11.7$ Rice =  $2 \times 1.3 = 2.6$ Corn =  $6 \times 1.3 = 7.8$ Soybeans =  $5 \times 1.3 = 6.5$ 

Step 2 – Increase the "Performance" rating by 30% and then 50% for each commodity

Wheat =  $7 \times 1.3 \times 1.5 = 13.65$ Oats =  $9 \times 1.3 \times 1.5 = 17.55$ Rice =  $4 \times 1.3 \times 1.5 = 7.8$ Corn =  $10 \times 1.3 \times 1.5 = 19.5$ Soybeans =  $3 \times 1.3 \times 1.5 = 5.85$  **Step 3** – Calculate the weighted average across all four features, and identify the commodity with the largest average

Wheat = (13.65 + 8 + 5 + 13)/4 = 9.9125Oats = (17.55 + 8 + 1 + 11.7)/4 = 9.5625Rice = (7.8 + 8 + 5 + 2.6)/4 = 5.85Corn = (19.5 + 6 + 6 + 7.8)/4 = 9.825Soybeans = (5.85 + 7 + 9 + 6.5)/4 = 7.0875

Thus, the correct answer is (A) Wheat.

Hotel	Comfort	Location	Service	Cleanliness	Price per Night
The Marmot	3	3	8	3	£117.00
Duchess and Rye	8	7	3	5	£86.00
El Pacifico	5	1	9	3	£64.00
Highway Inn	4	1	6	6	£116.00
Lanebrooke Spa	8	9	8	9	£97.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

**Q10** You want to stay at the hotel with the second highest number of ratings larger than "Above Average". Which hotel should you stay at?

- (A) The Marmot
- (B) Duchess and Rye
- (C) El Pacifico
- (D) Highway Inn
- (E) Lanebrooke Spa
- (F) None of the above

**Step 1** – identify the hotel with the <u>second</u> highest number of ratings larger than "Above Average"

The Marmot = 1 rating above "Above Average" **Duchess and Rye = 2 ratings above "Above Average"** El Pacifico = 1 rating above "Above Average" Highway Inn = 0 ratings above "Above Average" Lanebrooke Spa = 4 ratings above "Above Average"

Thus the correct answer is (B) Duchess and Rye

Hotel	Comfort	Location	Service	Cleanliness	Price per Night
The Marmot	3	3	8	3	£117.00
Duchess and Rye	8	7	3	5	£86.00
El Pacifico	5	1	9	3	£64.00
Highway Inn	4	1	6	6	£116.00
Lanebrooke Spa	8	6	8	9	£97.00

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Ratings Key:

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q11 You first select the hotels with no ratings at "Very Low" or lower. You then

select the hotels with "Comfort" ratings higher than their "Location" ratings. Of the remaining hotels, you select the cheapest. Which hotel do you select?

- (A) The Marmot
- (B) Duchess and Rye
- (C) El Pacifico
- (D) Highway Inn
- (E) Lanebrooke Spa
- (F) None of the above

Step 1 - Select the hotels with no ratings at "Very Low" or lower

The Marmot = 0 ratings at or below "Very Low" Duchess and Rye = 0 ratings at or below "Very Low" El Pacifico = 1 rating at or below "Very Low" Highway Inn = 1 rating at or below "Very Low" Lanebrooke Spa = 0 ratings at or below "Very Low"

**Step 2** – Of the applicable hotels, select the hotels with "Comfort" ratings higher than their "Location" ratings.

The Marmot = 3 : 3 Duchess and Rye = 8 : 7 Lanebrooke Spa = 8 : 6

Step 3 – Of the applicable hotels, select the cheapest

Duchess and Rye = £86.00 Lanebrooke Spa = £97.00

Thus the correct answer is (B) Duchess and Rye

Hotel	Comfort	Location	Service	Cleanliness	Price per Night
The Marmot	3	3	8	3	£117.00
Duchess and Rye	8	7	3	5	£86.00
El Pacifico	5	1	9	3	£64.00
Highway Inn	4	1	6	6	£116.00
Lanebrooke Spa	8	6	8	9	£97.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q12 Hotel Luxor (not shown) has a "Location" to "Comfort" ratings ratio of 2:3.

Which hotels have a lower "Location" to "Comfort" ratio than Hotel Luxor?

- (A) The Marmot and Duchess and Rye
- (B) El Pacifico and Highway Inn
- (C) Lanebrooke Spa and The Marmot
- (D) El Pacifico and Lanebrooke Spa
- (E) Duchess and Rye and Lanebrooke Spa
- (F) None of the above

**Step 1** – Calculate the "Location" to "Comfort" ratio of each hotel, and identify the hotels with a ratio lower than that of Hotel Luxor (0.667).

The Marmot = 3:3 = 1:1 (1.0) Duchess and Rye = 7:5 (1.4) **El Pacifico = 1:5 (0.2) Highway Inn = 1:4 (0.25)** Lanebrooke Spa = 9:8 (1.125)

Thus the correct answer is (B) El Pacifico and Highway Inn

Hotel	Comfort	Location	Service	Cleanliness	Price per Night
The Marmot	3	3	8	3	£117.00
Duchess and Rye	8	7	3	5	£86.00
El Pacifico	5	1	9	3	£64.00
Highway Inn	4	1	6	6	£116.00
Lanebrooke Spa	8	6	8	9	£97.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q13 Of the hotels with a "Location" rating at or above "High" you select the two

hotels with the lowest "Price per Night". Of those two hotels, you select the hotel with the highest rating for "Comfort". Which hotel do you select?

(A) The Marmot

- (B) Duchess and Rye
- (C) El Pacifico
- (D) Highway Inn
- (E) Lanebrooke Spa
- (F) None of the above

Step 1 – Identify the hotels with "Location" ratings at or above "High"

The Marmot = 3 **Duchess and Rye = 7 El Pacifico = 8** Highway Inn = 1 **Lanebrooke Spa = 9** 

Step 2 – Of the applicable hotels, select the two with the lowest "Price per Night"

Duchess and Rye = £86.00 El Pacifico = £64.00 Lanebrooke Spa = £97.00

Step 3 – Of the applicable hotels, select the hotel with the highest rating for comfort.

Duchess and Rye = 8 El Pacifico = 5

Thus the correct answer is (B) Duchess and Rye

Hotel	Comfort	Location	Service	Cleanliness	Price per Night
The Marmot	3	3	8	3	£117.00
Duchess and Rye	8	7	3	5	£86.00
El Pacifico	5	1	9	3	£64.00
Highway Inn	4	1	6	6	£116.00
Lanebrooke Spa	8	6	8	9	£97.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q14 Imagine that the most expensive hotel per night has a "Price" rating of

"Extremely High", the least expensive hotel has a "Price" rating of "Extremely Low" and every other hotel has a "Price" rating of "Medium". With this in mind, which hotel has the highest overall rating across all 5 features?

- (A) The Marmot
- (B) Duchess and Rye
- (C) El Pacifico
- (D) Highway Inn
- (E) Lanebrooke Spa
- (F) None of the above

Step 1 – Identify the "Price" ratings for each hotel based on the "Price per Night"

The Marmot =  $\pounds$ 117.00 = Extremely High Duchess and Rye =  $\pounds$ 86.00 = Medium El Pacifico =  $\pounds$ 64.00= Extremely low Highway Inn =  $\pounds$ 116.00 = Medium Lanebrooke Spa =  $\pounds$ 97.00 = Medium

**Step 2** – Calculate the average based on the five ratings (including the new "Price" rating and identify the hotel with the highest rating.

The Marmot = (3 + 3 + 8 + 3 + 9) / 5 = 5.2Duchess and Rye = (8 + 7 + 3 + 5 + 5) / 5 = 5.6El Pacifico = (5 + 1 + 9 + 3 + 1) / 5 = 3.8Highway Inn = (4 + 1 + 6 + 6 + 5) / 5 = 4.4Lanebrooke Spa = (8 + 9 + 8 + 9 + 5) / 5 = 7.8

Thus the correct answer is (E) Lanebrooke Spa

Hotel	Comfort	Location	Service	Cleanliness	Price per Night
The Marmot	3	3	8	3	£117.00
Duchess and Rye	8	7	3	5	£86.00
El Pacifico	5	1	9	3	£64.00
Highway Inn	4	1	6	6	£116.00
Lanebrooke Spa	8	6	8	9	£97.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q15 You want to stay at the hotel with the highest possible combined score on

"Comfort" and "Service" while not paying more than £500 for five nights. Which hotel do you choose?

- (A) The Marmot
- (B) Duchess and Rye
- (C) El Pacifico
- (D) Highway Inn
- (E) Lanebrooke Spa
- (F) None of the above

Step 1 – Identify the hotels which would cost less than £500 for five nights.

The Marmot =  $\pounds 117.00 \times 5 = \pounds 585$ Duchess and Rye =  $\pounds 86.00 \times 5 = \pounds 430$ El Pacifico =  $\pounds 64.00 \times 5 = \pounds 325$ Highway Inn =  $\pounds 116.00 \times 5 = \pounds 580$ Lanebrooke Spa =  $\pounds 97.00 \times 5 = \pounds 485$ 

**Step 2** – Of the applicable hotels, select the hotel with the highest combined score on "Comfort" and "Service.

Duchess and Rye = 8 + 3 = 11El Pacifico = 5 + 9 = 14Lanebrooke Spa = 8 + 8 = 16

Thus the correct answer is (E) Lanebrooke Spa

Hotel	Comfort	Location	Service	Cleanliness	Price per Night
The Marmot	3	3	8	3	£117.00
Duchess and Rye	8	7	3	5	£86.00
El Pacifico	5	1	9	3	£64.00
Highway Inn	4	1	6	6	£116.00
Lanebrooke Spa	8	6	8	9	£97.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q16 You do not want to stay at a hotel with a "Cleanliness" rating below

"Medium", a "Location" rating lower than its "Comfort" rating, or a "Price per Night" above £150. Which hotel could you stay in?

- (A) The Marmot
- (B) Duchess and Rye
- (C) El Pacifico
- (D) Highway Inn
- (E) Lanebrooke Spa
- (F) None of the above

Step 1 – Identify the hotels with a cleanliness rating at or above "Medium"

The Marmot = 3 **Duchess and Rye = 5** El Pacifico = 3 **Highway Inn = 6 Lanebrooke Spa = 9** 

**Step 2** – Of the applicable hotels, identify the hotels with "Location" ratings higher than their "Comfort" ratings.

**Step 3** – Duchess and Rye = 7 : 8 Highway Inn = 1 : 4 **Lanebrooke Spa = 9 : 8** 

Step 3 – Identify whether the applicable hotel has a "Price per night" lower than £150

#### Lanebrooke Spa = £97.00

Thus the correct answer is (E) Lanebrooke Spa

Hotel	Comfort	Location	Service	Cleanliness	Price per Night
The Marmot	3	3	8	3	£117.00
Duchess and Rye	8	7	3	5	£86.00
El Pacifico	5	1	9	3	£64.00
Highway Inn	4	1	6	6	£116.00
Lanebrooke Spa	8	6	8	9	£97.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q17 You choose to stay at hotels with an average rating of "High" or greater

across all features, or a "Price per Night" of £100 or lower, or a "Service" rating at extremely high. If you stay 1 night at each applicable Hotel, how much would you spend?

- (A) £261.00
- (B) £270.00
- (C) £279.00
- (D) £288.00
- (E) £297.00
- (F) None of the above

**Step 1** – Calculate the average rating across all features for each hotel and select the hotels with an average rating at or above "High"

The Marmot = (3 + 3 + 8 + 3)/4 = 4.25Duchess and Rye = (8 + 7 + 3 + 5)/4 = 5.75El Pacifico = (5 + 1 + 9 + 3)/4 = 4.50Highway Inn = (4 + 1 + 6 + 6)/4 = 4.25Lanebrooke Spa = (8 + 9 + 8 + 9)/4 = 8.50

**Step 2** – Identify the hotels with a "Price per Night" of £100 or less

The Marmot =  $\pounds 117.00$ Duchess and Rye =  $\pounds 186.00$ El Pacifico =  $\pounds 164.00$ Highway Inn =  $\pounds 116.00$ Lanebrooke Spa =  $\pounds 97.00$  Step 3 – Identify the hotels with "Service" ratings of "Extremely High".

The Marmot = 8 Duchess and Rye = 3 **El Pacifico = 9** Highway Inn = 6 Lanebrooke Spa = 8

Step 4 – Calculate how much it would cost to spend 1 night at each applicable hotel.

 $\pounds97.00 + \pounds164.00 = \pounds261.00$ 

Thus the correct answer is (A) £261.00

Hotel	Comfort	Location	Service	Cleanliness	Price per Night
The Marmot	7	3	7	7	£127.00
Duchess and Rye	1	5	9	3	£128.00
El Pacifico	7	3	9	9	£69.00
Highway Inn	6	4	9	6	£89.00
Lanebrooke Spa	8	4	4	1	£130.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

**Q18** You consider "Comfort" to be 75% more important than "Service", and

"Service" to be twice as important as "Cleanliness". You consider "Location" to be irrelevant. With this in mind, which Hotel has the highest weight average rating across all relevant features?

- (A) The Marmot
- (B) Duchess and Rye
- (C) El Pacifico
- (D) Highway Inn
- (E) Lanebrooke Spa
- (F) None of the above

Step 1 – Double each hotel's rating for "Service".

The Marmot =  $7 \times 2 = 14$ Duchess and Rye =  $9 \times 2 = 18$ El Pacifico =  $9 \times 2 = 18$ Highway Inn =  $9 \times 2 = 18$ Lanebrooke Spa =  $4 \times 2 = 8$ 

Step 2 – Double each hotel's rating for "Comfort" and increase that by 75%.

The Marmot =  $7 \times 2 \times 1.75 = 24.5$ Duchess and Rye =  $1 \times 2 \times 1.75 = 3.5$ El Pacifico =  $7 \times 2 \times 1.75 = 24.5$ Highway Inn =  $6 \times 2 \times 1.75 = 21$ Lanebrooke Spa =  $8 \times 2 \times 1.75 = 28$  **Step 3** – Calculate the weighted average across the 3 relevant features (not including location)

The Marmot = (24.5 + 14 + 7) / 3 = 15.17Duchess and Rye = (3.5 + 18 + 3) / 3 = 8.17**EI Pacifico = (24.5 + 18 + 9) / 3 = 17.17** Highway Inn = (21 + 18 + 6) / 3 = 15Lanebrooke Spa = (28 + 8 + 1) / 3 = 12.33

Thus the correct answer is (C) El Pacifico

# NUMERICAL REASONING TEST 13

## Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 

Corporate Venue	Accessibility	Services	Location	Catering	Cost per Day
Meeting Room	6	5	4	9	£510.00
Conference Hall	4	7	1	3	£820.00
Renta-space	2	1	6	1	£1,000.00
Johnson Venues	6	6	9	8	£520.00
Studio Hire	5	3	6	6	£820.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

**Q1** You want to book the venue with the fewest ratings at or below "Low". Which venue are you least likely to book?

- (A) Meeting Room
- (B) Conference Hall
- (C) Renta-space
- (D) Johnson Venues
- (E) Studio Hire
- (F) None of the above

Step 1 – Identify the venue with the highest number of ratings at or below "Low"

Meeting Room = 0 ratings at or below "Low" Conference Hall = 2 ratings at or below "Low" **Renta-space = 3 ratings at or below "Low"** Johnson Venues = 0 ratings at or below "Low" Studio Hire = 1 ratings at or below "Low"

Thus, the correct answer is (C) Renta-space
Corporate Venue	Accessibility	Services	Location	Catering	Cost per Day
Meeting Room	6	5	4	9	£510.00
Conference Hall	4	7	1	3	£820.00
Renta-space	2	1	6	1	£1,000.00
Johnson Venues	6	6	9	8	£520.00
Studio Hire	5	3	6	6	£820.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q2 You select the venues with an "Accessibility" rating at or above "Medium",

you then select the venues with no ratings at or below "Low". Of the remaining venues, you choose the cheapest. Which venue have you chosen?

- (A) Meeting Room
- (B) Conference Hall
- (C) Renta-space
- (D) Johnson Venues
- (E) Studio Hire
- (F) None of the above

Step 1 – Select the venues with "Accessibility" ratings at or above "Medium".

Meeting Room = 6

Conference Hall = 4 Renta-space = 2 Johnson Venues = 6 Studio Hire = 5

Step 2 – Of the applicable venues, select the venues with no ratings at or below "Low"

Meeting Room = 0 ratings at or below "Low" Johnson Venues = 0 ratings at or below "Low" Studio Hire = 1 rating at or below "Low"

Step 2 - Of the applicable venues, select the cheapest

 $\begin{array}{l} \textbf{Meeting Room} = \texttt{\texttt{5510.00}}\\ \textbf{Johnson Venues} = \texttt{\texttt{5520.00}} \end{array}$ 

Thus, the correct answer is (A) Meeting Room

Corporate Venue	Accessibility	Services	Location	Catering	Cost per Day
Meeting Room	6	5	4	9	£510.00
Conference Hall	4	7	1	3	£820.00
Renta-space	2	1	6	1	£1,000.00
Johnson Venues	6	6	9	8	£520.00
Studio Hire	5	3	6	6	£820.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q3 You only want to book a venue with an overall average rating of "Medium" or

higher across all features, and a "Catering" rating which would be considered greater than the average across the 5 venues. Which venue do you book?

- (A) Meeting Room
- (B) Conference Hall
- (C) Renta-space
- (D) Johnson Venues
- (E) Studio Hire
- (F) None of the above

Step 1 – Identify the venues with an overall average rating of "Medium" or higher.

Meeting Room = (6 + 5 + 4 + 5)/4 = 5Conference Hall = (4 + 7 + 1 + 7)/4 = 4.75Renta-space = (2 + 1 + 6 + 9)/4 = 4.5Johnson Venues = (6 + 6 + 9 + 5)/4 = 6.5Studio Hire = (5 + 3 + 6 + 6)/4 = 5

**Step 2** – Of the applicable venues, select a venue with a "Catering" rating which would be considered greater than the average across the 5 venues.

Average catering rating = (5 + 7 + 9 + 5 + 6) / 5 = 6.4

Meeting Room = 5 Johnson Venues = 5 Studio Hire = 6

Thus, the correct answer is (F) None of the above

Corporate Venue	Accessibility	Services	Location	Catering	Cost per Day
Meeting Room	6	5	4	9	£510.00
Conference Hall	4	7	1	3	£820.00
Renta-space	2	1	6	1	£1,000.00
Johnson Venues	6	6	9	8	£520.00
Studio Hire	5	3	6	6	£820.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q4 Of the venues with a rating of "Medium" or above for "Location", you select

the venues with an average rating across all features higher than "Studio Hire". Which venue do you choose?

- (A) Meeting Room
- (B) Conference Hall
- (C) Renta-space
- (D) Johnson Venues
- (E) Studio Hire
- (F) None of the above

Step 1 – Identify the venues with a rating of "Medium" or above for "Location"

Meeting Room = 4 Conference Hall = 1 **Renta-space = 6** Johnson Venues = 9 Studio Hire = 6

**Step 2** – Of the applicable venues, identify the average overall ratings for each venue, and select the venue with a rating higher than "Studio Hire".

Studio Hire = (5 + 3 + 6 + 6) / 4 = 5 Renta-space = (2 + 1 + 6 + 1) / 4 = 2.5 Johnson Venues = (6 + 6 + 9 + 8) / 4 = 7.25

Corporate Venue	Accessibility	Services	Location	Catering	Cost per Day
Meeting Room	6	5	4	9	£510.00
Conference Hall	4	7	1	3	£820.00
Renta-space	2	1	6	1	£1,000.00
Johnson Venues	6	6	9	8	£520.00
Studio Hire	5	3	6	6	£820.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

**Q5** You want to book the venue with the highest overall average you can get while not paying more than £650 per day. Which venue should you book?

- (A) Meeting Room
- (B) Conference Hall
- (C) Renta-space
- (D) Johnson Venues
- (E) Studio Hire
- (F) None of the above

Step 1 – Identify the venues which charge less than  $\pounds650$  per day

Meeting Room =  $\pounds$ 530.00 Conference Hall =  $\pounds$ 820.00 Renta-space =  $\pounds$ 1,000.00 Johnson Venues =  $\pounds$ 520.00 Studio Hire =  $\pounds$ 820.00

**Step 2** – Calculate the overall average rating for the applicable venues, and select the venue with the highest average.

Meeting Room = (6 + 5 + 4 + 9) / 4 = 6 Johnson Venues = (6 + 6 + 9 + 8) / 4 = 7.25

Corporate Venue	Accessibility	Services	Location	Catering	Cost per Day
Meeting Room	6	5	4	9	£510.00
Conference Hall	4	7	1	3	£820.00
Renta-space	2	1	6	1	£1,000.00
Johnson Venues	6	6	9	8	£520.00
Studio Hire	5	3	6	6	£820.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

**Q6** You want to book a venue with as few ratings at or below "Low" as possible, while not paying more than £3,750 for 5 days. Which venue can you book?

- (A) Meeting Room
- (B) Conference Hall
- (C) Renta-space
- (D) Johnson Venues
- (E) Studio Hire
- (F) None of the above

Step 1 – Identify which venues would cost less than £3,750 for 5 days

Meeting Room =  $\pounds 510.00 \times 5 = \pounds 2,250$ Conference Hall =  $\pounds 820.00 \times 5 = \pounds 4,100$ Renta-space =  $\pounds 1,000.00 \times 5 = \pounds 5,000$ Johnson Venues =  $\pounds 520.00 \times 5 = \pounds 2,600$ Studio Hire =  $\pounds 820.00 \times 5 = \pounds 4,100$ 

Step 2 – Of the applicable venues, select the venue with the fewest ratings at or below "Low.

Meeting Room = 1 rating at or below "Low" Johnson Venues = 0 ratings at or below "Low"

Corporate Venue	Accessibility	Services	Location	Catering	Cost per Day
Meeting Room	6	5	4	9	£510.00
Conference Hall	4	7	1	3	£820.00
Renta-space	2	1	6	1	£1,000.00
Johnson Venues	6	6	9	8	£520.00
Studio Hire	5	3	6	6	£820.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

**Q7** You do not want to book a venue with the lowest rating for any of the four ratings. Which venue can you book?

- (A) Meeting Room
- (B) Conference Hall
- (C) Renta-space
- (D) Johnson Venues
- (E) Studio Hire
- (F) None of the above

Step 1 – Select the venue with the lowest number of ratings across any of the four ratings.

#### Meeting Room = No lowest ratings

Conference Hall = Lowest rating for "Location" Renta-space = Lowest rating for "Accessibility" Johnson Venues = Lowest rating for "Catering" Studio Hire = Lowest rating for "Services"

Thus, the correct answer is (A) Meeting Room

Corporate Venue	Accessibility	Services	Location	Catering	Cost per Day
Meeting Room	6	5	4	9	£510.00
Conference Hall	4	7	1	3	£820.00
Renta-space	2	1	6	1	£1,000.00
Johnson Venues	6	6	9	8	£520.00
Studio Hire	5	3	6	6	£820.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q8 The venue with the lowest overall average rating across all features is

offering a 25% discount on its "Cost per Day". How much would it cost to book this venue for 3 days?

- (A) £1,982.50
- (B) £2,047.50
- (C) £2,112.50
- (D) £2,177.50
- (E) £2,242.50
- (F) None of the above

Step 1 – Identify the venue with the lowest overall average across all features

Meeting Room = (6 + 5 + 4 + 9) / 4 = 6Conference Hall = (4 + 7 + 1 + 3) / 4 = 3.75**Renta-space = (2 + 5 + 6 + 1) / 4 = 3.5** Johnson Venues = (6 + 6 + 9 + 8) / 4 = 7.25Studio Hire = (5 + 3 + 6 + 6) / 4 = 5

**Step 2** – Calculate how much it would cost to book this venue for 3 days, with a 25% discount.

£910.00 x 3 = £2,730 £2,730 - (£2,730 x 0.25) =£2,047.50

Thus, the correct answer is (B) £2,047.50

Corporate Venue	Accessibility	Services	Location	Catering	Cost per Day
Meeting Room	6	5	4	9	£510.00
Conference Hall	4	7	1	3	£820.00
Renta-space	2	1	6	1	£1,000.00
Johnson Venues	6	6	9	8	£520.00
Studio Hire	5	3	6	6	£820.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q9 You consider "Location" to be twice as important as "Services" and

"Catering". You consider "Accessibility" to be irrelevant. With this in mind, which venue has the highest weighted average across the relevant features?

- (A) Meeting Room
- (B) Conference Hall
- (C) Renta-space
- (D) Johnson Venues
- (E) Studio Hire
- (F) None of the above

Step 1 – Double the "Location" rating for each venue

Meeting Room =  $9 x^2 = 18$ Conference Hall = 5 x 2 = 10Renta-space =  $1 x^2 = 2$ Johnson Venues = 6 x 2 = 12Studio Hire = 1 x 2 = 2

**Step 2** – Calculate the weighted average score across the 3 relevant features (not including "Accessibility") and identify the venue with the highest average.

Meeting Room = (2 + 18 + 3)/3 = 7.67Conference Hall = (6 + 10 + 2)/3 = 6Renta-space = (9 + 2 + 9)/3 = 6.67Johnson Venues = (6 + 12 + 9)/3 = 9Studio Hire = (2 + 2 + 7)/3 = 3.67

# NUMERICAL REASONING TEST 14

### Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 

Energy Provider	Customer Service	Eco- friendliness	Clarity of Billing	Payment Options	Monthly Bill
DZpower	4	5	3	7	£70.00
GasTech	2	1	9	6	£73.00
UK Power	9	7	9	1	£67.00
HM Electrical	9	1	4	5	£61.00
Global Gas	1	4	1	8	£72.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

**Q1** You want to sign up with the energy provider with the lowest "Monthly Bill" to "Payment Options" ratio. Which energy provider do you select?

- (A) DZpower
- (B) GasTech
- (C) UK Power
- (D) HM Electrical
- (E) Global Gas
- (F) None of the above

**Step 1** – Calculate the "Monthly Bill" to "Payment Options" ratio for each energy provider and select the lowest

DZpower = £70.0 / 7 = 10 GasTech = £73.00 / 6 = 12.17 UK Power = £67.00 / 1 = 67 HM Electrical = £61.00 / 5 = 12.2Global Gas = £72.00 / 8 = 9

Thus the correct answer is (E) Global Gas

Energy Provider	Customer Service	Eco- friendliness	Clarity of Billing	Payment Options	Monthly Bill
DZpower	4	5	3	7	£70.00
GasTech	2	1	9	6	£73.00
UK Power	9	7	9	1	£67.00
HM Electrical	9	1	4	5	£61.00
Global Gas	1	4	1	8	£72.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q2 You select the three energy providers with the highest rating for "Customer

Service". From these providers, you select the two with the highest rating for "Eco-friendliness". You then select the provider with the lowest "Monthly Bill", which provider do you select?

- (A) DZpower
- (B) GasTech
- (C) UK Power
- (D) HM Electrical
- (E) Global Gas
- (F) None of the above

Step 1 – Select the three energy providers with the highest rating for "Customer Service"

**DZpower = 4** GasTech = 2 **UK Power = 9 HM Electrical = 9** Global Gas = 1

**Step 2** – Of the applicable energy providers, select the two energy providers with the highest ratings for "Eco-friendliness"

DZpower = 5 UK Power = 7 HM Electrical = 1

Step 3 – Of the applicable energy providers, select the provider with the lowest "Monthly Bill"

*DZpower* = £70.00 *UK Power* = £67.00

Thus the correct answer is (C) UK Power

Energy Provider	Customer Service	Eco- friendliness	Clarity of Billing	Payment Options	Monthly Bill
DZpower	4	5	3	7	£70.00
GasTech	2	1	9	6	£73.00
UK Power	9	7	9	1	£67.00
HM Electrical	9	1	4	5	£61.00
Global Gas	1	4	1	8	£72.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

**Q3** You only want to sign up with an energy provider with a rating of "Extremely High" for both "Payment Options" and "Clarity of Billing". Which provider do you choose?

(A) DZpower

- (B) GasTech
- (C) UK Power
- (D) HM Electrical
- (E) Global Gas
- (F) None of the above

**Step 1** – Select an energy provider with a rating of "Extremely high" for both "Payment Options" and "Clarity of Billing"

DZpower = 7 and 3 GasTech = 6 and 9 UK Power = 1 and 9 HM Electrical = 5 and 4Global Gas = 8 and 1

Thus the correct answer is (F) None of the above

Energy Provider	Customer Service	Eco- friendliness	Clarity of Billing	Payment Options	Monthly Bill
DZpower	4	5	3	7	£70.00
GasTech	2	1	9	6	£73.00
UK Power	9	7	9	1	£67.00
HM Electrical	9	1	4	5	£61.00
Global Gas	1	4	1	8	£72.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q4 You select the energy providers with "Clarity of Billing" ratings of "Above

Average" or higher. Of these providers, you select the providers with a "Customer Service" rating of "Medium" or higher. You then choose this provider and sign up for one year. How much would this cost?

- (A) £734.00
- (B) £699.00
- (C) £734.00
- (D) £769.00
- (E) £804.00
- (F) None of the above

Step 1 – Select the providers with a rating of "Above Average" or higher for "Clarity of Billing"

DZpower = 3 GasTech =9 UK Power =9 HM Electrical = 4 Global Gas = 1

**Step 2** – Of the applicable companies, select the providers with a rating of "Medium" or higher for "Customer Service"

GasTech = 2 UK Power = 9

Step 3 - Calculate how much it would cost to sign up with this provider for 1 year

 $\pounds 67.00 \times 12 = \pounds 804$ 

Thus the correct answer is (E) £804

Energy Provider	Customer Service	Eco- friendliness	Clarity of Billing	Payment Options	Monthly Bill
DZpower	4	5	3	7	£70.00
GasTech	2	1	9	6	£73.00
UK Power	9	7	9	1	£67.00
HM Electrical	9	1	4	5	£61.00
Global Gas	1	4	1	8	£72.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

**Q5** You want to sign up with the energy provider with the lowest "Monthly Billing" to overall average rating ratio across all features. Which provider do you select?

- (A) DZpower
- (B) GasTech
- (C) UK Power
- (D) HM Electrical
- (E) Global Gas
- (F) None of the above

Step 1 – Calculate the overall average rating of each energy provider across all four features

DZpower = (8 + 1 + 5 + 7) / 4 = 5.25 GasTech = (6 + 7 + 6 + 8) / 4 = 6.75 UK Power = (2 + 6 + 8 + 6) / 4 = 5.5 HM Electrical = (7 + 4 + 2 + 3) / 4 = 4Global Gas = (9 + 1 + 4 + 1) / 4 = 3.75

**Step 2** – Calculate the "Monthly Billing" to overall average rating ratio for each provider and select the provider with the lowest ratio

 $DZpower = \pm 80.00 / 5.25 = 15.24$   $GasTech = \pm 96.00 / 6.75 = 14.22$   $UK Power = \pm 88.00 / 5.5 = 16$   $HM Electrical = \pm 86.00 / 4 = 21.5$  $Global Gas = \pm 84.00 / 3.75 = 22.4$ 

Thus the correct answer is (B) GasTech

Energy Provider	Customer Service	Eco- friendliness	Clarity of Billing	Payment Options	Monthly Bill
DZpower	4	5	3	7	£70.00
GasTech	2	1	9	6	£73.00
UK Power	9	7	9	1	£67.00
HM Electrical	9	1	4	5	£61.00
Global Gas	1	4	1	8	£72.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q6 You want to sign up with the energy provider with the highest rating for "Eco-

friendliness" you can get while still having no ratings below "Low". Which provider do you choose?

- (A) DZpower
- (B) GasTech
- (C) UK Power
- (D) HM Electrical
- (E) Global Gas
- (F) None of the above

Step 1 – Identify the energy providers with no ratings below "Low"

#### DZpower = No ratings below "Low"

GasTech = 1 rating below "Low" UK Power = 2 ratings below "Low" HM Electrical = 1 rating below "Low" Global Gas = No ratings below "Low"

**Step 2** – Of the applicable providers, select the provider with the highest rating for "Eco-Friendliness"

DZpower = 3 Global Gas = 5

Thus the correct answer is (E) Global Gas

Energy Provider	Customer Service	Eco- friendliness	Clarity of Billing	Payment Options	Monthly Bill
DZpower	4	5	3	7	£70.00
GasTech	2	1	9	6	£73.00
UK Power	9	7	9	1	£67.00
HM Electrical	9	1	4	5	£61.00
Global Gas	1	4	1	8	£72.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q7 You don't want to sign up to an energy provider with an "Eco-Friendliness"

rating of "Low" or lower. You also don't want to sign up to a provider with any rating at "Very Low" or lower. Which providers can you sign up with?

(A) DZpower & GasTech

- (B) UK Power & HM Electrical
- (C) GasTech & UK Power
- (D) HM Electrical & DZpower
- (E) Global Gas & HM Electrical
- (F) None of the above

Step 1 – Identify the providers with "Eco-Friendliness" ratings higher than "Low"

DZpower = 5 GasTech =6 UK Power = 5 HM Electrical = 8 Global Gas = 8

Step 2 – Identify the providers with no ratings at "Very Low" or lower

DZpower = 1 rating at "Very low" or lower GasTech =0 ratings at "Very low" or lower UK Power = 0 ratings at "Very low" or lower HM Electrical = 1 rating at "Very low" or lower Global Gas = 1 rating at "Very low" or lower

Thus the correct answer is (C) GasTech & UK Power

Energy Provider	Customer Service	Eco- friendliness	Clarity of Billing	Payment Options	Monthly Bill
DZpower	4	5	3	7	£70.00
GasTech	2	1	9	6	£73.00
UK Power	9	7	9	1	£67.00
HM Electrical	9	1	4	5	£61.00
Global Gas	1	4	1	8	£72.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q8 You either want to sign up to an energy provider with a combined "Customer

Service" and "Clarity of Billing" rating of 16 or higher, or a provider with a "Monthly Bill" to "Customer Service" ratio of £10 or lower. Which providers can you sign up with?

- (A) DZpower
- (B) GasTech
- (C) UK Power
- (D) HM Electrical
- (E) Global Gas
- (F) None of the above

**Step 1** – Calculate the combined "Customer Service" and "Clarity of Billing" ratings of each provider

DZpower = 7 + 7 = 14 GasTech = 5 + 2 = 7 UK Power = 5 + 1 = 6 HM Electrical = 2 + 1 = 2Global Gas = 8 + 5 = 13

Step 2 – Identify a provider with a "Monthly Bill" to "Customer Service" ratio of £10 or lower

DZpower = £77.00 / 7 = £11 GasTech = £98.00 / 2 = £49 UK Power = £82.00 / 1 = £82 HM Electrical = £56.00 / 1 = £56Global Gas = £90.00 / 5 = £18

Thus the correct answer is (F) None of the above

Energy Provider	Customer Service	Eco- friendliness	Clarity of Billing	Payment Options	Monthly Bill
DZpower	4	5	3	7	£70.00
GasTech	2	1	9	6	£73.00
UK Power	9	7	9	1	£67.00
HM Electrical	9	1	4	5	£61.00
Global Gas	1	4	1	8	£72.00

Extremely Low	Very Low	Low	Below Average	Medium	Above Average	High	Very High	Extremely High
1	2	3	4	5	6	7	8	9

Q9 You want to sign up with the energy provider with the highest average rating

across "Eco-Friendliness" and "Clarity of Billing", but you are willing to give up 1 point of this average rating for two points of "Customer Service". Which energy provider do you sign up with?

- (A) DZpower
- (B) GasTech
- (C) UK Power
- (D) HM Electrical
- (E) Global Gas
- (F) None of the above

**Step 1** – Calculate the average rating across "Eco-Friendliness" and "Clarity of Billing" for each provider

DZpower = (3 + 8) / 2 = 5.5GasTech = (8 + 7) / 2 = 7.5 UK Power = (8 + 9) / 2 = 8.5 HM Electrical = (3 + 9) / 2 = 6 Global Gas = (1 + 2) / 2 = 1.5

**Step 2** – Halve the "Customer Service" rating for each provider, and add that to their average rating for "Eco-Friendliness" and "Clarity of Billing", then select the highest.

DZpower = 5.5 + (5/2) = 8 GasTech = 7.5 + (9/2) = 12 UK Power = 8.5 + (4/2) = 10.5 HM Electrical = 6 + (9/2) = 10.5Global Gas = 1.5 + (6/2) = 4.5

Thus the correct answer is (B) GasTech

### NUMERICAL REASONING TEST 15

#### Instructions

This Numerical reasoning test comprises 20 questions and you will have 20 minutes in which to correctly answer as many as you can.

In each question you will be presented with tables, graphs or charts followed by three or four questions. You will need to determine which answer is correct based on the information provided in the passages only.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. **The test will start on the next page.** 



Q1 How many Bernd cars were sold in May?

- (A) 10(B) 1,000
- (C) 5,000
- (D) 10,000

The trick to this question is to recognise that the graph gives sales figures <u>cumulatively</u>.

**Step 1** - We see from the graph that the cumulative Bernd sales at the end of April are 9,000. We see that the cumulative Bernd sales at the end of May are 10,000.

Step 2 - Therefore during May (10,000 – 9,000 =) 1,000 Bernd cars must have been sold.

Thus the correct answer is (B) 1,000



- Q2 What were the total sales of Tymko cars for May, June and July combined?
  - (A) 21,000(B) 16,000(C) 22,000(D) 6,000

Don't waste time working out the sales for each month. Since the data is cumulative, we can say combined sales for May, June and July = (cumulative sales for end of July) – (cumulative sales end of April).

Step 1 - (Cumulative sales July) - (Cumulative sales April) = (21,000) - (15,000) = 6,000

Thus the correct answer is (D) 6,000



Q3 If the number of Bernd cars sold in July had been equal to the number of

Bernd cars sold in June, how many more Bernd cars would have been sold during July?

(A) 1,000
(B) 1
(C) 12,000
(D) 2,000

**Step 1** - First, find out the number of Bernd cars sold in June. From the cumulative graph we see this is 1,000.

**Step 2** - Now, compare this with how many Bernd cars were actually sold in July. We see from the graph there were no sales 1,000 - 0 = 1,000

Thus the correct answer is (A) 1,000

	Population at start of year (thousands)	Live births per 1000 population (Jan-Dec)	Deaths per 1000 population (Jan-Dec)	% Population under 15 at start of year	% Population aged 60 or over at start of year
London	7,500	11.2	9.7	16	18
Birmingham	995	13.6	12.7	18	22
Glasgow	600	13.8	13.2	21	21
Liverpool	500	13.4	12.4	22	22
Leeds	450	14.1	13.0	23	23

## City Population Composition (Year 2000)

**Q4** In Liverpool what was the net effect of live birth and death rates on the population during 2000?

- (A) 200 decrease
- (B) 600 increase
- (C) 500 increase
- (D) 300 increase

**Step 1** - In Liverpool the population was 500,000 at the start of the year. We are told there were 13.4 births per thousand of the population. So this means there were  $(500 \times 13.4 =)$  6,700.

**Step 2** - We are told there were 12.4 deaths per thousand of the population, i.e.  $500 \times 12.4 = 6,200$ .

**Step 3** - The net effect on population is 6,700 - 6,200 = 500.

Thus the correct answer is (C) 500 increase.

## City Population Composition (Year 2000)

	Population at start of year (thousands)	Live births per 1000 population (Jan-Dec)	Deaths per 1000 population (Jan-Dec)	% Population under 15 at start of year	% Population aged 60 or over at start of year
London	7,500	11.2	9.7	16	18
Birmingham	995	13.6	12.7	18	22
Glasgow	600	13.8	13.2	21	21
Liverpool	500	13.4	12.4	22	22
Leeds	450	14.1	13.0	23	23

# **Q5** How many live births occurred in 2000 in Birmingham and Glasgow combined?

(A) 21,812(B) 18,210(C) 16,700(D) 32,100

Step 1 - In Birmingham there were  $995 \times 13.6 = 13,532$  births. In Glasgow there were  $600 \times 13.8 = 8,280$  live births. In total that is 13,532 + 8,280 = 21,812

Thus the correct answer is (A) 21,812

## City Population Composition (Year 2000)

	Population at start of year (thousands)	Live births per 1000 population (Jan-Dec)	Deaths per 1000 population (Jan-Dec)	% Population under 15 at start of year	% Population aged 60 or over at start of year
London	7,500	11.2	9.7	16	18
Birmingham	995	13.6	12.7	18	22
Glasgow	600	13.8	13.2	21	21
Liverpool	500	13.4	12.4	22	22
Leeds	450	14.1	13.0	23	23

**Q6** Of the cities shown, which had the lowest number of people under the age of 15 at the start of the year 2000?

- (A) Birmingham
- (B) Glasgow
- (C) Liverpool
- (D) Leeds

**Tip** - The question says "of the cities shown". Without this technically we would have to respond "cannot say" because we are not told any information about any other cities and therefore we would not be able to say with any certainty which had the lowest number. As it happens in this question "cannot say" is not an option so we would have been OK, but it's a catch worth looking out for.

**Step 1 -** Work through each city shown calculating the number of under 15 year olds. Don't worry about entering the thousands in your calculator – this just wastes time.

London: don't bother calculating as it is not a possible answer. Birmingham:  $995 \times 0.18 = 179.1$ Glasgow:  $600 \times 0.21 = 126$ Liverpool:  $500 \times 0.22 = 110$ Leeds:  $450 \times 0.23 = 103.5$ 

Thus the correct answer is (D) Leeds

Money spent on public transport (£billion)				
2006	2007	2008	2008 population	
32	35	38	60,100,000	
121	128	136	302,500,000	
39	44	46	84,300,000	
25	26	28	58,700,000	
	on public 2006 32 121 39 25	on public transpor       2006     2007       32     35       121     128       39     44       25     26	on public transport (fbillion         2006       2007       2008         32       35       38         121       128       136         39       44       46         25       26       28	

**Q7** Which of the countries shown experienced the largest percentage increase in public transport spending from 2007 to 2008?

(A) UK

(B) US

(C) Germany

(D) Cannot tell

**Step 1 -** Calculate the percentage increase from 2007 to 2008 for each country. Don't bother with the billions, the percentage calculation won't be affected.

UK: 38 ÷ 35 = 8.57% increase US: 136 ÷ 128 = 6.25% increase Germany: 46 ÷ 44 = 4.55% increase Italy: 28 ÷ 26 = 7.69% increase

Thus the correct answer is (A) UK

**Tip**: we will be using this short-hand method of calculating percentages as it saves time. If you prefer you can do it the long way. So for example the UK percentage would be as follows. Step 1:  $(38-35) \div 35 = 0.085714$ Step 2:  $0.085714 \times 100 = 8.5714$ Step 3: 8.57% increase

Money sj	pent on	public (	transport (	(fullion)
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	2006	2007	2008	2008 population
UK	32	35	38	60,100,000
US	121	128	136	302,500,000
Germany	39	44	46	84,300,000
Italy	25	26	28	58,700,000

- **Q8** Which of the countries shown had the highest public transport spend per capita in 2008?
  - (A) UK
  - (B) US
  - (C) Germany
  - (D) Cannot say

Step 1 - Simply divide the public transport spend by the population for each country. Again, use units which simplify the calculation because we are only interested in the relative order of magnitude.

UK:  $38 \div 60.1 = 0.632$ US:  $136 \div 302.5 = 0.450$ Germany:  $46 \div 84.3 = 0.546$ Italy: don't bother as this is not an option.

Thus the correct answer is (A) UK

- **Q9** In 2007 Italy had a target to spend 8% more on public transport than they did in 2006. By how much were they short of this target?
  - (A) £1 million
  - (B) £1 billion
  - (C) £0.1 billion
  - (D) Cannot tell

**Step 1** - In 2006 Italy spent £25 billion An increase of 8% is: £25 billion x 1.08 =£27 billion.

**Step 2** - We see from the table that Italy actually spent £26 billion. That's £1 billion short of the target.

Thus the correct answer is (B) £1 billion

Visitors from	Number of visitors	Number of visitors who made a purchase
Website W	315,380	2,876
Website X	26,850	284
Website Y	82,520	183
Website Z	12,630	204

## Internet sales data for Newbags.com

- **Q10** Visitors arriving from which website were most likely to make a purchase at newbags.com?
  - (A) Website W
  - (B) Website X
  - (C) Website Y
  - (D) Website Z

Step 1 - For each arrival website, calculate the percentage of visitors who made a purchase out of the number of visitors.

W: 2,876 ÷ 315,380 = 0.912% X: 284 ÷ 26,850 = 1.06% Y: 183 ÷ 82,520 = 0.222% Z: 204 ÷ 12,630 = 1.62%

Thus the correct answer is (D) Website Z

- **Q11** If the average profit made per sale at newbags.com was £12, approximately how much more profit was made from visitors from Website X than visitors from Website Y?
  - (A) £1,212
    (B) £1,852
    (C) £867
    (D) £891

**Step 1** - Calculate how many more sales came from Website X than from Website Y. 284 – 183 = 101.

**Step 2** - Calculate the profit difference.  $101 \times \pounds 12 = \pounds 1,212$ 

Thus the correct answer is (A) £1,212

Internet sa	les data	for New	bags.com
			<u> </u>

Number of visitors	Number of visitors who made a purchase
315,380	2,876
26,850	284
82,520	183
12,630	204
	Number of visitors 315,380 26,850 82,520 12,630

- **Q12** Assuming all visitors arrived via either website W, X, Y or Z, approximately what percentage of visitors arrived at newbags.com from Website Y?
  - (A) 15.7%
    (B) 18.9%
    (C) 25.0%
    (D) 30.3%

**Step 1** - Add up the total number of visitors. 315,380 + 26,850 + 82,520 + 12,630 = 437,380.

**Step 2** - Calculate the percentage of them who came from Website Y.  $82,520 \div 437,380 = 18.87\%$ 

Thus the correct answer is (B) 18.9%

## TOTAL SALES (Emillions)

	1 7		
Region	Previous Year	Current Year	Next Year's Projection
Northern	310	310	320
Southern	170	160	165
Eastern	290	300	275
Western	255	280	270
Central	110	90	125

- **Q13** If the sales projections for next year prove accurate, which region will have maintained or increased sales levels each year from the previous year to next year?
  - (A) Northern region
  - (B) Southern region
  - (C) Eastern region
  - (D) Western region
  - (E) Central region

**Step 1** – Calculate the regional sales for the current year using the table.

**Step 2** – Compare the numbers from Step 1 to the figures for the previous year and for next year, as follows;

			Next Year's
Region	Previous Year	Current year	Projection
Northern	310	310	320
Southern	170	160	165
Eastern	290	300	275
Western	255	280	270
Central	110	90	125

Only the Northern region has maintained sales at 310 for the previous and current year, as well as projecting an increase in sales to 320 for next year.

Thus the correct Answer is (A) Northern region

TOTAL SAL	TOTAL SALES (£millions)				
Region	Previous Year	Current Year	Next Year's Projection		
Northern	310	310	320		
Southern	170	160	165		
Eastern	290	300	275		
Western	255	280	270		
Central	110	90	125		

- **Q14** What is the absolute difference between the lowest and the highest performing region (to the nearest £million) in the current year?
  - (A) £216 million
    (B) £217 million
    (C) £218 million
    (D) £219 million
    (E) £220 million

**Step 1** - Calculate the difference between the highest regional sales (Northern) and the lowest regional sales (Central)  $310 - 90 = \pounds 220$  million

Thus the correct Answer is (E) £220 million

## TOTAL SALES (£millions)

Region	Previous Year	Current Year	Next Year's Projection
Northern	310	310	320
Southern	170	160	165
Eastern	290	300	275
Western	255	280	270
Central	110	90	125

- **Q15** If next year's forecasts are scaled back by a quarter for the Northern and Western region, and by a fifth for the Southern and Eastern regions, what will be the total projected sales for all 5 regions?
  - (A) £1,155 million
  - (B) £924 million
  - (C) £919.50 million
  - (D) £942 million
  - (E) £866.25 million

**Step 1** - Calculate the new regional sales for the 4 regions affected and sum these, as shown in the table below:

Region	Next Year's Projection	New Projection
Northern	320	x 3/4 = 240
Southern	165	x 4/5 = 132
Eastern	275	x 4/5 = 220
Western	270	x 3/4 = 202.5
Central	125	125
TOTAL		919.50

Thus the correct Answer is (C) £919.50 million

## TOTAL SALES (£millions)

Region	Previous Year	Current Year	Next Year's Projection
Northern	310	310	320
Southern	170	160	165
Eastern	290	300	275
Western	255	280	270
Central	110	90	125

# **Q16** What were the ratios for the Central: Eastern regional sales for the Previous Year compared to the Current Year?

- (A) 9:30 (Previous Year); 3:11 (Current Year)
- (B) 20:50 (Previous Year); 3:11 (Current Year)
- (C) 10:30 (Previous Year); 5:11 (Current Year)
- (D) 11:29 (Previous Year); 3:10 (Current Year)
- (E) 5:11 (Previous Year); 11:29 (Current Year)

**Step 1** – Put the Previous Year's sales for these regions into a ratio 110:290

**Step 2** – Put the Current Year's sales for these regions into a ratio 90:300

**Step 3** – Simplify these ratios by dividing by the highest common denominator 11:29 for Previous Year (after division by 10) 3:10 for Current Year (after division by 30)

Thus the correct answer is (D) 11:29 (Previous Year); 3:10 (Current Year)

## TOTAL SALES (£millions)

	1 7		
Region	Previous Year	Current Year	Next Year's Projection
Northern	310	310	320
Southern	170	160	165
Eastern	290	300	275
Western	255	280	270
Central	110	90	125

# **Q17** Put the regions in increasing order of total combined sales for the current year and next year's projection

- (A) Central, Southern, Western, Eastern, Northern
- (B) Southern, Central, Western, Eastern, Northern
- (C) Central, Western, Southern, Eastern, Northern
- (D) Central, Southern, Western, Northern, Eastern
- (E) Central, Southern, Northern, Western, Eastern

#### Step 1 - Calculate the totals for each region, as follows:

	Current Year	Next Year	Total
Northern	310	320	630
Southern	160	165	325
Eastern	300	275	575
Western	280	270	550
Central	90	125	215

Thus the correct answer is (A) Central, Southern, Western, Eastern, Northern



2009	Country's Gross Domestic Product	GDP Per person
	(£billion)	(£1000s)
UK	2.05	24
France	2.4	24.5
Germany	3.1	25.7
Spain	1.4	20.5
Italy	1.95	23.6

- **Q18** In which year (or years) was there more than a 3.3% difference in the GDP per person for France compared to the UK?
  - (A) 2005, 2007(B) 2006, 2008
  - (C) 2007, 2008
  - (C) 2007, 2008 (D) 2008, 2005
  - (E) 2009, 2005 (E) 2009, 2005

Step 1 – Calculate the % difference as shown in the table below:

Year	UK	France	Difference	% Difference
2005	22000	23500	1500	6.82
2006	23250	23250	0	0.00
2007	23750	23000	-750	-3.16
2008	23000	24000	1000	4.35
2009	24000	24500	500	2.08

Thus the correct answer is (D) 2008, 2005



2009	Country's Gross Domestic Product	GDP Per person
	(£billion)	(£1000s)
UK	2.05	24
France	2.4	24.5
Germany	3.1	25.7
Spain	1.4	20.5
Italy	1.95	23.6

#### Q19 Which of the following statements is false?

- (A) Germany has the highest GDP of the countries shown.
- (B) Germany's GDP is over 20% higher than the France's GDP in 2009.
- (C) The 2005-2009 range of UK GDP per person is £23,500-£24,500.
- (D) The average GDP per country for the 5 countries shown is £2.18 billion.
- (E) The lowest and highest GDP per person are £20,500 and £25,700 respectively.

Step 1 - Go through each of the answer options checking if it is true or false:

- a) Is True
- b) Germany's GDP (3.1) is over 20% higher than the France's GDP (2.4). TRUE
- c) From the graph, France's GDP per person ranges from £23,500 to £24,500, not the UK's. So this is FALSE.
- d) The average GDP per country for the 5 countries shown is (2.05 + 2.4 + 3.1 + 1.4 + 1.95) / 5 = 2.18 TRUE
- e) The lowest and highest GDP per person are £20,500 and £25,700 respectively. TRUE

Thus the False answer is (C) "The 2005-2009 range of UK GDP per person is £23,500-£24,500."


2009	Country's Gross Domestic Product	GDP Per person
	(£billion)	(£1000s)
UK	2.05	24
France	2.4	24.5
Germany	3.1	25.7
Spain	1.4	20.5
Italy	1.95	23.6

Q20 Which two countries had the smallest difference in GDP per person in 2009?

- (A) UK, Italy
- (B) France, Italy
- (C) Germany, Italy
- (D) Spain, Italy
- (E) Spain, France

**Step 1** - From looking at the table Country Gross Domestic Product there is only a 0.4 difference in GDP per person between the UK (24.0) and Italy (23.6)

Thus the correct answer is (A) UK, Italy



2009	Country's Gross Domestic Product	GDP Per person
	(£billion)	(£1000s)
UK	2.05	24
France	2.4	24.5
Germany	3.1	25.7
Spain	1.4	20.5
Italy	1.95	23.6

- **Q22** Of those shown, between which years were the GDPs per person increasing in both France and the UK?
  - (A) 2008-2009
  - (B) 2007-2008
  - (C) 2006-2007
  - (D) 2005-2006
  - (E) Cannot tell from data

**Step 1** - Look at the direction of the lines representing the UK and France (on the line graph). For both the France and the UK to be increasing the lines need to both be pointing upwards. This is only true for 2008-2009.

Thus the correct answer is (A) 2008-2009



2009	Country's Gross Domestic Product	GDP Per person
	(£billion)	(£1000s)
UK	2.05	24
France	2.4	24.5
Germany	3.1	25.7
Spain	1.4	20.5
Italy	1.95	23.6

## **Q23** What was the average GDP per person for France and the UK across the 5 years shown?

- (A) £23,500 (France); £23,200 (UK)
- (B) £23,650 (France); £23,500 (UK)
- (C) £23,500 (France); £23,000 (UK)
- (D) £23,000 (France); £23,500 (UK)
- (E) £23,650 (France); £23,200 (UK)

Step 1 - Calculate the average as shown in the table below:

Year	UK	France
2005	22000	23500
2006	23250	23250
2007	23750	23000
2008	23000	24000
2009	24000	24500
TOTAL	116000	118250
AVERAGE	23200	23650

Thus the correct answer is (E) £23,650 (France); £23,200 (UK)