


NAME

- 1 The sum of two odd numbers is 80 and their difference is 6.
Work out these numbers.

(2 marks)

- 2 Find three different prime numbers that add up to 21.

(2 marks)

- 
- 3 Sanjiv has £46 and Joshua has £38.
Sanjiv gives Joshua some of his money, so that they both have the same amount.
How much do they each have now?

(2 marks)



- 4 Zarah pays the same amount for each text message she sends.
In June she pays £4.16 for 52 text messages.
In July she pays £5.12.
How many text messages did she send in July?

(2 marks)



- 5** Three whole numbers have a total of 80.
 The first number is a factor of 32.
 The second number is 5 times the third number.
 Work out the three numbers.

(3 marks)

- 6** Saima is organising a conference.
 She wants to give each person a pen and a notebook.
 Pens are sold in packs of 15.
 Notebooks are sold in packs of 18.
 Saima bought exactly the same number of pens and notebooks.

- a** What were the smallest numbers of packs Saima could have bought of pens and notebooks?


.....packs of pens

.....packs of notebooks

(4 marks)

- b** How many people did she provide pens and notebooks for?

(1 mark)


- 
- 7 In one month, Paul buys c CDs.
Each CD contains 10 songs.
Write an expression for the total number of songs Paul has bought.

(1 mark)




- 8 The formula used to find the delivery cost of a parcel is
Cost = $(80 \times \text{mass in kilograms} + 50)$ pence.
- a Jo posts a parcel that weighs 150 g.
How much will it cost to post?


(2 marks)

- 
- b Mike's parcel weighs 300 g. He says:
'The cost for posting my parcel will be twice the cost of posting Jo's parcel.'
Is he correct?
Explain your answer.


(1 mark)

- 
- 9 a Write $2(3x + 5) + 4(2x - 1) + 4$ in the form $a(bx + c)$ where a , b and c are integers and $a > 1$.

(3 marks)

- 
- b Is $2(3x + 5) + 4(2x - 1) + 4$ divisible by an even number? Explain your answer.

(2 marks)

- 
- 10 Ben asked 70 students to choose from tennis, hockey or badminton.
30 of the students were girls.
10 girls chose tennis.
11 out of the 26 students who chose hockey were girls.
22 students altogether chose badminton.
How many boys chose badminton?

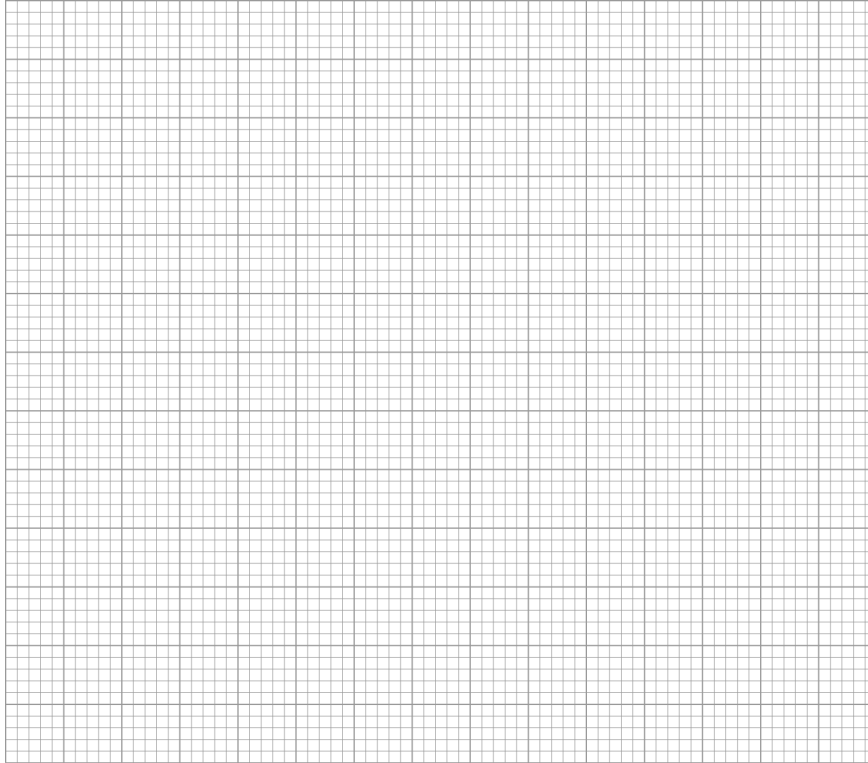
(4 marks)



11 The table shows the population of England (in millions) from 2002 to 2014.

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
49.6	49.9	50.1	50.5	50.8	51.1	51.5	51.8	52.2	52.7	53.1	53.6	54.0

a Use this information to draw a graph and predict the population in England in 2020.



(4 marks)

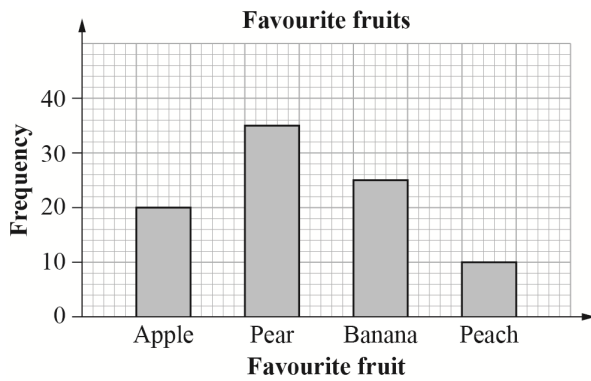
b Make two comments to explain why your prediction in part a may not be reliable.

(1)

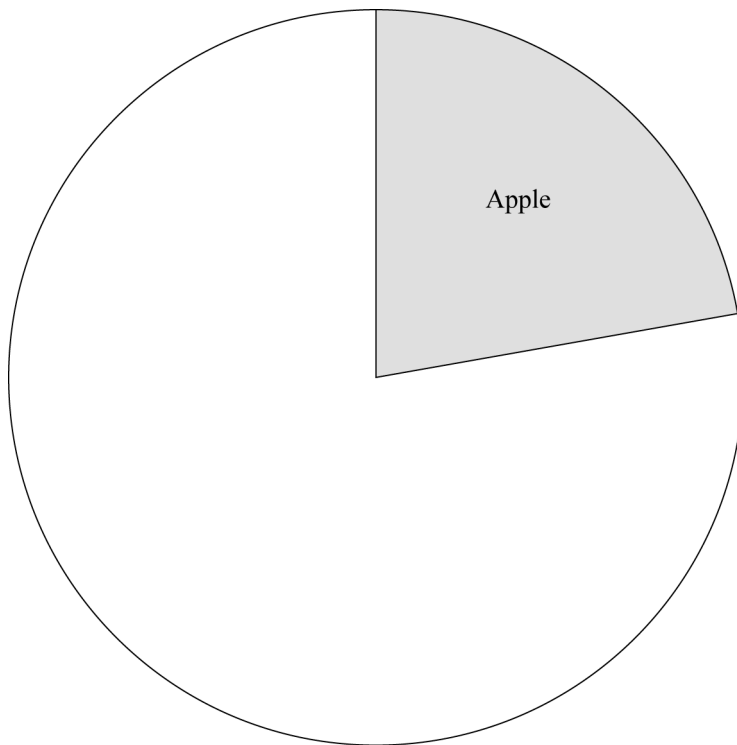
(2)

(1 mark)

- 12 A shopkeeper did a survey to find his customers' favourite fruits. He asked 90 customers. The bar chart shows the results.



Use the information from the bar chart to complete the pie chart.



(3 marks)



- 13** Sarah buys 15 boxes of cupcakes.

The cost of each box of cupcakes is £8.

Each box holds 20 cakes.

Sarah sells 40% of the total number of cupcakes for 80p each.

She then sells all the remaining cakes for 40p each.

Work out the total profit Sarah makes.

(5 marks)

- 14** John, Colin and Bob share the petrol costs on their way to work each month.

John pays 30% of the cost.

Colin pays $\frac{1}{2}$ of the cost.

Bob pays £25.

How much do they pay altogether for the petrol?

(4 marks)

- 15** Students were given a choice of 3 language study options.

30% of students chose Spanish.

$\frac{1}{4}$ of students chose French.

The remaining students chose German.

a What fraction of students chose German?

(3 marks)

90 students chose Spanish.

b How many students chose French?

(3 marks)



- 16 Naomi, Caitlin and Rebecca share a house and split the electricity bill between them.

Naomil pays $\frac{2}{5}$ of the bill.

Caitlin pays $\frac{1}{2}$ of the bill.

Rebecca pays £15.

How much do they pay altogether for the electricity bill?

(4 marks)

- 17 Hasan, Umar and Bill play a computer game.

Hasan scores 20 more points than Bill.

Bill scores 8 more points than Umar.

Altogether they score 72 points.

How many points does each of them score?

Hasan.....

Bill.....

Umar.....

(4 marks)

- 18 Sarah, Parveen and Jen shared out some pencils.

Sarah had twice as many pencils as Parveen.

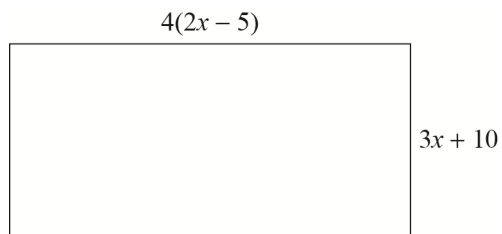
Parveen had 6 more pencils than Jen.

They had a total of 42 pencils.

How many pencils does Parveen have?

(5 marks)

- 19 The diagram shows a rectangle.
The length of the rectangle is greater than the height.

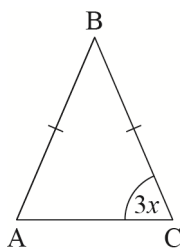


Complete this inequality.

$$x > \dots\dots\dots$$

(3 marks)

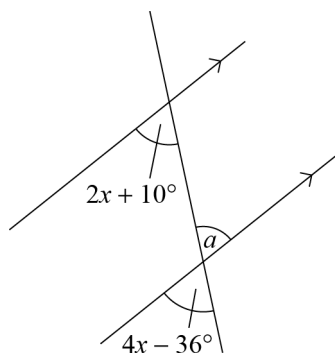
20 ABC is an isosceles triangle.



Write an expression in terms of x for angle ABC.

(2 marks)

21 The diagram shows three straight lines.



Calculate the value of a .

Give your reasons.

(6 marks)



22 Bernie and his five friends timed themselves to complete a puzzle.

The times, in seconds, of his five friends are shown.

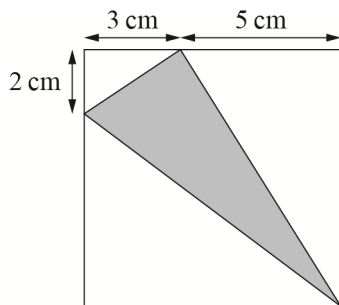
12.4, 12.5, 12.6, 12.7, 12.9

The mean time for Bernie and his friends was 12.55 seconds.

How long did Bernie take?

(3 marks)

23 The diagram shows a shaded triangle inside a square.



Work out the area of the shaded triangle.

.....cm²

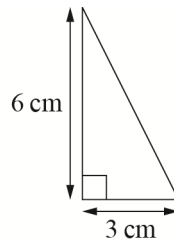
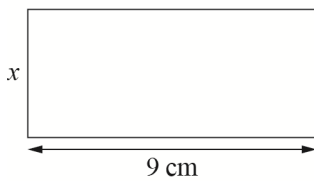
(5 marks)

- 24 A square has an area of 144 cm^2 .
Calculate its perimeter.

.....cm

(2 marks)

- 25 The area of the rectangle is four times the area of the triangle.

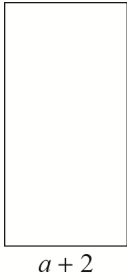


Calculate the height x of the rectangle.

.....cm

(4 marks)

26 Here is a rectangle.



The height of the rectangle is twice the length of the base.

a Write an expression for the height of the rectangle.

(1 mark)

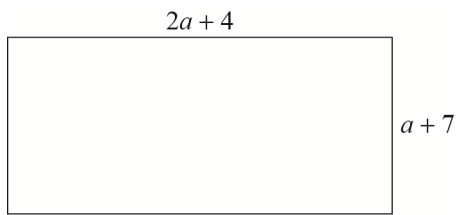
The perimeter of the rectangle is 36 cm.

b Calculate the area of the rectangle.

.....cm²

(4 marks)

- 27 The perimeter of this rectangle is 64 cm.



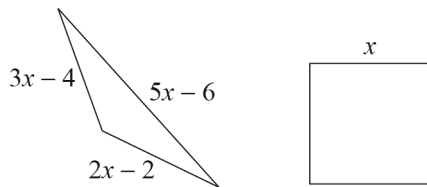
Calculate the length of each side of the rectangle.

.....cm

.....cm

(4 marks)

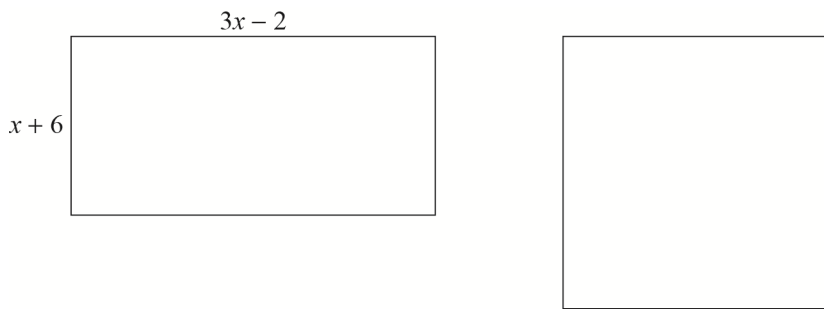
- 28 The perimeter of the triangle is the same as the perimeter of the square.



Calculate the area of the square.

(5 marks)

29 The perimeter of the rectangle is the same as the perimeter of the square.

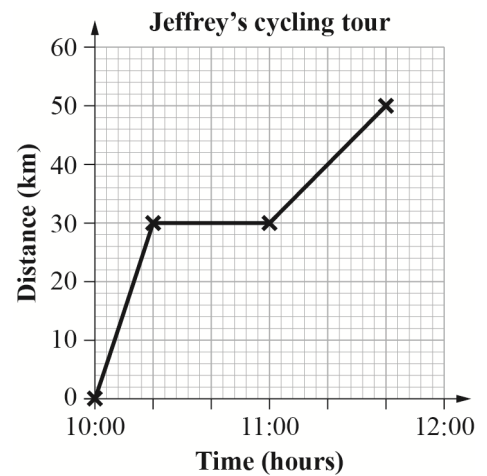


Find an expression for the length of one side of the square, in terms of x .

(4 marks)

30 Jeffrey leaves home at 10:00 on a cycling tour.

a How many minutes did Jeffrey rest for?



.....minutes

(1 mark)

b What is his average speed for the last part of his journey? Give your answer in km/hour.

.....km/hour

(3 marks)

c Between which times did he cycle faster?

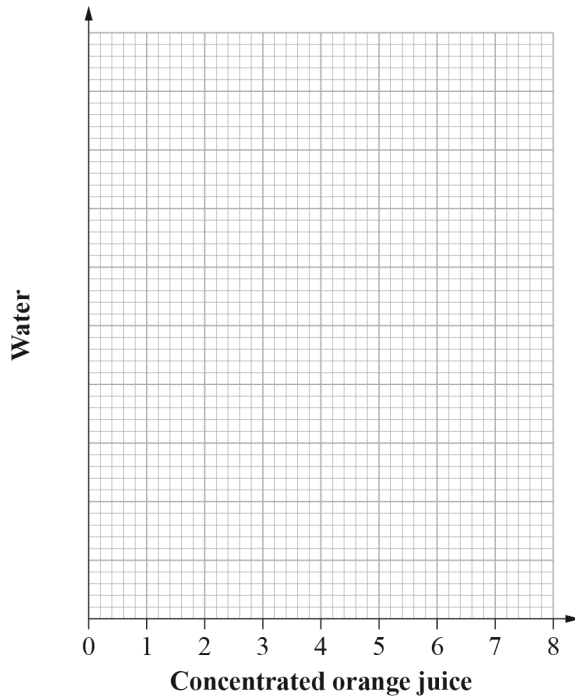
(1 mark)



31 Orange squash is made from concentrated orange juice and water in the ratio 2 : 5.

a Draw a graph that can be used to work out the amount of water needed, given the amount of concentrated orange juice.

Your graph must show up to 8 litres of concentrated orange juice.



(3 marks)

b How much water needs to be mixed with 5 litres of concentrated orange juice?

(1 mark)



- 32 A square with an area of 16 cm^2 is enlarged.
The area of its image is 144 cm^2 .
What is the scale factor of enlargement?

(3 marks)

- 33 Point A with coordinates $(2, 4)$ has been translated to point B with coordinates $(5, -3)$.
a Write the translation vector from A to B.

(2 marks)



- b Calculate the shortest distance between point A and point B.
Write your answer to 1 decimal place.

(3 marks)



34 Chloe saved £4000 for a holiday.

She spent 20% on flights.

She shared the rest of the money between accommodation, food and spending money in the ratio 3 : 2 : 3.

How much did she spend on accommodation and food?

.....Accommodation

.....Food

(4 marks)

35 Joe, Rajiv and Sharon shared some money in the ratio 3 : 5 : 6.


Rajiv got £90 more than Joe.

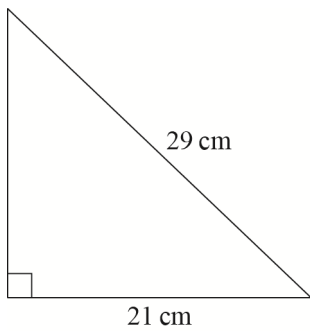
How much did Sharon get?

(3 marks)

- 36** Mark and Simon shared some money in the ratio 3 : 12.
 Simon gave half of his money to Mark.
 Write the ratio of Mark's money to Simon's in its simplest form.

(3 marks)

-  **37** Calculate the area of this right-angled triangle.

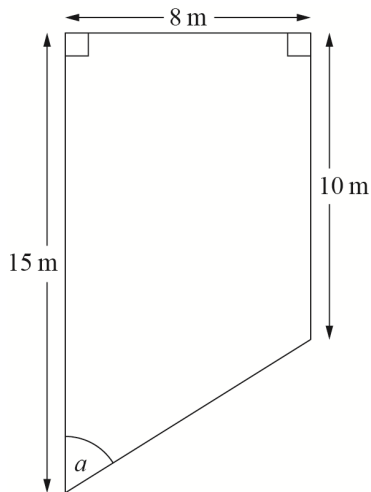


..... cm²

(4 marks)



38 The diagram shows the plan of a garden.



Calculate the size of the angle labelled a .
Give your answer to 2 significant figures.

(4 marks)



39 There are 5 chocolates and 7 mints in a jar.

Carlos puts some more mints in the jar.

The probability of choosing a chocolate is now $\frac{1}{3}$.

How many mints did Carlos put in the jar?

.....mints

(2 marks)



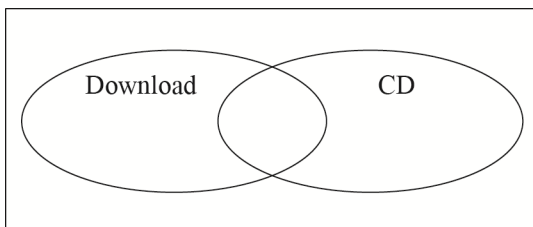
40 Victoria does a survey of 20 people to find out if her friends download music or buy CDs.

8 said they both download and buy CDs.

4 said they only buy CDs.

2 said they don't buy CDs or download music.

a Complete the Venn diagram to show this information.



(2 marks)

b What is the probability that a person chosen at random only downloads music?

(1 mark)



41 a Meryl's Car Showroom made car sales of £400 000 in 2012.

The total value of cars sold in 2013 was 20% lower than in 2012.

Calculate the total value of cars sold in 2013.

(2 marks)

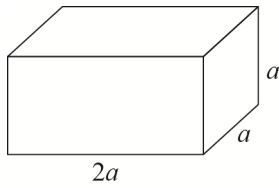


b The total value of sales in 2014 was £400 000.

Calculate the percentage increase from 2013 to 2014.

(2 marks)

- 42 The diagram shows a cuboid of wood.
The measurements are given in centimetres.

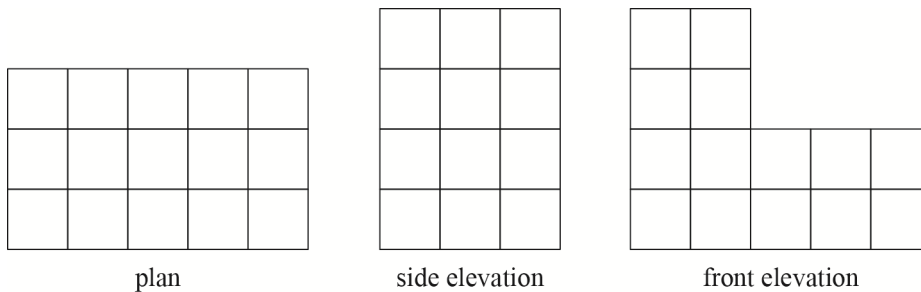


The block of wood has a mass of 0.4 kg.

Show that the density is $\frac{200}{a^3}$ g/cm³.


(3 marks)

- 43 A solid shape is made from centimetre cubes.
Here are the plan view, side view and front elevation of the shape.




How many centimetre cubes were used to make the shape?

(2 marks)

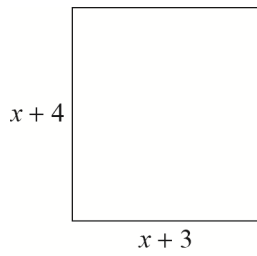
- 
- 44 Two telephone masts A and B are 200 km apart.
The bearing of mast B from A is 060° .
- a Draw an accurate scale drawing of the position of Mast B from Mast A.
Use a scale of 1 cm to represent 40 km.

(3 marks)

- 
- b Each mast has a range of 120 km. Shade the region where both masts can receive a signal.

(2 marks)

45 The area of this rectangle is 30 cm^2 .



a Show that $x^2 + 7x - 18 = 0$.

(3 marks)

b Solve the equation $x^2 + 7x - 18 = 0$ to find the value of x .

$x = \dots\dots\dots$

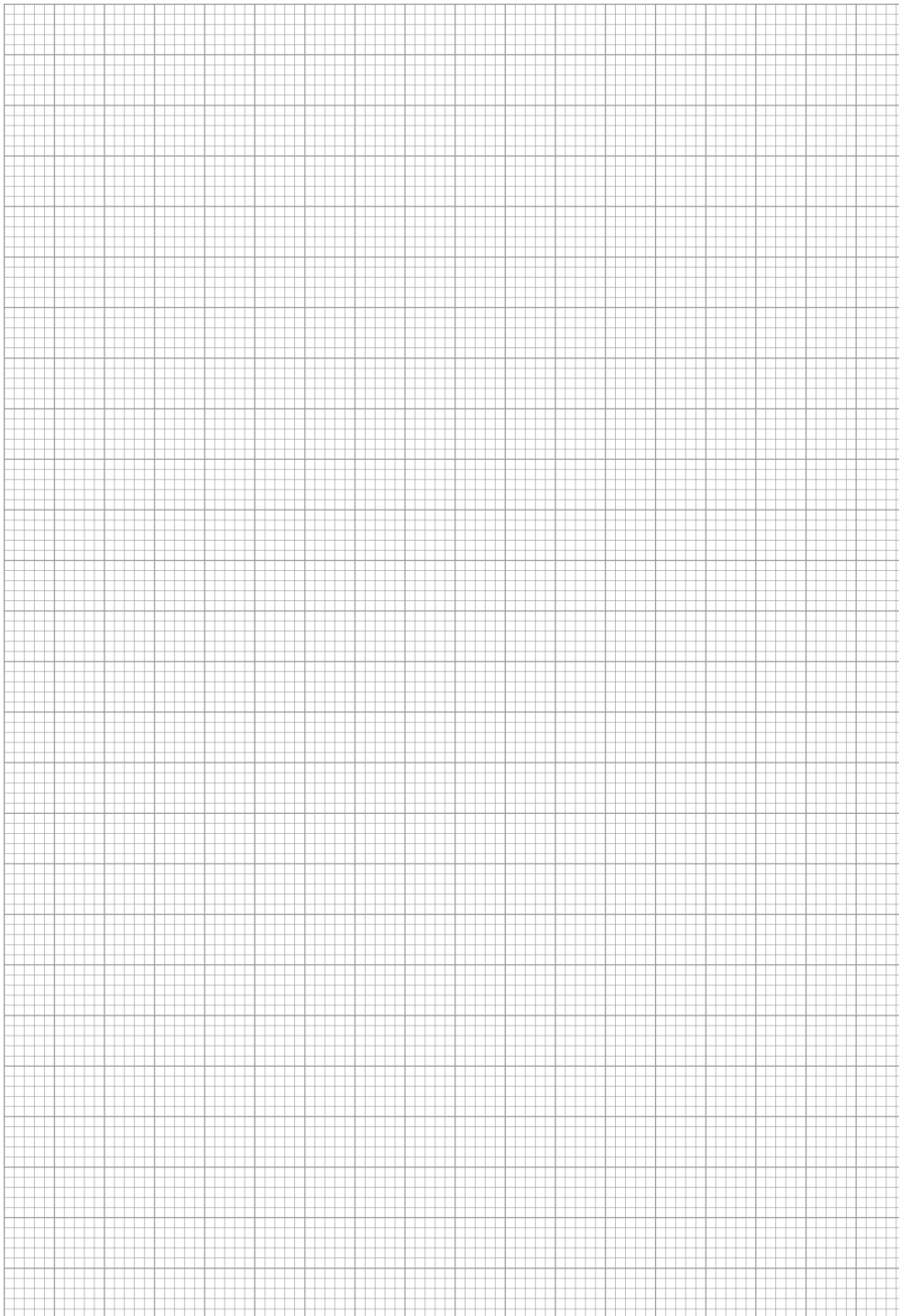
(2 marks)

c Calculate the perimeter of the rectangle.

$\dots\dots\dots \text{cm}$

(2 marks)

46 Draw the graph of $y = x^2 + 2x - 8$ on the grid below.



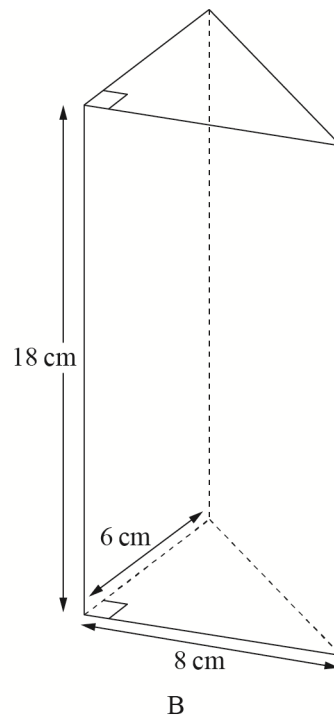
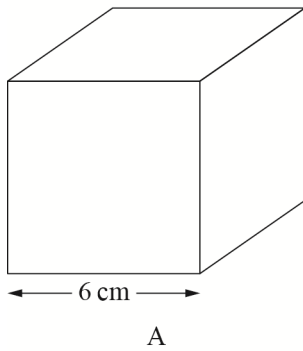
a What are the coordinates of the points where the graph crosses the x -axis?

(3 marks)

b Write the equation of the line of symmetry of the graph $y = x^2 + 2x - 8$.

(1 mark)

- 47 The diagram shows a cube A and a right-angled triangular prism B.
 Show that the volume of B is twice the volume of A.



(3 marks)

48 The diagram shows two identical squares.

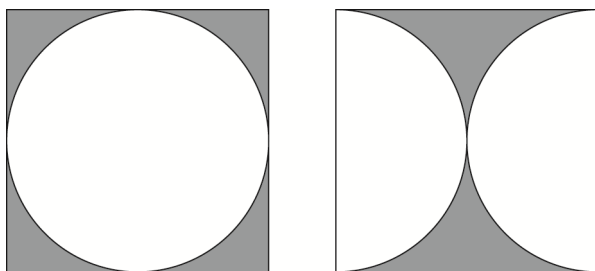


Diagram A shows a circle inside a square.

Diagram B shows two identical semi-circles inside a square.

Show that the area of the shaded region in diagram A is equal to the area of the shaded region in diagram B.

(4 marks)

49 Given that $a = 2^3 \times 3^2 \times 7$ and $b = 2 \times 3^4$

a Write a^2 as a product of its prime factors.

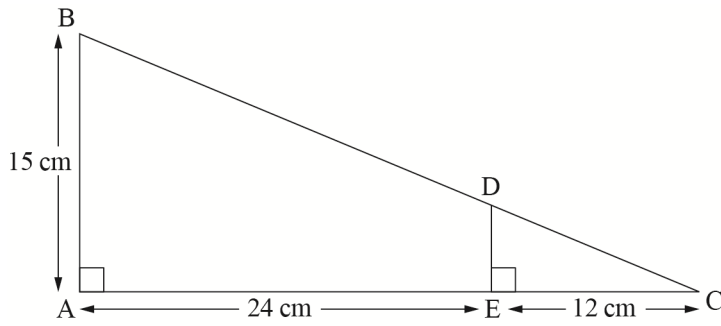
(2 marks)

b Write ab as a product of its prime factors.

(1 mark)



50 Triangle ABC is similar to triangle EDC.



Calculate the length of side DC.

.....cm

(4 marks)

Overall mark	/185
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