

Write your name here

Surname

Other names

Pearson Edexcel
Level 1 / Level 2
GCSE (9–1)

Centre Number

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Candidate Number

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Mathematics

Paper 1 (Non-Calculator)

Foundation Tier

Thursday 25 May 2017 – Morning
Time: 1 hour 30 minutes

Paper Reference

1MA1/1F

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Total Marks



Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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6/6/6/6/7/7/4/

.CG Maths.

Hints



Pearson

Please note that these worked solutions have neither been provided nor approved by Pearson Education and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue indicates what must be written in order to answer the questions and get the marks. The worked solutions have been designed to show the smallest amount of work which needs to be done to answer the question.

Anything written in green in a cloud doesn't have to be written in the exam.

Anything written in orange in a rectangle doesn't have to be written in the exam and is there to show what should be put into a calculator or measured using a ruler or protractor.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Work out the value of 2^4

$2 \times 2 \times 2 \times 2$
Keep Doubling 2.

.....
(Total for Question 1 is 1 mark)

2 Write 7.26451 correct to 3 decimal places.

The 4 is in the 3rd decimal place. Look at the 4th decimal place to decide whether to round it up or down.

.....
(Total for Question 2 is 1 mark)

3 (a) Simplify $7 \times e \times f \times 8$

The multiplication can be done in any order. 7×8 first.

.....
(1)

(b) Solve $\frac{x}{5} = 2\frac{1}{2}$

Rearrange to make x the subject by doing the opposite of dividing by 5 to both sides.

$x =$
(1)

(Total for Question 3 is 2 marks)

4 Write $\frac{4}{5}$ as a percentage.

$\frac{1}{10} = 10\%$
 $\frac{1}{5} = 20\%$

.....%

(Total for Question 4 is 1 mark)

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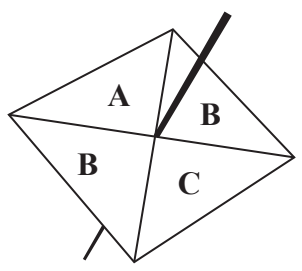
5 Work out 60% of 70

Work out 10% first.
Multiply this to get 60%

(Total for Question 5 is 2 marks)

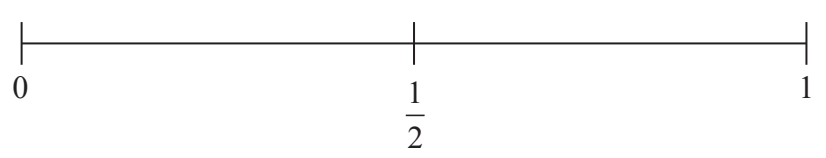
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6 Sammy spins a fair 4-sided spinner.



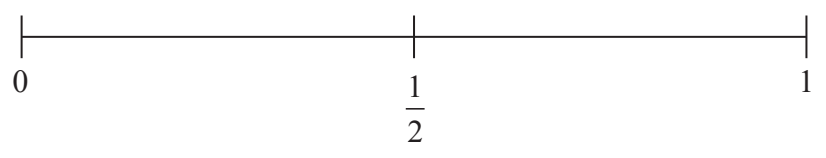
There are 2 Bs out of 4 possible outcomes. There is no F so this is impossible.

(i) On the probability scale, mark with a cross (×) the probability that the spinner will land on B.



(1)

(ii) On the probability scale, mark with a cross (×) the probability that the spinner will land on F.



(1)

(Total for Question 6 is 2 marks)

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7 Fahima buys

- 2 packets of bread rolls costing £1.50 for each packet
- 1 bottle of ketchup costing £1.60
- 3 packets of sausages

Fahima pays with a £10 note.
She gets 30p change.

Fahima works out that one packet of sausages costs £2.30

Is Fahima right?

You must show how you get your answer.

Work out the cost of 3 packs of sausages by taking away the total cost of the bread rolls and ketchup from the amount spent. The amount spent isn't £10 as there was 30p change. Then divide the cost of the sausages by 3.

(Total for Question 7 is 3 marks)

8 (a) Work out $\frac{5}{8} \times \frac{3}{4}$

Multiply the numerators and denominators together and combine into one fraction.

.....
(1)

(b) Work out $\frac{2}{3} - \frac{1}{4}$

The denominators need to be the same in order to proceed. A common multiple of 3 and 4 will be the common denominator. Multiply both the numerator and denominator by the same amount to keep the fraction equivalent and to get the common denominator. Once the denominators are the same, the numerators can be subtracted.

.....
(2)

(Total for Question 8 is 3 marks)

- 9 Sean works for a company.
His normal rate of pay is £12 per hour.

When Sean works more than 8 hours a day, he is paid overtime for each hour he works more than 8 hours.

Sean's rate of overtime pay per hour is $1\frac{1}{4}$ times his normal rate of pay per hour.

On Monday Sean worked for 10 hours.

Work out the total amount of money Sean earned on Monday.

Work out how many hours were worked overtime and normal rate. Work out how much was earned for that many hours of overtime and normal rate then add them both together to get the total amount earned.

£.....

(Total for Question 9 is 4 marks)



- 10 A farmer has 20 boxes of eggs.
There are 6 eggs in each box.

Write, as a ratio, the number of eggs in two boxes to the total number of eggs.
Give your answer in its simplest form.

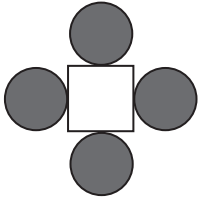
Express in a ratio
eggs in 2 boxes : eggs in total
Simplify by dividing both sides of the ratio by
common factors until it can't be simplified any more.

.....

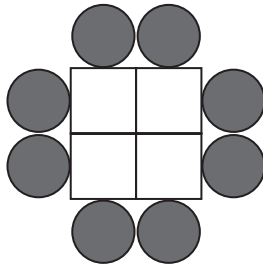
(Total for Question 10 is 2 marks)

11 A sequence of patterns is made from circular tiles  and square tiles 

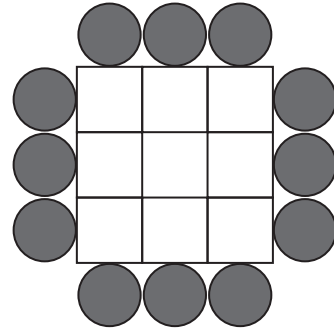
Here are the first three patterns in the sequence.



pattern number 1



pattern number 2



pattern number 3

(a) How many square tiles are needed to make pattern number 6?

The square tiles form a larger square so the number of square tiles are going to be square numbers.

.....
(2)

(b) How many circular tiles are needed to make pattern number 20?

The number of circular tiles follows the pattern 4, 8, 12... this is a times table.

.....
(2)

Derek says,

“When the pattern number is odd, an odd number of square tiles is needed to make the pattern.”

(c) Is Derek right?

You must give reasons for your answer.

The pattern number is squared to get the number of square tiles so the odd pattern number will be multiplied by itself.

.....
(2)

(Total for Question 11 is 6 marks)

12 There are only 7 blue pens, 4 green pens and 6 red pens in a box.

One pen is taken at random from the box.

Write down the probability that this pen is blue.

There are ? in total. 7 out of the ? are blue. Express this as a fraction.

.....

(Total for Question 12 is 2 marks)

13 The diagram shows a tree and a man.



The man is of average height.

The tree and the man are drawn to the same scale.

(a) Write down an estimate for the real height, in metres, of the man.

A doorway is about 2m.

..... metres

(1)

(b) Find an estimate for the real height, in metres, of the tree.

They are drawn to the same scale. Use a ruler to measure how many times higher the tree is than the man.

..... metres

(2)

(Total for Question 13 is 3 marks)

14 Year 9 students from Halle School were asked to choose one language to study.

The table shows information about their choices.

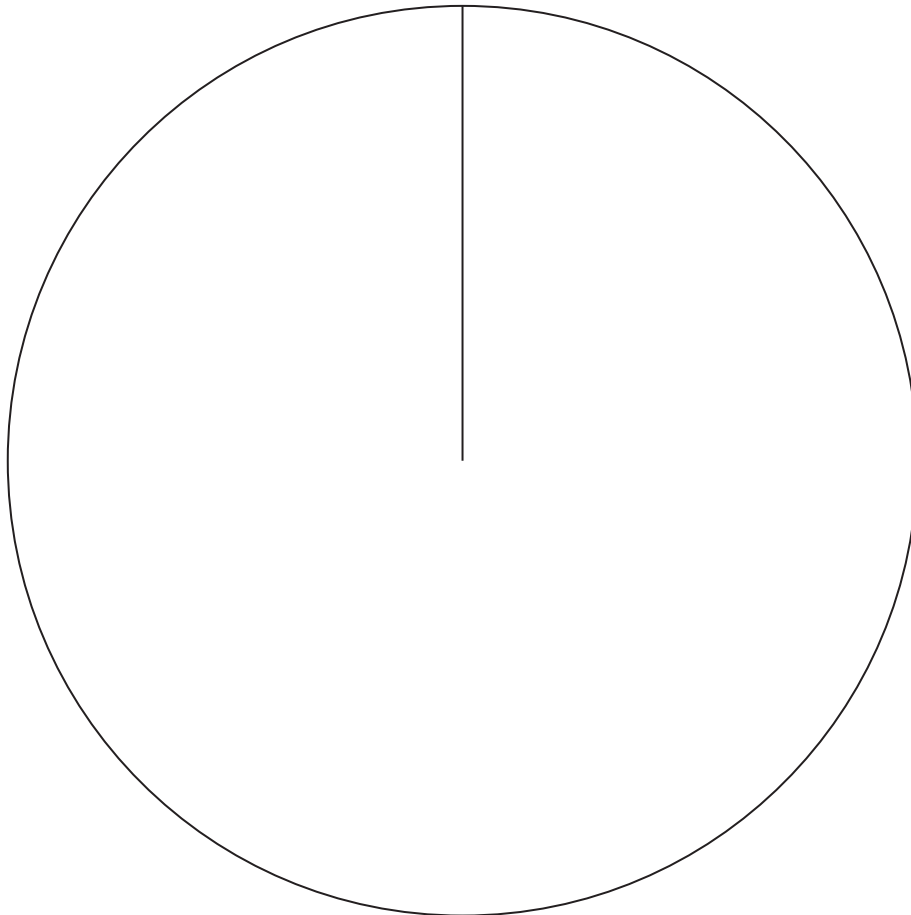
Language	Number of students	degrees
French	56	
Spanish	40	
German	24	

120

120 students in total.

(a) Draw an accurate pie chart to show this information.

Work out how many degrees there are per student using the fact there are 120 in total and that there are 360 degrees in total around the centre of a circle. Then work out the angle for each category, draw the angles using a protractor and label the sectors.



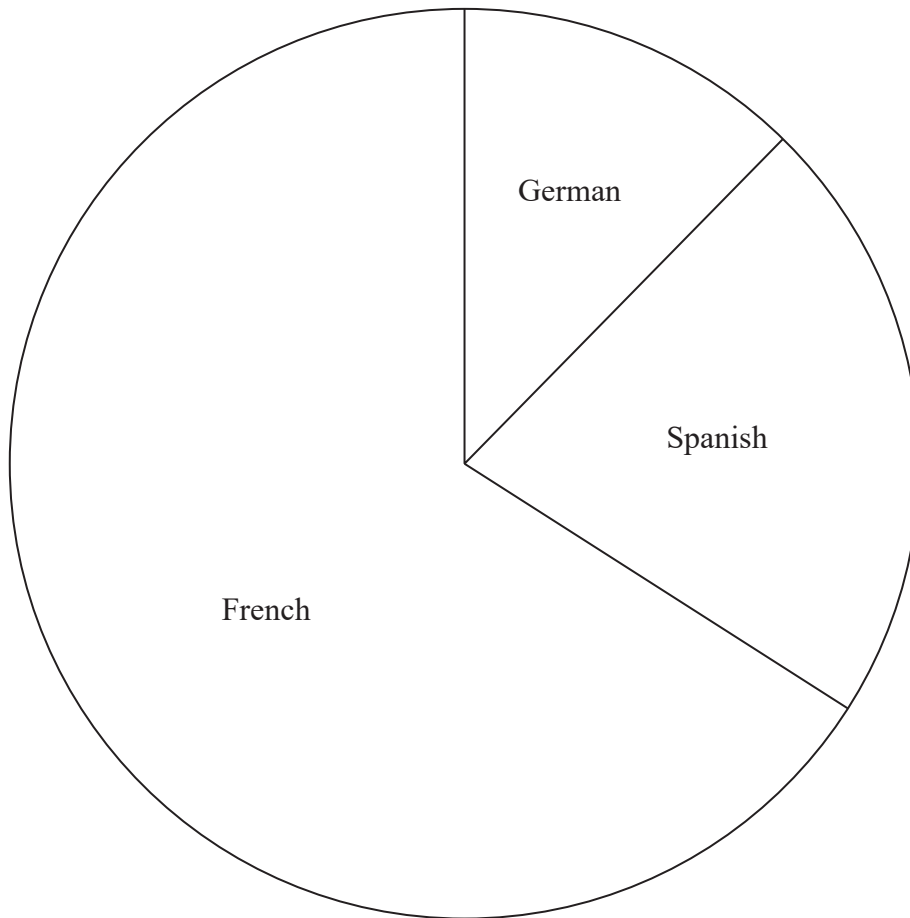
(3)

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Year 9 students from Lowry School were also asked to choose one language to study.
This accurate pie chart shows information about their choices.



Shameena says,

“The pie chart shows that French was chosen by more Year 9 students at Lowry School than at Halle School.”

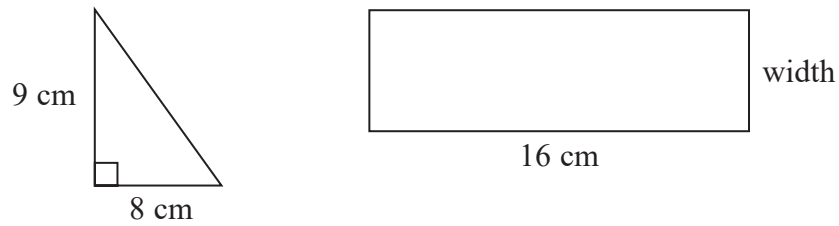
- (b) Is Shameena right?
You must explain your answer.

The pie chart needs to show that there were more than 56 students choosing French for her to be right.

(1)

(Total for Question 14 is 4 marks)

15 Here are a triangle and a rectangle.



The area of the rectangle is 6 times the area of the triangle.

Work out the width of the rectangle.

Area of rectangle = length \times width
 Width = area of rectangle / length
 Area of rectangle = 6 \times area of triangle
 Area of triangle = $\frac{1}{2} \times$ base \times height

..... cm

(Total for Question 15 is 4 marks)

16 $v = u + at$

$$u = 1 \quad a = -3 \quad t = \frac{1}{2}$$

Work out the value of v .

Substitute the values
into the equation.

$v =$

(Total for Question 16 is 2 marks)

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17 5 tins of soup have a total weight of 1750 grams.
4 tins of soup and 3 packets of soup have a total weight of 1490 grams.

Work out the total weight of 3 tins of soup and 2 packets of soup.

1. Calculate the weight of 1 tin.
2. Calculate the weight of 4 tins.
3. Subtract this from the total weight of 4 tins and 3 packets to get the weight of the 3 packets.
4. Calculate the weight of 1 packet.
5. Calculate the total weight of 3 tins and 2 packets.

..... grams

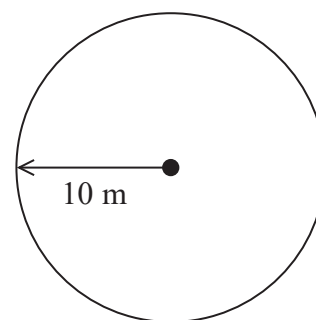
(Total for Question 17 is 4 marks)

- 18 Balena has a garden in the shape of a circle of radius 10 m.
He is going to cover the garden with grass seed to make a lawn.

Grass seed is sold in boxes.

Each box of grass seed will cover 46 m^2 of garden.

Balena wants to cover all the garden with grass seed.



- (a) Work out an estimate for the number of boxes of grass seed Balena needs.
You must show your working.

Area of circle = πr^2
 π is about 3.14

Round all figures to 1 significant figure then work out how many lots of the amount covered by each box goes into the area of the lawn

.....
(4)

- (b) Is your estimate for part (a) an underestimate or an overestimate?
Give a reason for your answer.

If you rounded or used an approximation, consider what effect this will have on the final answer.

.....
(1)

(Total for Question 18 is 5 marks)

19 (a) Solve $4(x - 5) = 18$

Expand the bracket then rearrange to make x the subject. Perform the same operations to both sides of the equation.

$x = \dots\dots\dots$
(2)

$-3 < t \leq 2$
 t is an integer.

(b) Write down all the possible values of t .

t is greater than -3 but is less than or equal to 2 .

$\dots\dots\dots$
(2)

(Total for Question 19 is 4 marks)

20 Azmol is paid £1500 per month.
He is going to get a 3% increase in the amount of money he is paid.

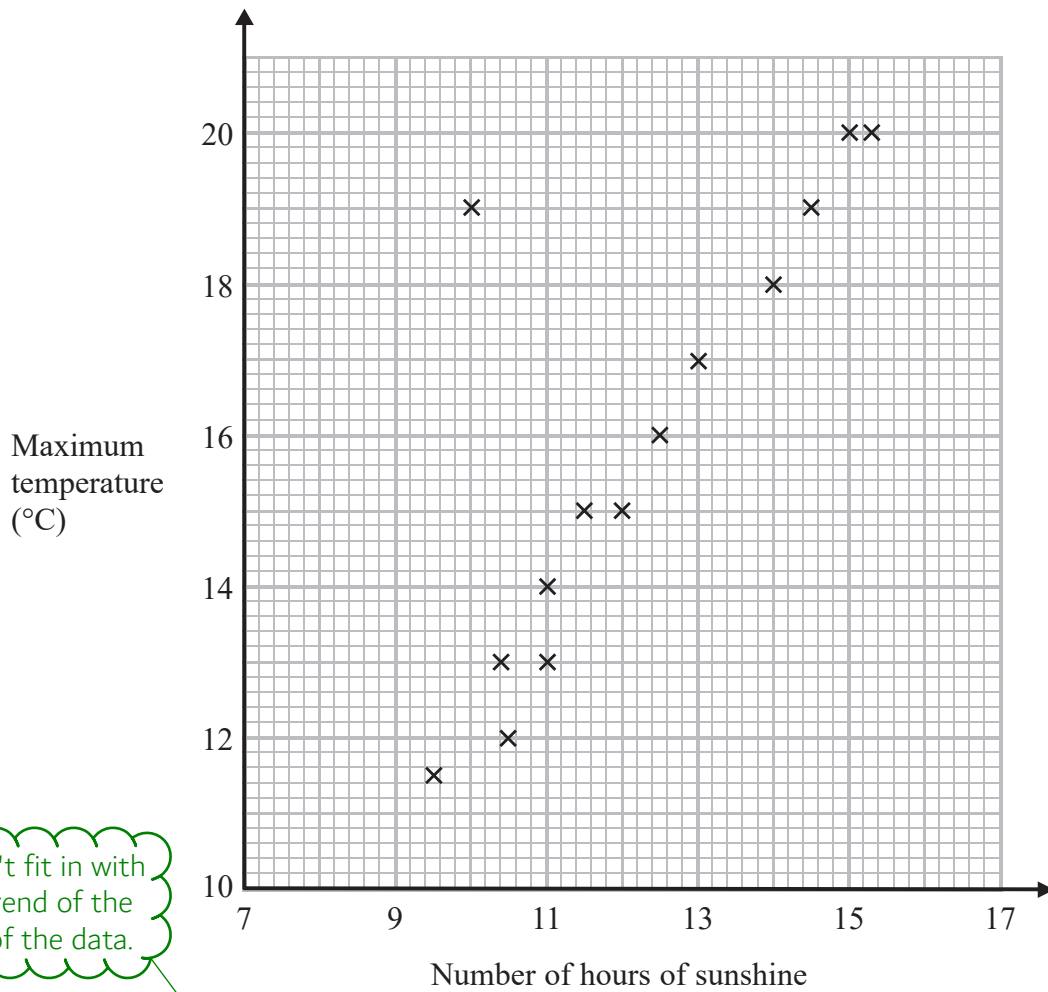
Work out how much money Azmol will be paid per month after the increase.

Calculate 1% then 3% of £1500.
1% can be found by dividing by 100.
Then add the value of 3% to £1500.

£ $\dots\dots\dots$

(Total for Question 20 is 2 marks)

- 21 The scatter graph shows the maximum temperature and the number of hours of sunshine in fourteen British towns on one day.



Doesn't fit in with the trend of the rest of the data.

One of the points is an **outlier**.

- (a) Write down the coordinates of this point.

(x-coordinate, y-coordinate)

(.....,)
(1)

- (b) For all the other points write down the type of **correlation**.

Positive if both variables increase together. Negative if one increases while the other decreases.

.....
(1)

On the same day, in another British town, the maximum temperature was 16.4°C .

(c) Estimate the number of hours of sunshine in this town on this day.

We can draw a line of best fit and use this to give an estimate. Be careful of the scale. 16.4 is not 4 boxes after 16.

..... hours

(2)

A weatherman says,

“Temperatures are higher on days when there is more sunshine.”

(d) Does the scatter graph support what the weatherman says?

Give a reason for your answer.

Test the statement against the data. Is it supported by the data?

(1)

(Total for Question 21 is 5 marks)

22 Express 56 as the product of its prime factors.

Product: multiplied together.

Prime: positive whole numbers which are only divisible by themselves and 1.

Factors: positive whole numbers which can be multiplied by another whole number to give 56.

A factor tree would help us to find the prime factors.

(Total for Question 22 is 2 marks)

23 Work out 54.6×4.3

Multiplying decimals can be tricky. It is easier to remove the decimal places then adjust the answer after.

$$\begin{array}{r} 546 \\ \times 43 \\ \hline \end{array}$$

$$54.6 \times 10 = 546$$

$$4.3 \times 10 = 43$$

How many times higher does this make the result?

(Total for Question 23 is 3 marks)

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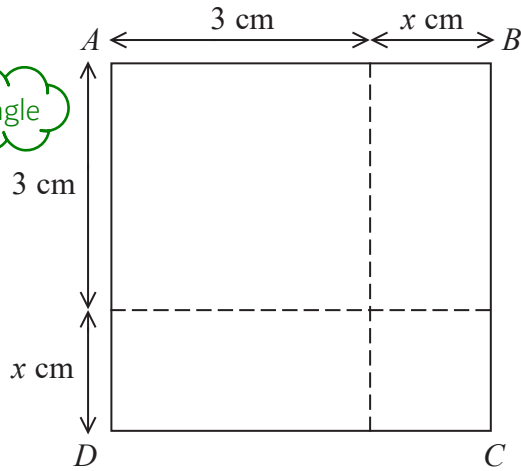
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Length \times width = area of rectangle



The area of square $ABCD$ is 10 cm^2 .

Show that $x^2 + 6x = 10$

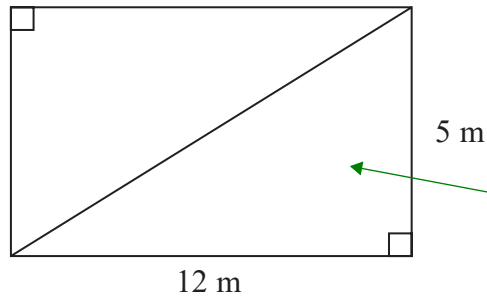
Adding up all the individual areas or working out the area of the whole shape gives 10

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(Total for Question 24 is 3 marks)

25 This rectangular frame is made from 5 straight pieces of metal.



This is a right-angled triangle so Pythagoras finds the missing side.
 $a^2 + b^2 = c^2$

The weight of the metal is 1.5 kg per metre.

Work out the total weight of the metal in the frame.

Adding together all the lengths and multiplying it by the weight per metre gives the total weight.

..... kg

(Total for Question 25 is 5 marks)

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- 26 The equation of the line L_1 is $y = 3x - 2$
The equation of the line L_2 is $3y - 9x + 5 = 0$

Show that these two lines are parallel.

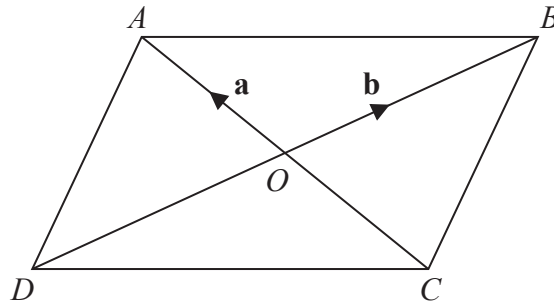
Parallel lines have the same gradient.

$y = mx + c$ is the general equation for a straight line.

m is the gradient so L_1 must have a gradient of 3.

Rearranging the second equation can put it into the desired form and we can work out the gradient.

(Total for Question 26 is 2 marks)



$ABCD$ is a parallelogram.

The diagonals of the parallelogram intersect at O .

$$\vec{OA} = \mathbf{a} \text{ and } \vec{OB} = \mathbf{b}$$

- (a) Find, in terms of \mathbf{b} , the vector \vec{DB} .

$$\vec{DO} = \vec{OB}$$

(1)

- (b) Find, in terms of \mathbf{a} and \mathbf{b} , the vector \vec{AB} .

From A to B , we go against \mathbf{a} , making it negative, and with \mathbf{b} meaning it is positive.

(1)

- (c) Find, in terms of \mathbf{a} and \mathbf{b} , the vector \vec{AD} .

From A to D , we go against \mathbf{a} and \mathbf{b} , making them negative. $OD = -b$

(1)

(Total for Question 27 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS