Numerical Reasoning
Practice Test 5

Solution Booklet

Total Product Sales by Demographic

	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

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

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

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 tax is due 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 = 105,800
Total value of Austrian unit sales = 105,800 x €3.5 = €370,300

Step 2 - Calculate the corporation tax for the first €200,000 of Austrian unit sales
€200,000 x 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

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 x 2.5 = 270,750
Portugal = 104,200 x 2.25 = 234,450
Austria = 105,800 x 2.25 = 238,050
Ireland = 102,400 x 2.5 = 256,000
Croatia = 105,200 x 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 (£)
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) ÷ (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

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

So the correct answer is (C), £55 profit

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 x 4.2 = £840,000
£840,000 / 2 = £420,000 per share A and D.

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

Step 3 – Calculate the number of Share D shares at today's prices
£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.*

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

Q9 What was the total cost of buying 550 Share Cs yesterday and 1,050 Share Es 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 x 19.3 = £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 x 3.1 = £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 £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.*

So the correct Answer is (E) $23,000

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)?

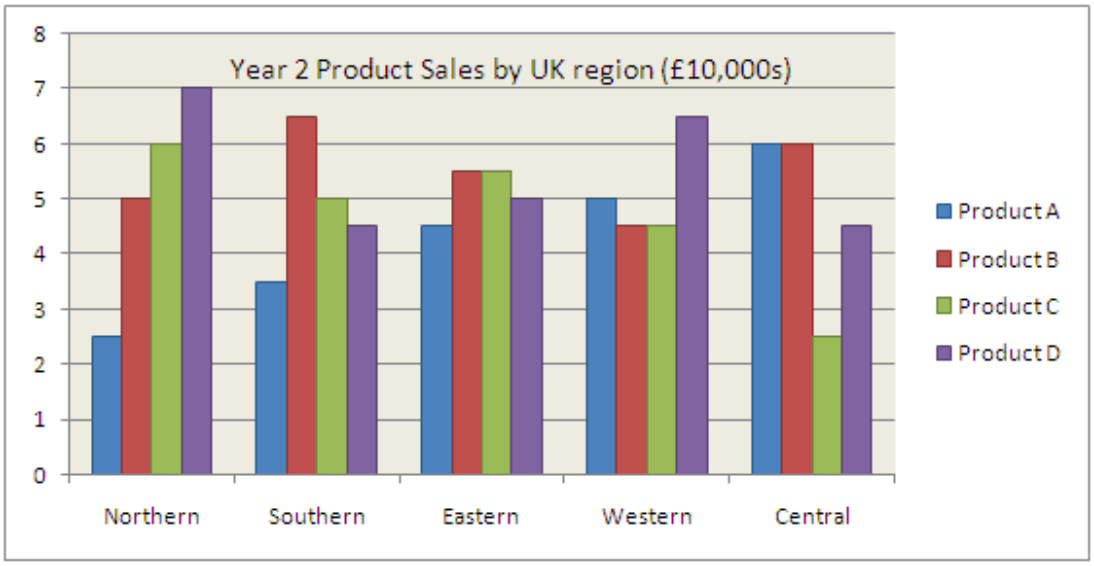
(A) €18 (Share A); €18 (Share C)
(B) €22 (Share A); €22 (Share C)
(C) €29 (Share A); €29 (Share C)
(D) €29 (Share A); €18 (Share C)
(E) €29 (Share A); €30 (Share C)

Step 1 – convert share prices in to Euros
Share A: 20 x 1.23 = €24.6
Share C: 18.1 x 1.23 = €22.263

Step 2 - calculate the Share A price one year ago
24.6 ÷ 0.85 = €28.94

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

So 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 = 21.5
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

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) 1.5% more
(C) 1.5% 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 (Year 2= 4.5 + 5.5 + 5.5 + 5 = 20.5
Add up the total sales for all products across all regions to get 100 (£10,000s)
As a % of total sales: 20.5 / 100 = 20.5%

Step 2 – calculate the change between Year 1 and Year 2
Year 1 = 22%
22 – 20.5 = 1.5%

Thus the correct answer is (C), 1.5% less

Q13 Which two regions did not have equal total product sales in Year 2?

(A) Northern and Western
(B) Northern and Eastern
(C) Southern and Central
(D) Eastern and Western
(E) None of these

Calculate the total sales for each region
Eastern = 4.5 + 5.5 + 5.5 + 5 = 20.5%
Northern = 2.5 + 5 + 6 + 7 = 20.5%
Southern = 3.5 + 6.5 + 5 + 4.5 = 19.5%
Western = 5 + 4.5 + 4.5 + 6.5 = 20.5%
Central = 6 + 6 + 2.5 + 4.5 = 19%

We can now see that (A): equal, (B): equal, (C): not equal, (D): equal, (E): not true.

Thus the correct answer is (C), Southern and Central

Q14 The 5 regions shown represent UK product sales, and this territory represents 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) £9,000,000
(B) £7,000,000
(C) £5,000,000
(D) £3,000,000
(E) £1,000,000

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 = 21.5 + 27.5 + 23.5 + 27.5 = 100 (10,000's) = 1,000,000

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

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

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 (from previous question)
Eastern = 20.5%
Northern = 20.5%
Southern = 19.5%
Western = 20.5%
Central = 19%

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

N	***S***	***E***	***W***	***C***
22 – 20.5 = 1.5%	*24 – 19.5 = 4.5%*	*22 – 20.5 = 1.5%*	*18 – 20.5 = -2.5%*	*14 – 19 = -5%*

Thus the correct answer is (E), Central

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

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

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

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

Q18 If the projected figures shown prove accurate and the same percentage changes occur for each liability in the subsequent year, what will the total Current Liabilities be in this subsequent year (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

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 = £618 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
£618 million / 24,720 = £25,000

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

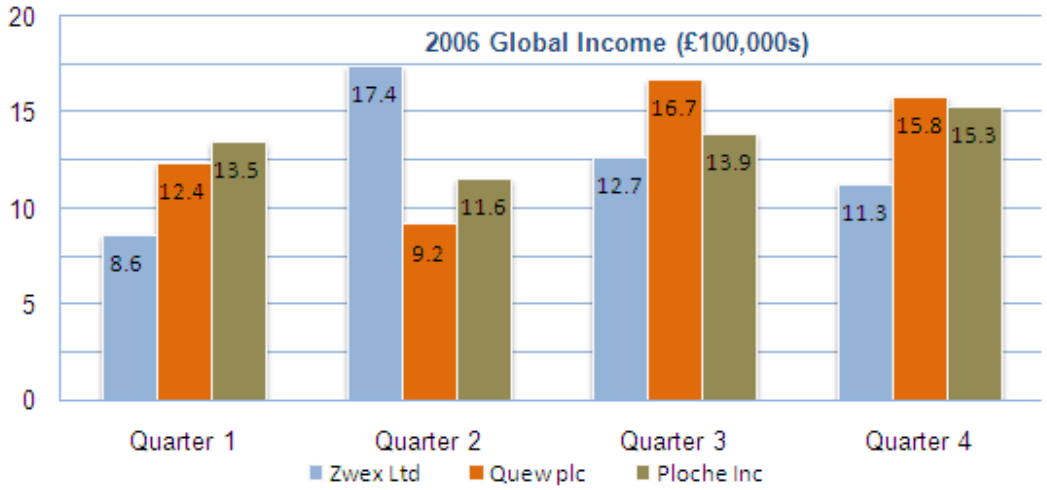
Q20 Next year's projected figures need to be corrected by adding an additional 4% for inflation. What is next year's corrected total Non-Current Liabilities?

(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 x 1.04 = £322.5 million

So the correct answer is (A), £322.5 million



Global income (% annual change on year before)

	2007	2008	2009	2010	2011 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%)
£5.43 million x 1.014 = £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

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

Check whether each option is True or False

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

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 x 1.022 x 1.018) = 1.0466, or 4.66%.

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

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

The average 2006 Quarter 2 sales were £1.15 million
FALSE – they were £1.27 million

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

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

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

Q24 In 2006 the ratio of Zwex Ltd's Global : European sales was 4:3. What were the European sales for 2006?

(A) £2 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
4 (Global) : 3 (European) = £5 million (Global) : x (European)

Step 3 – calculate Zwex Ltd's Rest of Europe sales
x (European) = £5 million x 3/4 = £3.75 million

Thus the correct answer is (E), £3.75 million

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 line graph 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
	(£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

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) £0.23 million
(B) £1.03 million
(C) £1.83 million
(D) £1.87 million
(E) £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 ÷ 1.041 = 1.87 (£million)

Thus the correct answer is (D), £1.87 million

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 / 500 = £0.50	*£325 / 500 = £0.65*	*£175/ 500 = £0.35*	*£200/ 500 = £0.40*	*£300 / 500 = £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

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 x 3/2 = 1.87

Thus the correct answer is (B), £1.87 million

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

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

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

Q30 Which year experienced the greatest percentage change in Cash flow compared to the preceding year?

(A) 2007
(B) 2008
(C) 2009
(D) 2010
(E) Can't tell from data

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

2007	*2008*	*2009*	*2010*
1.42 / 1.32	*Negative so don't bother calculating*	*Negative so don't bother calculating*	*1.53/1.25*
= 7.58%			*= 22.4%*

Thus the correct answer is (D), 2010