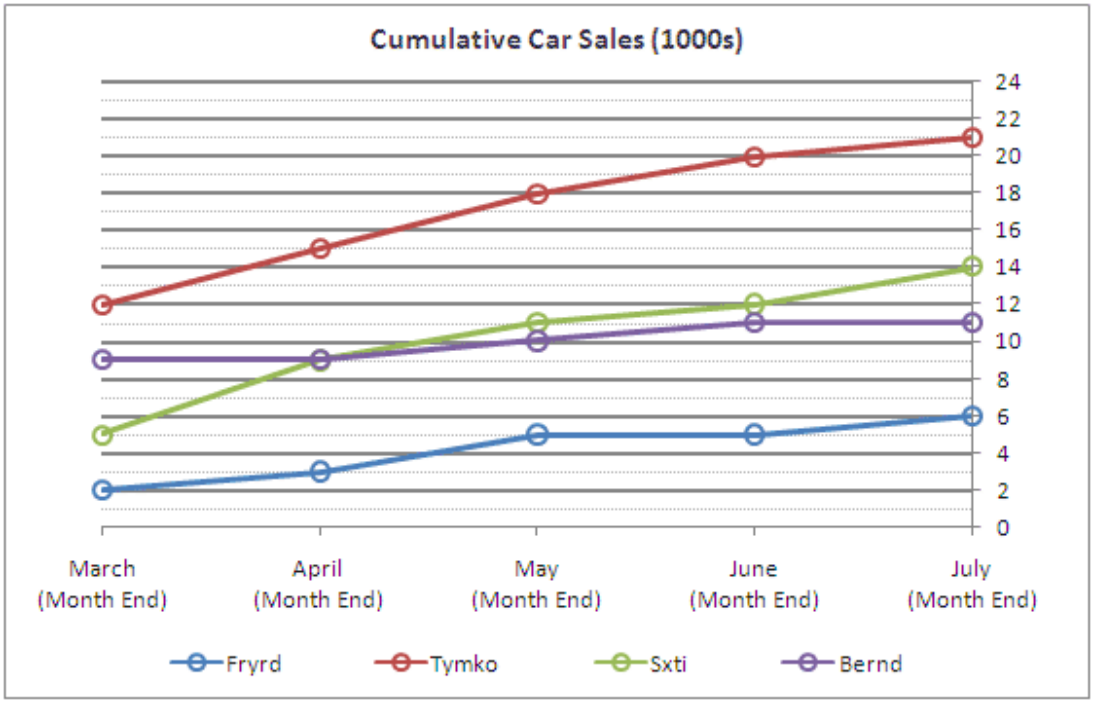
Numerical Reasoning

Practice Test 1

Solution Booklet



Q1 How many Bernd cars were sold in May?

10 **1,000** 5,000 10,000

The trick to this question is to recognise that the graph gives sales figures cumulatively.

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.

Q2 What were the total sales of Tymko cars for May, June and July combined?

21,000 16,000 22,000 **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).

(Cumulative sales July) – (Cumulative sales April) =
(21,000) – (15,000) =
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?

1,000 1 12,000 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 we no sales.

Thus, the answer is 1,000 – 0 = 1,000

City Population Composition 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

Q4 In Liverpool what was the net effect of live birth and death rates on the population during 2000?

200 decrease 600 increase **500 increase** 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 x 13.4 =) 6,700.

Step 2
We are told there were 12.4 deaths per thousand of the population, i.e. 500 x 12.4 = 6,200.

Step 3
The net effect on population is 6,700 – 6,200 = 500.

Q5 How many live births occurred in 2000 in Birmingham and Glasgow combined?

21,812 18,210 16,700 32,100

In Birmingham there were 995 x 13.6 = 13,532 births. In Glasgow there were 600 x 13.8 = 8,280 live births. In total that is 13,532 + 8,280 = 21,812

Q6 Of the cities shown, which had the lowest number of people under the age of 15 at the start of the year 2000?

Birmingham Glasgow Liverpool **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.*

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 x 0.18 = 179.1
Glasgow: 600 x 0.21 = 126
Liverpool: 500 x 0.22 = 110
Leeds: 450 x 0.23 = 103.5

Thus the answer is Leeds.

Money spent on public transport (£billion)				
	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

Q7 Which of the countries shown experienced the largest percentage increase in public transport spending from 2007 to 2008?

UK US Germany Cannot tell

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

We see that the UK experienced the largest increase in spending.

Q8 Which of the countries shown had the highest public transport spend per capita in 2008?

UK US Germany Cannot say

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 ÷ 60.1 = 0.632
US: 136 ÷ 302.5 = 0.450
Germany: 46 ÷ 84.3 = 0.546
Italy: don't bother as this is not an option.

We see that the highest spend was in the UK (these are very much pre-austerity figures!)

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?

£1 million **£1 billion** £0.1 billion 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.

Internet sales data for Newbags.com

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

Data for period: 2008

Q10 Visitors arriving from which website were most likely to make a purchase at newbags.com?

Website W Website X Website Y **Website Z**

For each arrival website, calculate the percentage of visitors who made a purchase out of the number of visiors.

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%

So Website Z is the correct answer.

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?

£1,212 £1,852 £867 £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 x £12 = £1,212

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?

15.7% **18.9%** 25.0% 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 the who came from Website Y. 82,520 ÷ 437,380 = 18.87%