

Numerical Test 1

Solutions Booklet

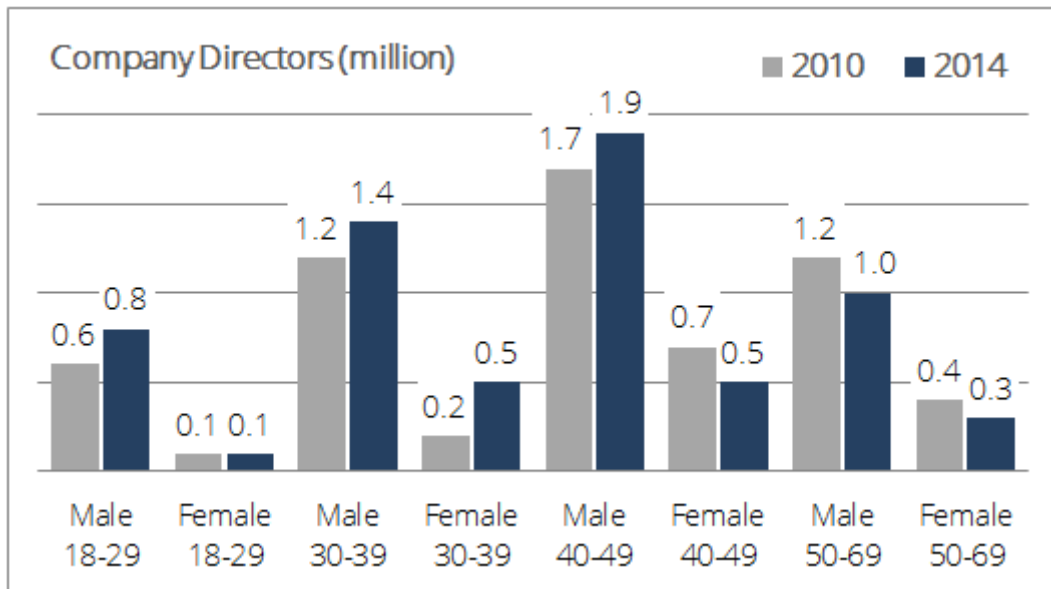
Instructions

This numerical reasoning test comprises **20 questions**, and you will have **24 minutes** in which to correctly answer as many as you can. Calculators are permitted for this test, and it is recommended you have some rough paper to work on.

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. Each question will have five possible answers, one of which is correct. You may click Back and Next during the test to review or skip questions.

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 begin on the next page.**



Q1 In what age group were at least 25% of directors female in 2014?

- (A) 18-29
- (B) 30-39
- (C) 40-49
- (D) 50-69
- (E) None

Step 1 Work out the percentage of female directors for each age group in 2014.

18-29: $0.1 \div (0.1 + 0.8) = 0.111$ which simplifies to 11.11%

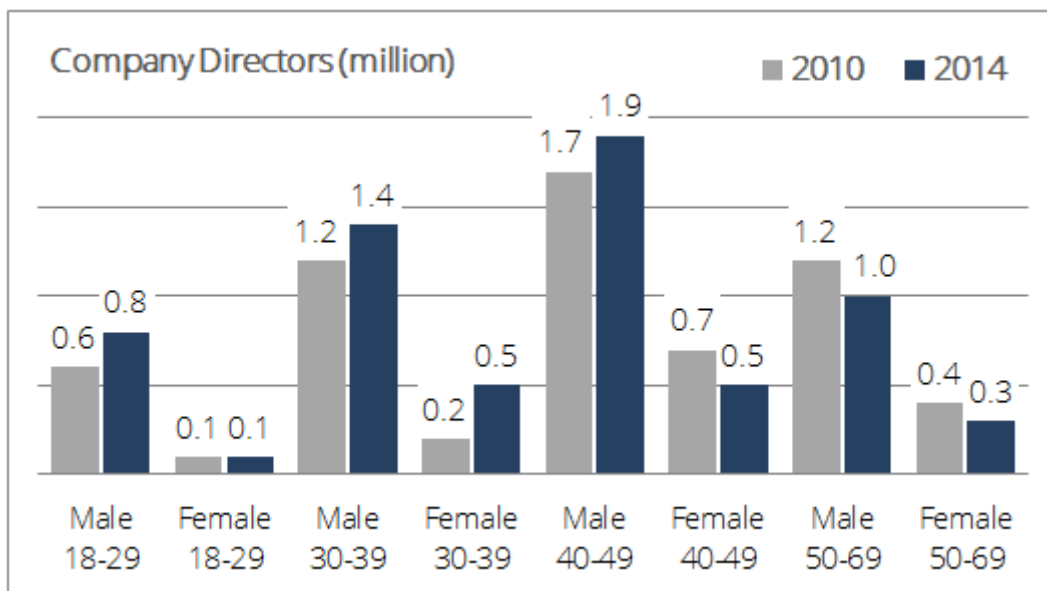
30-39: $0.5 \div (0.5 + 1.4) = 0.263$ which simplifies to 26.3%

40-49: $0.5 \div (0.5 + 1.9) = 0.208$ which simplifies to 20.8%

50-69: $0.3 \div (0.3 + 1.0) = 0.23$ which simplifies to 23%

Ans

30-39



Q2 Which age group saw the largest percentage change in the total number of company directors (male and female combined) from 2010 to 2014?

- (A) 18-29
- (B) 30-39
- (C) 40-49
- (D) 50-69
- (E) Cannot Say

Step 1 Work out the percentage change for each age group:

18-29: $[(0.9) \div (0.7)] = 1.286$ which is an increase of 28.6%

30-39: $[(1.9) \div (1.4)] = 1.357$ which is an increase of 35.7%

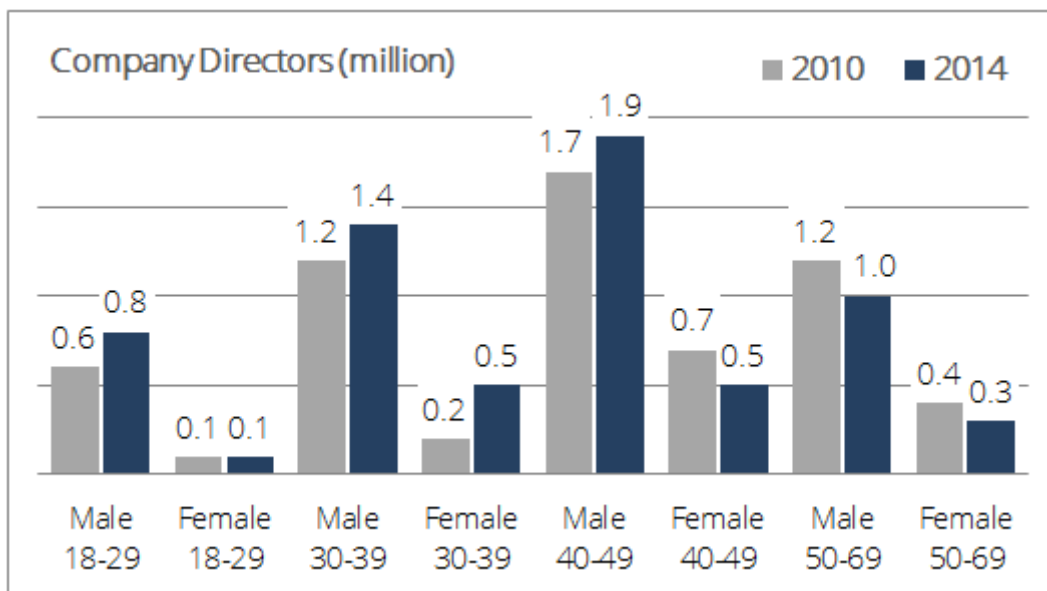
40-49: $[(2.4) \div (2.4)] = 1.000$ which is an increase of 0.0%

50-69: $[(1.3) \div (1.6)] = 0.813$ which is an increase of 18.7%

Ans

30-39

Tip: note we have used the shorthand version of working out percentage increases here. For example we have said the increase from A to B is: $100 - [(B \div A) \times 100]$. You could of course do it the longer way: $[(B - A) \div A] \times 100$. Both ways is fine but the important thing is to get the change 'from' and 'to' numbers the right way round.



Q3 In how many of the age groups shown were there more male directors than female directors in 2010?

- (A) 1
- (B) 2
- (C) 3
- (D) 4
- (E) Cannot Say

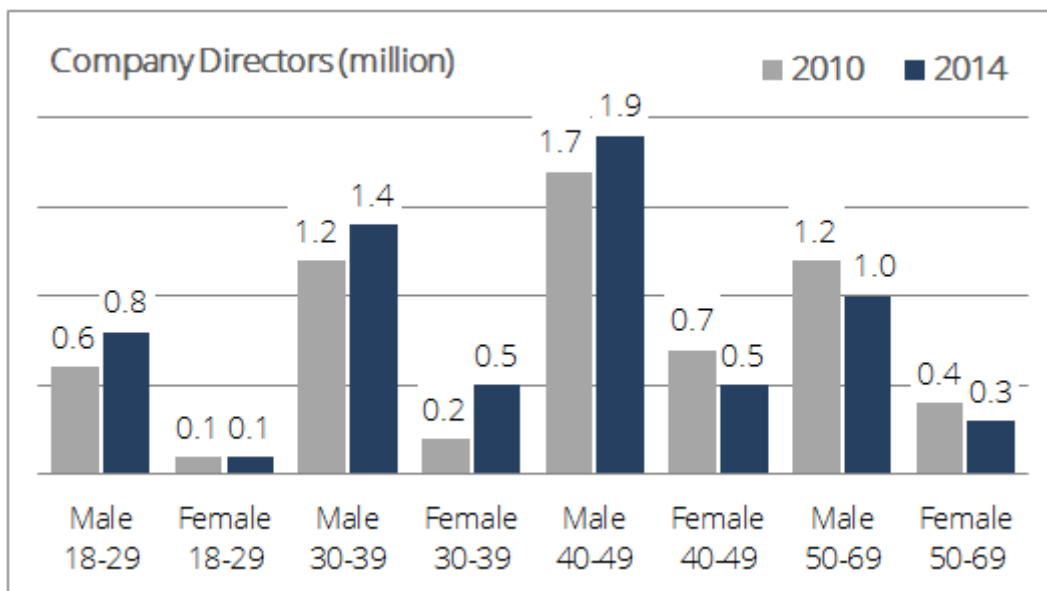
Step 1 From the graph, count how many age groups show more males than females. This is the case for the following age groups.

18-29: 0.6 vs. 0.1
 30-39: 1.2 vs. 0.2
 40-49: 1.7 vs. 0.7
 50-69: 1.2 vs. 0.4

So in fact, all of them. This one is relatively easy.

Ans

4



Q4 If in 2014 the ratio of female directors aged 40-49 to female apprentices was 2:5, how many female apprentices were there?

- (A) 1.25
- (B) 1,250,000
- (C) 2.5
- (D) 2,500,000
- (E) 5.0

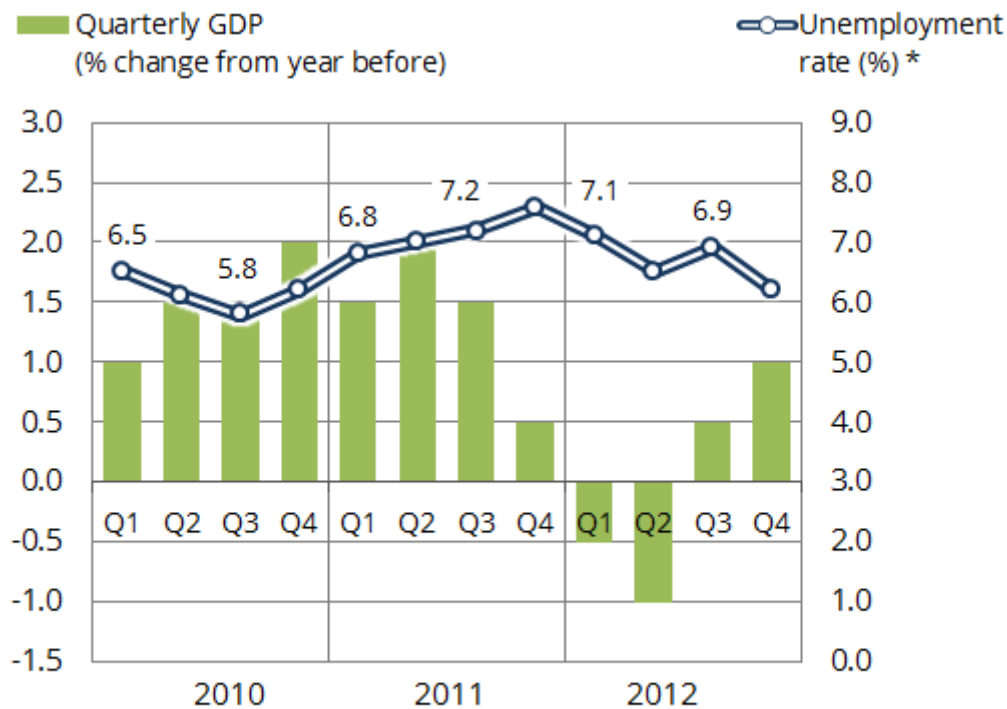
Step 1 We see that there are 0.5 (million) female directors in the age group 40-49 in 2014. We are told that the ratio of female directors to female apprentices is 2:5. So we have female apprentices =

$$0.5 \times (5 \div 2) = 1.25$$

And this number is in millions.

Ans

1,250,000 million



* Unemployment rate given as percent of working age population.

Q5 The working age population grew from 51 million people in Q1 2010 to 61 million people in Q1 2012. How many more people were unemployed in Q1 2012 than in Q1 2010?

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

Step 1

In Q1 2012 we have: 61 million $\times$ 7.1% = 4.33 million.

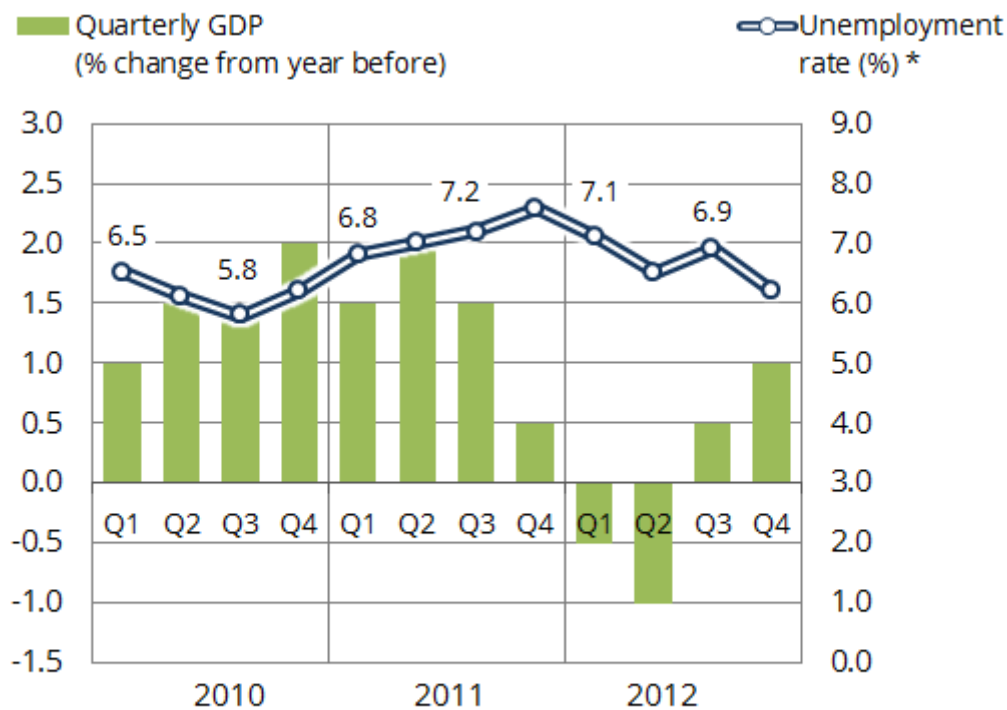
In Q1 2010 we have: 51 million $\times$ 6.5% = 3.315 million.

Step 2

$$4.33 - 3.315 = 1.015 \text{ (million)}$$

Ans

1 million



* Unemployment rate given as percent of working age population.

Q6 In Q1 2011, 1/5 of all employed people worked in the service sector. If 9.2 million people worked in the service sector at this time, what was the working age population in Q1 2011?

- (A) 46.0 million
- (B) 49.4 million
- (C) 51.8 million
- (D) 52.6 million
- (E) 56.2 million

Step 1

If 9.2 million is a 1/5 of the total number of employed people, we can work out how many people were employed as follows:

$$9,200,000 \div (1/5) = 46,000,000$$

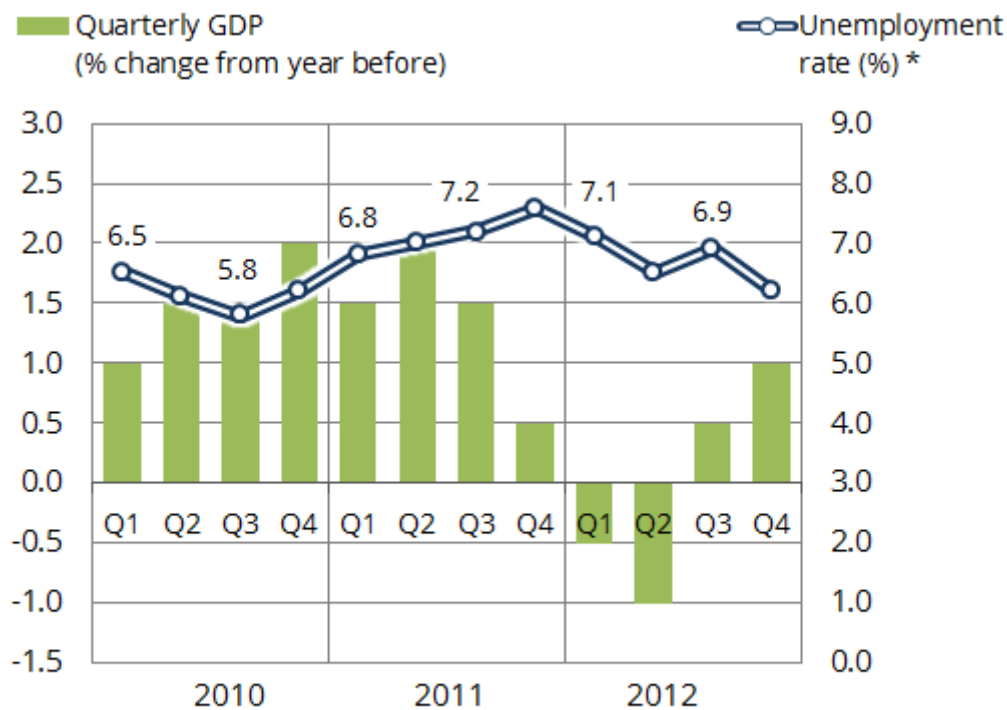
Step 2

From the graph we are told that in Q1 2011 93.2% of the working age population were employed. So we know that 46 million is 93.2% of the number we seek.

Recasting, we have working age population =
 $46,000,000 \div 0.932 = 49,356,223.2$

Ans

49.4 million



* Unemployment rate given as percent of working age population.

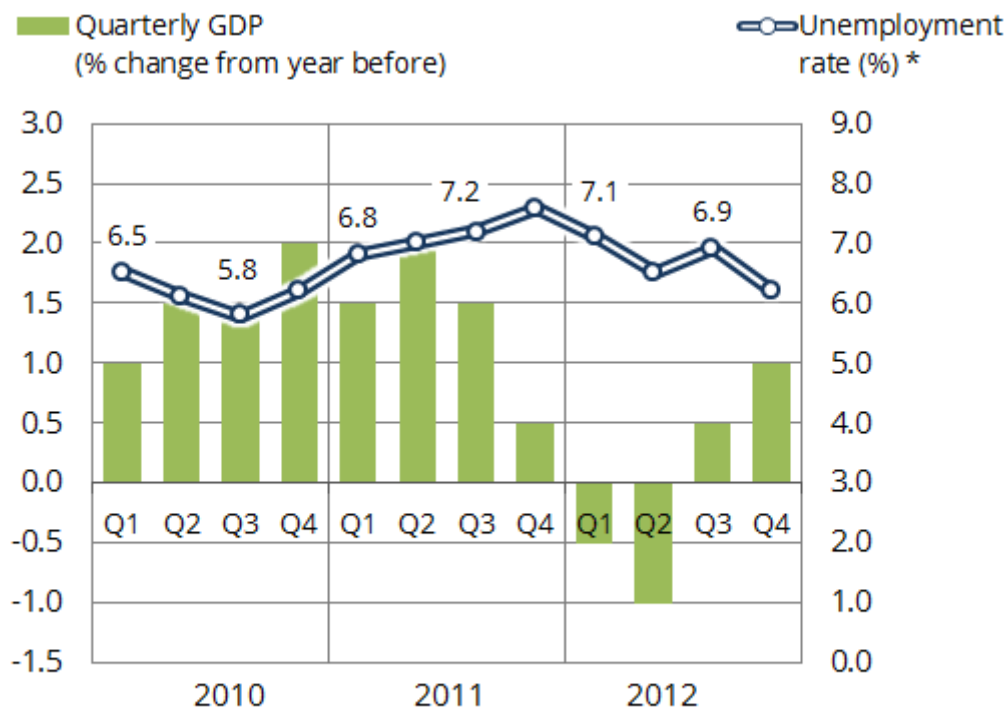
Q7 What was change in quarterly GDP from Q1 2011 to Q3 2011?

- (A) No change
- (B) £40 million
- (C) £44 million
- (D) £52 million
- (E) Cannot Say

The graph gives us GDP % change from year before, but not what the actual GDP is, so we cannot say. If we were given the GDP figures for 2010 we would be able to work out the change to 2011 but we are not given any GDP data to work with.

Ans

Cannot Say



* Unemployment rate given as percent of working age population.

Q8 GDP dropped from £1.84 trillion in Q4 2008 to £1.71 trillion in Q1 2009. What was the quarterly GDP in Q1 2010?

- (A) £1.71 trillion
- (B) £1.72 trillion
- (C) £1.73 trillion
- (D) £1.74 trillion
- (E) Cannot Say

Step 1

Some of the information we are given is unnecessary.

All we need is to be told that GDP in Q1 2009 was £1.71 trillion. Since the graph tells us that the GDP % change on year before for Q1 2010 was 1.0%, we simply have to increase £1.71 trillion by 1%.

Step 2

$$1.71 \times 1.01 = 1.7271$$

Ans

£1.73 trillion

Personal Insurance Claims (\$ billion)		Business Insurance Claims (\$ billion)	
US	159.2	US	112.5
UK	38.8	China	89.3
Japan	17.2	Japan	86.4
Netherlands	15.8	France	51.0
China	15.6	UK	19.5
France	15.5	Netherlands	16.1
Rest of World	231.5	Rest of World	844.2

Q9 Of the counties listed, which ones have personal insurance claims of less than 1/30th of the worldwide personal claims total?

- (A) Only Japan
- (B) Only Netherlands
- (C) Only China
- (D) Only China and France
- (E) Only Netherlands, China, and France

Step 1

Calculate the personal claims worldwide total.

$$159.2 + 38.8 + 17.2 + 15.8 + 15.6 + 15.5 + 231.5 = 493.6$$

Step 2

Work out the share for each county:

$$\text{US} \quad 159.2 \div 493.6 = 32.25\%$$

$$\text{UK} \quad 38.8 \div 493.6 = 7.86\%$$

$$\text{Japan} \quad 17.2 \div 493.6 = 3.48\%$$

$$\text{Netherlands} \quad 15.8 \div 493.6 = 3.20\%$$

(note you can actually stop at this point since the numbers in the table are in decreasing size order)

$$\text{China} \quad 15.6 \div 493.6 = 3.16\%$$

$$\text{France} \quad 15.5 \div 493.6 = 3.14\%$$

Step 3

One 30th is 3.333% so we see this is satisfied for the Netherlands, China, and France.

Ans

Only Netherlands, China, and France

Tip: notice that the table includes a row for 'Rest of World' which means we can answer this question. If we were not told about the rest of the world, we would have to answer 'cannot say' for this question.

Personal Insurance Claims (\$ billion)		Business Insurance Claims (\$ billion)	
US	159.2	US	112.5
UK	38.8	China	89.3
Japan	17.2	Japan	86.4
Netherlands	15.8	France	51.0
China	15.6	UK	19.5
France	15.5	Netherlands	16.1
Rest of World	231.5	Rest of World	844.2

Q10 For the US and the UK combined, what is the ratio of personal claims to business claims?

- (A) 1:2
- (B) 1:1
- (C) 3:2
- (D) 5:2
- (E) Cannot Say

Step 1

Sum the US and UK personal insurance claims: $159.2 + 38.8 = 198.0$

Sum the US and UK business insurance claims: $112.5 + 19.5 = 132.0$

Step 2

The ratio is then:

198 : 132

Which simplifies to 3:2

Ans

3:2

Tip: don't fall in to the trap of adding the business claims from US and China (201.8), instead of US and UK. The rows are swapped around on the right hand side of the figure.

Tip: don't worry if you get to 198:132 but can't automatically see that it simplifies to 3:2. Once you have your answer of 198:132 you can go down the multiple choice list and check each plausible option.

Personal Insurance Claims (\$ billion)		Business Insurance Claims (\$ billion)	
US	159.2	US	112.5
UK	38.8	China	89.3
Japan	17.2	Japan	86.4
Netherlands	15.8	France	51.0
China	15.6	UK	19.5
France	15.5	Netherlands	16.1
Rest of World	231.5	Rest of World	844.2

Q11 If the average business insurance claim in Japan was \$0.96 for every \$1.0 of premium paid, what was the total business insurance premium paid in Japan?

- (A) \$90 billion
- (B) \$83 billion
- (C) \$70 billion
- (D) \$60 billion
- (E) \$55 billion

Step 1

Simply divide the business insurance claim figure by 0.96:

$$86.4 \div 0.96 = 90 \text{ ($billion)}$$

Ans

\$90 billion

Personal Insurance Claims (\$ billion)		Business Insurance Claims (\$ billion)	
US	159.2	US	112.5
UK	38.8	China	89.3
Japan	17.2	Japan	86.4
Netherlands	15.8	France	51.0
China	15.6	UK	19.5
France	15.5	Netherlands	16.1
Rest of World	231.5	Rest of World	844.2

Q12 Which statement best describes the business insurance claims in China compared with other countries?

- (A) China's claims are more than double those of France
- (B) Claims from the UK and France combined are lower than China's
- (C) China's claims are less than two thirds of those in the US

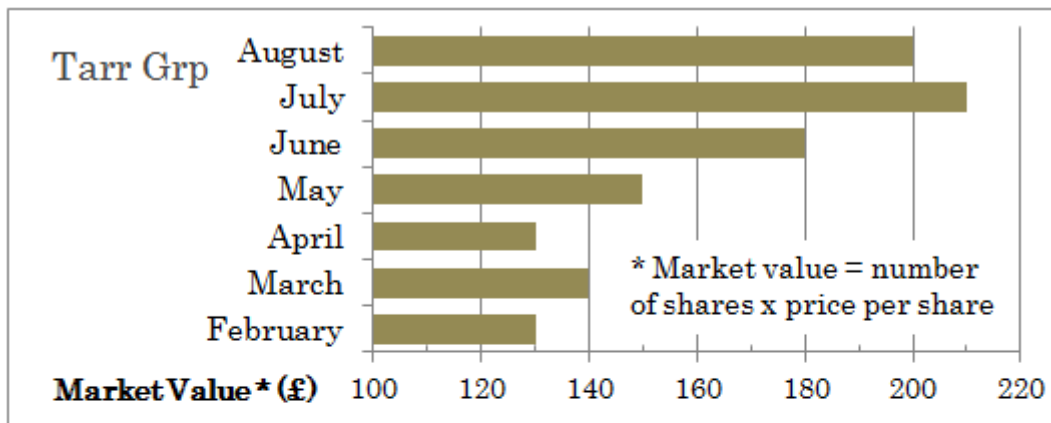
Step 1

We have to go through each plausible option.

- 1) French claims $\times 2 = 102$, which is not less than 89.3, so false.
- 2) $19.5 + 51.0 = 70.5$, which is indeed less than 89.3 so true.
- 3) US claims $\times (2/3) = 75.0$, which is less than 89.3, so false.

Ans

- 2) Claims from the UK and France combined are lower than China's



Price per Share

Company	March (£)	Change from February (£)
Simmon Estates	64.2	+4.2
Hamley Homes	8.4	+0.6
Larsen	17.2	-6.1
Tarr Grp	3.5	-0.6
TT Holdings	16.3	+3.4

Q13 What was the difference in the share prices of Larsen and Hamley Homes in February?

- (A) £2.1
- (B) £8.5
- (C) £14.3
- (D) £15.5
- (E) £17.3

Step 1

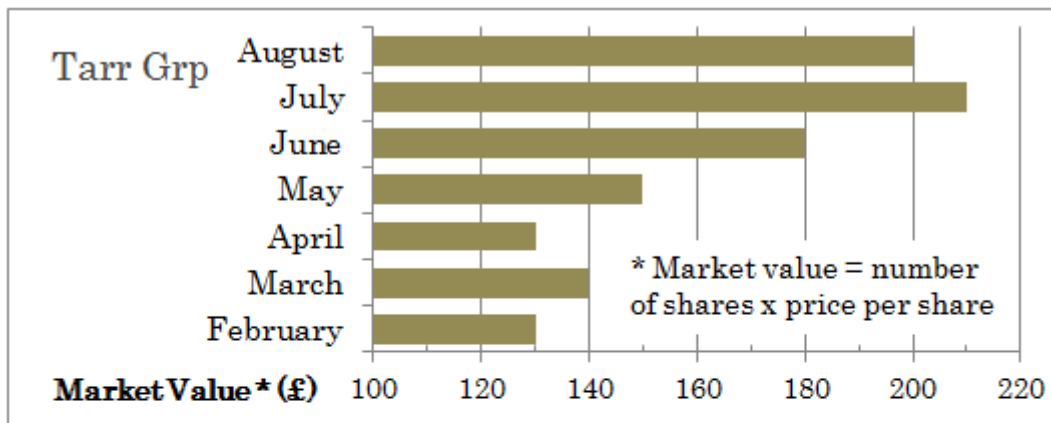
$$\text{Larsen} = 17.2 + 6.1 = 23.3$$

$$\text{Hamley Homes} = 8.4 - 0.6 = 7.8$$

$$\begin{aligned} \text{Difference} &= 23.3 - 7.8 \\ &= £15.5 \end{aligned}$$

Ans

£15.5



Price per Share

Company	March (£)	Change from February (£)
Simmon Estates	64.2	+4.2
Hamley Homes	8.4	+0.6
Larsen	17.2	-6.1
Tarr Grp	3.5	-0.6
TT Holdings	16.3	+3.4

Q14 What was the difference between the market value of Simmon Estates and that of Tarr Grp in March?

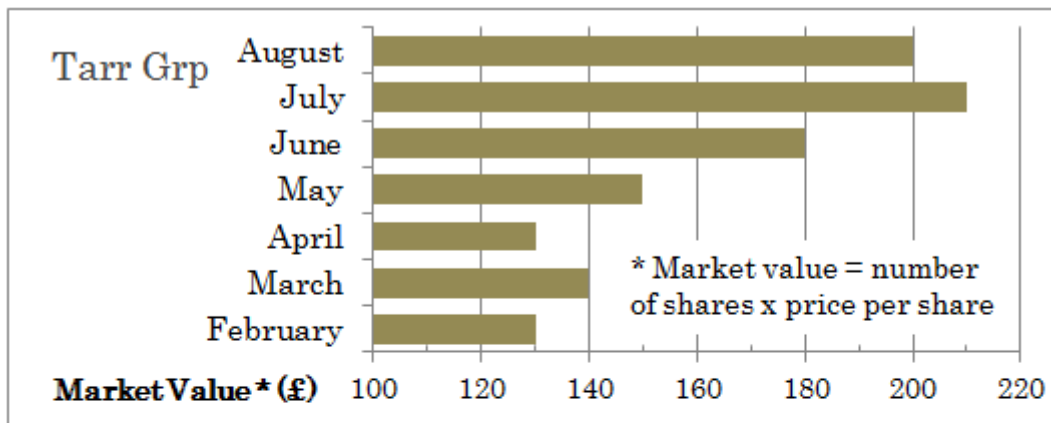
- (A) 140
- (B) 180
- (C) 1,428
- (D) 2,428
- (E) Cannot Say

Step 1

There is no way of knowing the market value of Simmon Estates from the data given, as we are not told the number of shares they have.

Ans

Cannot Say



Price per Share

Company	March (£)	Change from February (£)
Simmon Estates	64.2	+4.2
Hamley Homes	8.4	+0.6
Larsen	17.2	-6.1
Tarr Grp	3.5	-0.6
TT Holdings	16.3	+3.4

Q15 If TT Holdings' share price doubles from March to April, what will be the difference between their share price in February and April?

- (A) 17.9
- (B) 19.7
- (C) 28.7
- (D) 82.7
- (E) 102.9

Step 1

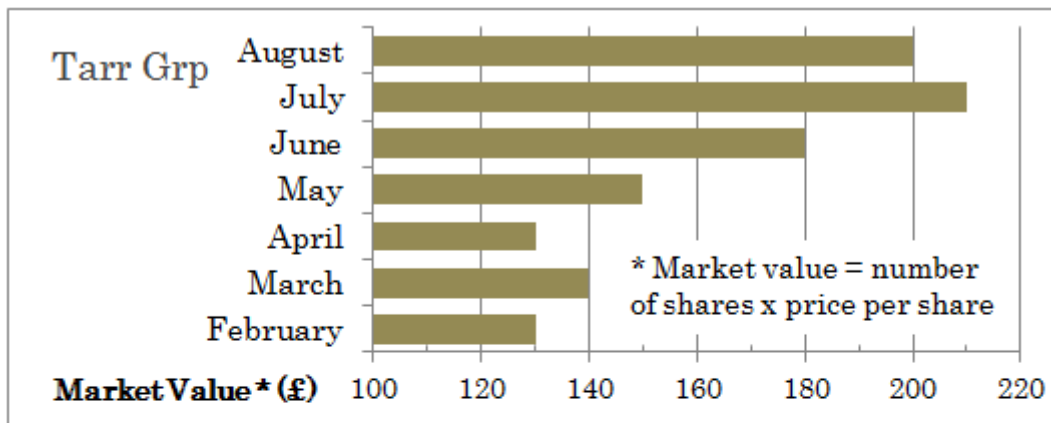
Double TT Holdings' March share price: $16.3 \times 2 = 32.6$.
 Work out their share price in February: $16.3 - 3.4 = 12.9$

Step 2

The difference is $32.6 - 12.9 = 19.7$

Ans

19.7



Price per Share

Company	March (£)	Change from February (£)
Simmon Estates	64.2	+4.2
Hamley Homes	8.4	+0.6
Larsen	17.2	-6.1
Tarr Grp	3.5	-0.6
TT Holdings	16.3	+3.4

Q16 If Simmon Estates' share price in January was $\frac{4}{5}$ of what it was in February, how much would it have cost to buy 40 Simmon Estate shares in January?

- (A) £1,620
- (B) £1,920
- (C) £2,190
- (D) £2,260
- (E) None of these

Step 1 Find the Simmon Estates share price in February. We are given the price in March, and told that the March price was + 4.2 (£) compared to February.

$$\text{Share price in Feb} = 64.2 - 4.2 = £60.0$$

Step 2 Find the share price in January.

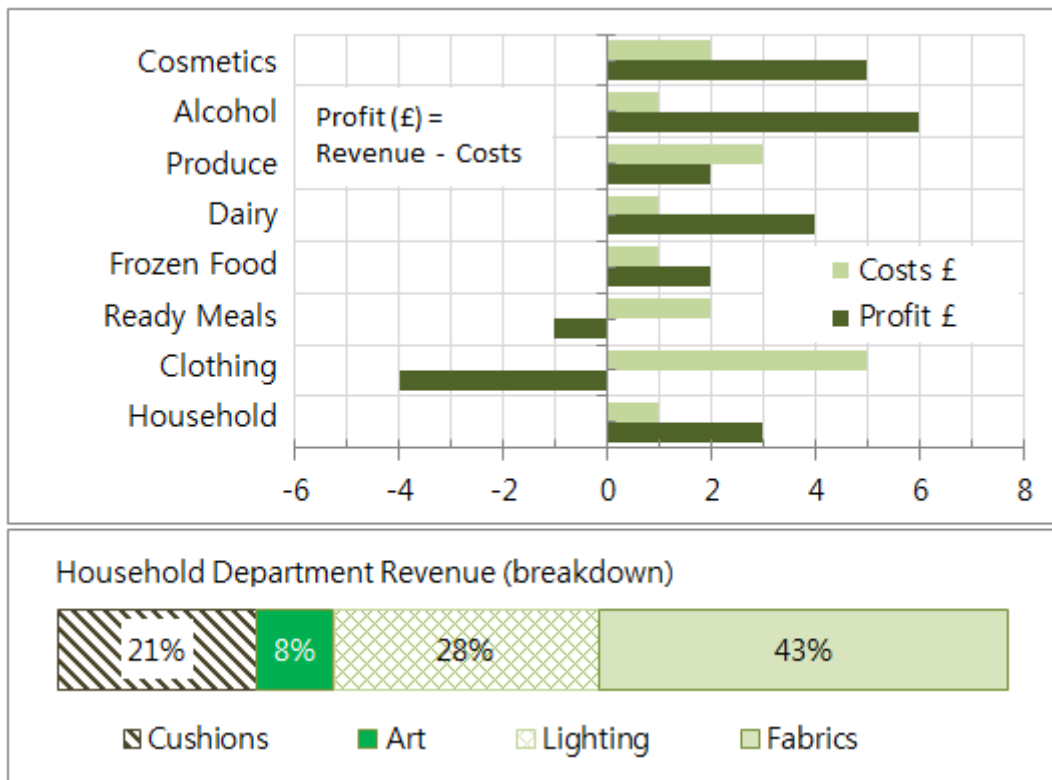
$$\text{Jan} = 60.0 \times \left(\frac{4}{5}\right) = £48.0$$

Step 3 Find the cost of buying 40 Simmon Estates shares.

$$40 \times £48 = £1,920.0$$

Ans

£1,920



Q17 Which department(s) had Revenue less than £2?

- (A) Ready Meals and Clothing
- (B) Alcohol and Dairy
- (C) Alcohol and Household
- (D) Only Dairy
- (E) Only Cosmetics

Step 1

Work out the Revenue for each department based on the definition we are given:

Revenue = Profit + Costs.

Cosmetics: $5 + 2 = 7$

Alcohol: $6 + 1 = 7$

Produce: $2 + 3 = 5$

Dairy: $4 + 1 = 5$

Frozen Food: $2 + 1 = 3$

Ready Meals: $2 - 1 = 1$

Clothing: $5 - 4 = 1$

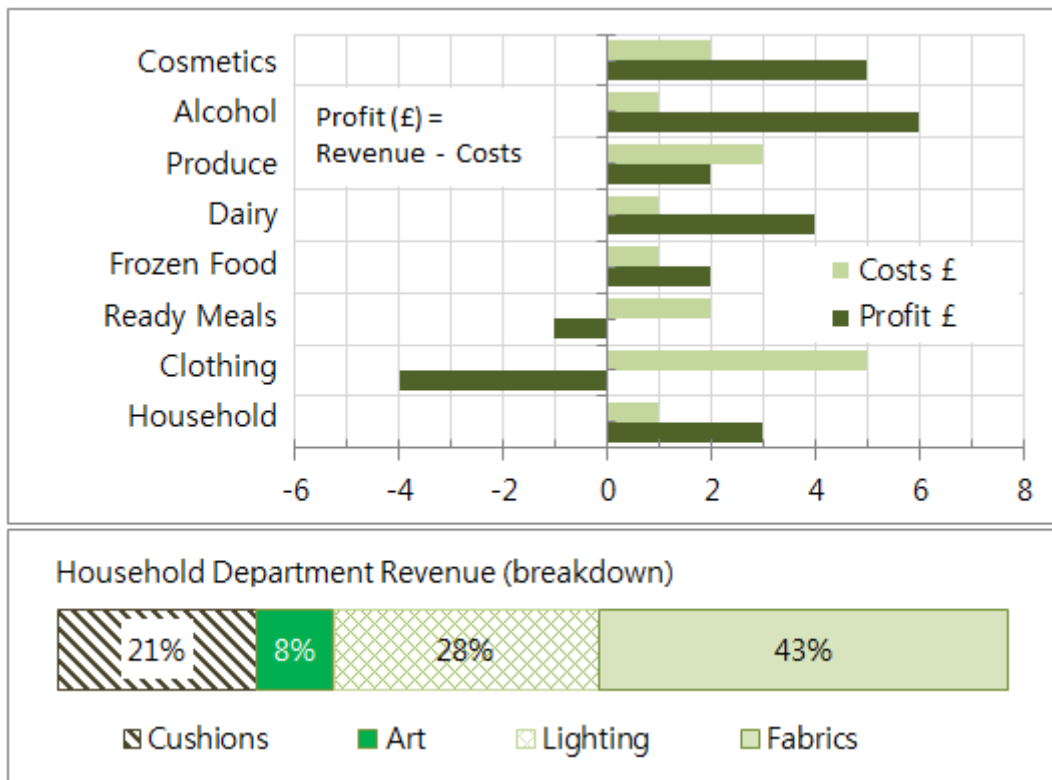
Household: $3 + 1 = 4$

Step 2

Only Ready Meals and Clothing had Revenue less than £2.

Ans

Ready Meals and Clothing



Q18 What is the ratio of Ready Meals costs to Produce costs?

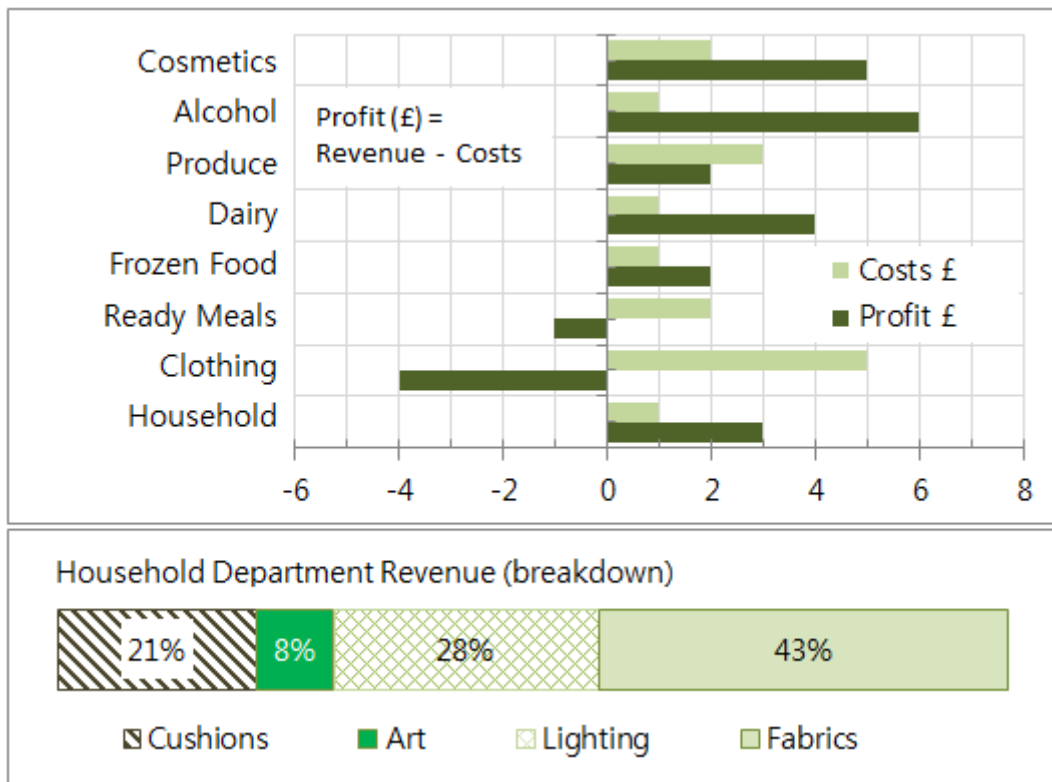
- (A) 1:3
- (B) 2:3
- (C) 1:1
- (D) 3:2
- (E) 3:1

Step 1

From the graph we see that Ready Meals costs are £2 and Produce costs are £3. So the ratio is 2:3

Ans

2:3



Q19 In the Household department, what was the Revenue from Fabrics?

- (A) £0.43
- (B) £0.72
- (C) £1.72
- (D) £4.00
- (E) £4.43

Step 1

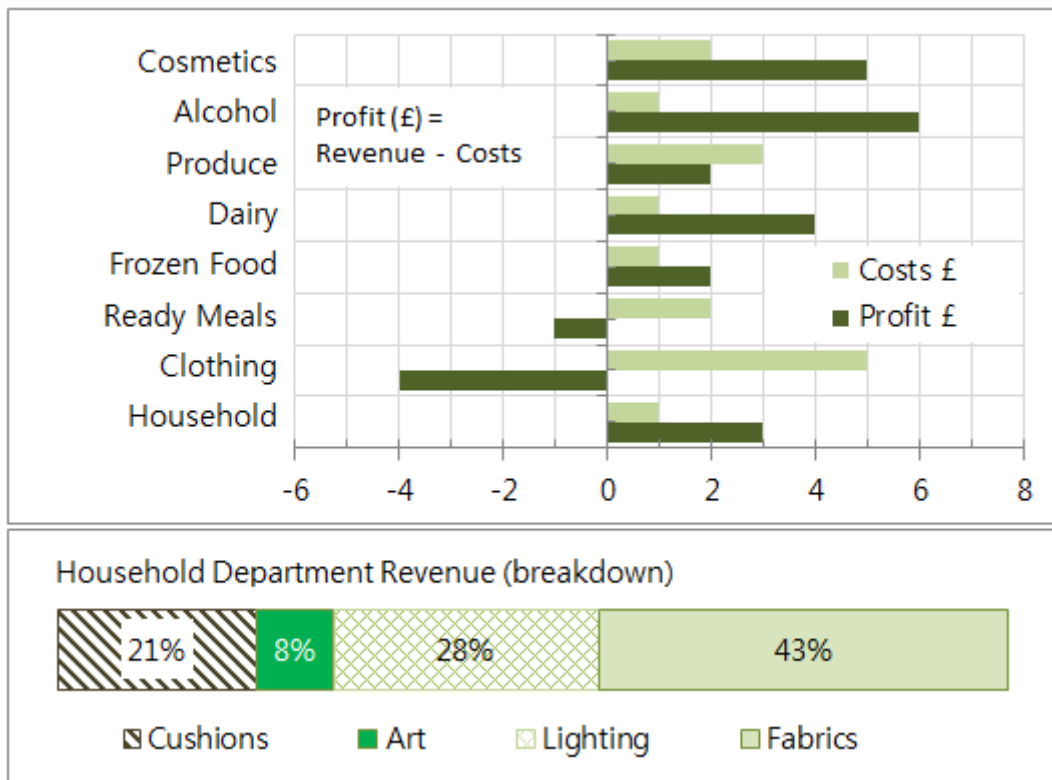
We see that revenue in the Household department is £4 (£3 + £1). And we see that the percentage share attributable to Fabrics is 43%.

Step 2

43% of £4 = £1.72

Ans

£1.72



Q20 If the Frozen Food and Ready Meals departments presented their Cost and Profit data together as one combined entity, what would the combined entity's Revenue have been?

- (A) £-1
- (B) £1
- (C) £2
- (D) £3
- (E) £4

Step 1

Add up the costs and the revenue for the combined department:

$$\text{Costs} = (1 + 2) = 3$$

$$\text{Profit} = (2 - 1) = 1$$

Step 2

$$\text{Revenue} = 3 + 1 = 4 \text{ (£)}$$

Ans

£4

-- End of Test --