

Here is a list of the ingredients needed to make leek and potato soup for 6 people.

<b>Leek and Potato Soup</b>
Ingredients for 6 people
900 ml chicken stock
900 ml water
750 g leeks
350 g potatoes
350 g onions

(a) Ainsley wants to make leek and potato soup for 13 people.

Work out the amount of chicken stock he needs.

..... ml  
(2)

(b) Delia makes leek and potato soup for a group of people.  
She uses 1250 g of leeks.

Work out the number of people in the group.

.....  
(2)

**(Total for Question is 4 marks)**

The table gives some information about the average price of a litre of petrol in England.

	January 2007	January 2012
Average price of a litre of petrol (pence)	87.3	133.3

- (a) Work out the percentage increase in the average price of a litre of petrol in England between January 2007 and January 2012.  
Give your answer correct to 3 significant figures.

..... %  
(3)

The average price of a litre of petrol in England increased by 20% from January 2010 to January 2012.

- (b) Work out the average price of a litre of petrol in England in January 2010.  
Give your answer in pence, correct to 1 decimal place.

..... pence  
(3)

**(Total for Question . is 6 marks)**

(a) Complete the table to show each number written correct to 1 significant figure.

<b>Number</b>	42.37	58.92	21.04
<b>Number written correct to 1 significant figure</b>			

(2)

(b) Use the approximations in part (a) to work out an estimate for the value of

$$\frac{42.37 + 58.92}{21.04}$$

Show clearly how you obtain your answer.

.....  
(2)

**(Total for Question is 4 marks)**

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34- (4MA0-S 2014-Paper 3H-Q19)-NUMBER

Rachael walks to school.

The distance to school is 2.8 km, correct to the nearest 0.1 km.

She walks at a speed of 5 km/h, correct to the nearest km/h.

Calculate the upper bound, in minutes, for the time Rachael takes to walk to school.

..... minutes

**(Total for Question is 3 marks)**

(a) Helen's savings increased from £155 to £167.40

Work out the percentage increase in Helen's savings.

..... %  
(3)

(b) Joe's savings increased by 4.5%.

His savings are now £125.40

What were his savings before the increase?

£.....  
(3)

**(Total for Question is 6 marks)**

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36- (4MA0-S 2014-Paper 3H-Q10)-NUMBER

Zara must take 5 tests.

Each test is out of 100

After 4 tests, her mean score is 64%.

What score must Zara get in her 5th test to increase her mean score in all 5 tests to 70%?

.....  
(Total for Question is 4 marks)

37- (4MA0-S 2014-Paper 3H-Q2)-NUMBER

Show that  $\frac{4}{9} \div \frac{5}{6} = \frac{8}{15}$

(Total for Question is 2 marks)

(a) Work out the value of  $\frac{13.8 \times 6.5}{7 + \sqrt{2}}$

Write down all the figures on your calculator display.

.....  
(2)

(b) Give your answer to part (a) correct to 3 significant figures.

.....  
(1)

**(Total for Question is 3 marks)**



The table shows the diameters, in kilometres, of five planets.

Planet	Diameter (km)
Venus	$1.2 \times 10^4$
Jupiter	$1.4 \times 10^5$
Neptune	$5.0 \times 10^4$
Mars	$6.8 \times 10^3$
Saturn	$1.2 \times 10^5$

(a) Which of these planets has the smallest diameter?

.....  
(1)

(b) Calculate the difference, in kilometres, between the diameter of Saturn and the diameter of Neptune.  
Give your answer in standard form.

..... km  
(2)

The diameter of the Moon is  $3.5 \times 10^3$  km.  
The diameter of the Sun is  $1.4 \times 10^6$  km.

(c) Calculate the ratio of the diameter of the Moon to the diameter of the Sun.  
Give your answer in the form 1 :  $n$

.....  
(2)

**(Total for Question is 5 marks)**

Joseph travels to work each day by train.  
The weekly cost of his train journey is £45  
Joseph's weekly pay is £625

(a) Work out 45 as a percentage of 625

..... %  
(2)

(b) The weekly cost of his train journey increases by 8%.

Increase £45 by 8%.

£ .....  
(3)

(c) Joseph's weekly pay increases to £640

Calculate the percentage increase from 625 to 640

..... %  
(3)

(d) Joseph decides to cycle to work.

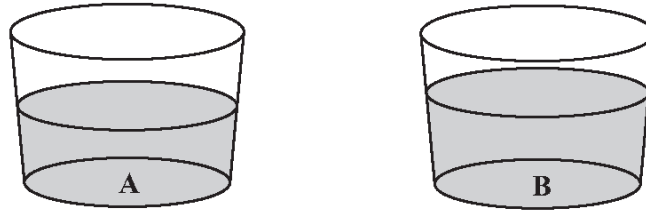
He cycles 18 km to work.

His journey to work takes 1 hour 20 minutes.

Calculate his average speed in kilometres per hour.

..... km/h  
(3)

**(Total for Question \_ is 11 marks)**



Glass **A** contains 122 millilitres of water, correct to the nearest millilitre.  
Glass **B** contains 168 millilitres of water, correct to the nearest millilitre.

Calculate the upper bound of the difference, in millilitres, between the volume of water in glass **A** and the volume of water in glass **B**.

..... millilitres

**(Total for Question 41 is 2 marks)**

(a) Write as an ordinary number

(i)  $4.2 \times 10^6$

.....

(ii)  $3.82 \times 10^{-4}$

.....

(2)

(b) Here are three numbers written in standard form.

Arrange these numbers in order of size.

Start with the smallest number.

$5.6 \times 10^{-7}$

$8.6 \times 10^{-9}$

$5.64 \times 10^{-8}$

.....

(2)

**(Total for Question is 4 marks)**

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43- (4MA0-S 2013-Paper 3HR-Q5)-NUMBER

Show that  $\frac{4}{9} - \frac{1}{6} = \frac{5}{18}$

**(Total for Question is 2 marks)**

44- (4MA0-S 2013-Paper 3HR-Q2)-NUMBER

Wendy travelled on the Eurostar train from St Pancras station to the Gare du Nord station.  
The Eurostar train travelled a distance of 495 km.  
The journey time was 2 hours 15 minutes.

Work out the average speed of the Eurostar train in kilometres per hour.

..... km/h

**(Total for Question is 3 marks)**

- (a) Correct to the nearest millimetre, the length of a side of a regular hexagon is 3.6 cm.

Calculate the upper bound for the perimeter of the regular hexagon.

..... cm  
(2)

- (b) Correct to 1 significant figure, the area of a rectangle is  $80 \text{ cm}^2$   
Correct to 2 significant figures, the length of the rectangle is 12 cm.

Calculate the lower bound for the width of the rectangle.  
Show your working clearly.

..... cm  
(3)

**(Total for Question is 5 marks)**

(a) Find the Highest Common Factor (HCF) of 54 and 90

.....  
(2)

(b) Find the Lowest Common Multiple (LCM) of 54 and 90

.....  
(2)

**(Total for Question is 4 marks)**

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47- (4MA0-S 2013-Paper 3H-Q9)-NUMBER

The number of runners in the London Marathon on 25th April, 2010 was 37 527.

Work out an estimate for the number of these runners whose birthday was on that day.

.....  
**(Total for Question is 4 marks)**

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An airline increases the prices of its flights by 8%.

(a) Before the increase, the price of a flight to Cairo was £475

Work out the price of a flight to Cairo after the increase.

£.....  
(3)

(b) The increase in price of a flight to Mumbai was £48

Work out the price of a flight to Mumbai after the increase.

£.....  
(3)

**(Total for Question is 6 marks)**

(a) Work out the value of  $\frac{\sqrt{7.4}}{9.8 - 2.1}$

Give your answer as a decimal.

Write down all the figures on your calculator display.

.....  
(2)

(b) Give your answer to part (a) correct to 2 significant figures.

.....  
(1)

**(Total for Question is 3 marks)**

Show that  $\frac{\sqrt{3} + \sqrt{27}}{\sqrt{2}}$  can be expressed in the form  $\sqrt{k}$  where  $k$  is an integer.

State the value of  $k$ .

$k =$  .....

**(Total for Question is 3 marks)**

Show that the recurring decimal  $0.1\dot{7} = \frac{8}{45}$

**(Total for Question is 2 marks)**

Two small magnets attract each other with a force,  $F$  newtons.  
 $F$  is inversely proportional to the square of the distance,  $d$  cm, between them.

When  $d = 2$ ,  $F = 12$

(a) Express  $F$  in terms of  $d$ .

.....  
(3)

(b) Calculate the value of  $F$  when  $d = 5$

$F =$  .....  
(1)

(c) Calculate the value of  $d$  when  $F = 3$

$d =$  .....  
(2)

**(Total for Question is 6 marks)**

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53- (4MA0-W 2012-Paper 3H-Q10)-NUMBER

A bank pays compound interest of 6% per annum on its savings accounts.  
Julia invests \$7500 for 3 years.

Calculate the total interest gained after 3 years.

\$ .....

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**(Total for Question is 3 marks)**

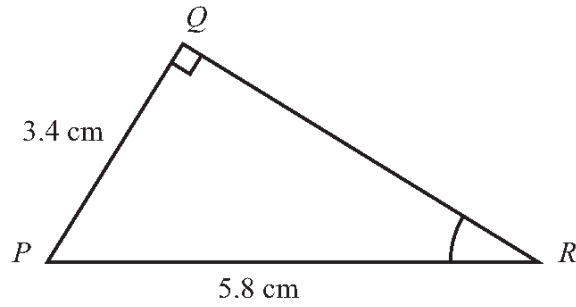


Diagram **NOT** accurately drawn

Triangle  $PQR$  has a right angle at  $Q$ .

$PQ = 3.4$  cm and  $PR = 5.8$  cm.

- (a) Work out the size of angle  $QRP$ .  
Give your answer correct to 1 decimal place.

.....<sup>o</sup>  
(3)

The length 5.8 cm, of  $PR$ , is correct to 2 significant figures.

- (b) (i) Write down the upper bound of the length of  $PR$ .

..... cm

- (ii) Write down the lower bound of the length of  $PR$ .

..... cm  
(2)

**(Total for Question is 5 marks)**

In January 2007 the population of Canada was 32 million.  
7 million of these Canadian people spoke French as their first language.

- (a) Express 7 million as a percentage of 32 million.  
Give your answer correct to 1 decimal place.

..... %  
(2)

Between January 2007 and January 2009 the population of Canada increased by 4%.

- (b) Increase 32 million by 4%.  
Give your answer correct to the nearest million.

..... million  
(3)

**(Total for Question is 5 marks)**

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56- (4MA0-S 2012-Paper 3H-Q20)-NUMBER

Correct to 2 decimal places, the volume of a solid cube is  $42.88 \text{ cm}^3$

Calculate the lower bound for the surface area of the cube.

.....  $\text{cm}^2$

**(Total for Question is 4 marks)**

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57- (4MA0-S 2012-Paper 3H-Q16)-NUMBER

The population of India increased by 20% between 1989 and 1999.

The population of India increased by a further 17% between 1999 and 2009.

Calculate the percentage by which the population of India increased between 1989 and 2009.

..... %

**(Total for Question is 3 marks)**

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58- (4MA0-S 2012-Paper 3H-Q8)-NUMBER

On 9th May, 2009, there were 3440 people in the world with swine flu.  
Of these people, 1639 were in the USA.

- (a) Express 1639 as a percentage of 3440  
Give your answer correct to 1 decimal place.

..... %  
(2)

The 3440 people who had swine flu on 9th May was an increase of 37.6% on  
the number of people who had swine flu on 8th May.

- (b) Calculate the number of people who had swine flu on 8th May.

.....  
(3)

**(Total for Question is 5 marks)**

- (a) The length of an Airbus A300 aeroplane is 54 m.  
The ratio of the length of this aeroplane to its wingspan is 6 : 5

Work out the wingspan of the aeroplane.

..... m  
(2)

- (b) A model is made of the Airbus A300 aeroplane.  
The length of the model is 36 cm.  
The length of the real aeroplane is 54 m.

Find the ratio of the length of the model to the length of the real aeroplane.  
Give your ratio in the form 1 :  $n$

1 : .....  
(3)

**(Total for Question is 5 marks)**

$$A = 2x^2 + kx$$

(a)  $x = -3$   
 $k = 4$

Work out the value of  $A$ .

$$A = \dots\dots\dots$$

(2)

(b)  $A = 38$   
 $x = 4$

Work out the value of  $k$ .

$$k = \dots\dots\dots$$

(3)

**(Total for Question \_ is 5 marks)**

