Centre Number						Candidate Number				
Surname										
Other Names										
Candidate Signature										

For Examiner's Use	
Examiner's Initials	
Pages	Mark
3	
4 – 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
24 – 25	
26 – 27	
28	
TOTAL	

AQA

General Certificate of Secondary Education
Foundation Tier
June 2015

Mathematics 43603F

Unit 3 Foundation Tier

F

Monday 8 June 2015 9.00 am to 10.30 am

For this paper you must have:
- a calculator
- mathematical instruments.

Time allowed
- 1 hour 30 minutes

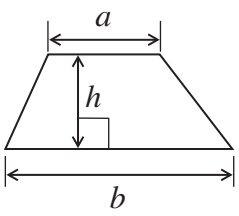
Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book.
- If your calculator does not have a π button, take the value of π to be 3.14 unless another value is given in the question.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- Quality of your written communication is specifically assessed in Questions 15, 16 and 17. These questions are indicated with an asterisk (*).
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer booklet.

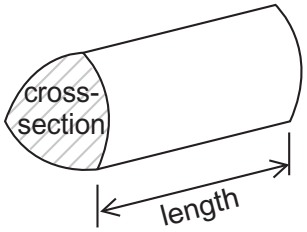
Advice
- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

Area of trapezium = $\frac{1}{2}(a+b)h$

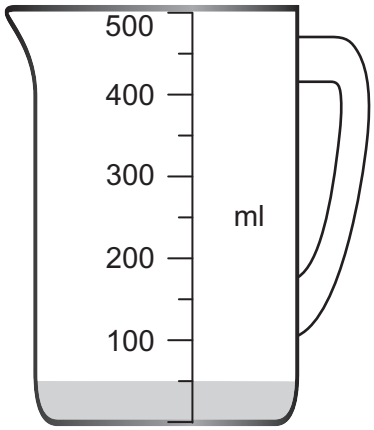


Volume of prism = area of cross-section × length



Answer **all** questions in the spaces provided.

1 Some water is shown in a 500 ml measuring jug.



1 (a) How much water is in the jug?

[1 mark]

Answer ..... ml

1 (b) 210 ml of water is added to the jug.

On the jug, draw a straight line to show the new water level.

[1 mark]

1 (c) How much water is in the 500 ml jug when it is 80% full?

[2 marks]

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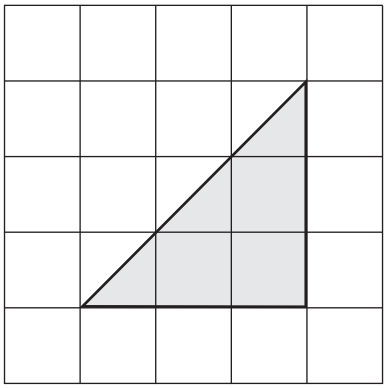
Answer ..... ml

4

Turn over ▶

2 (a) The diagram shows a triangle on a centimetre grid.



Work out the area of the triangle.

[1 mark]

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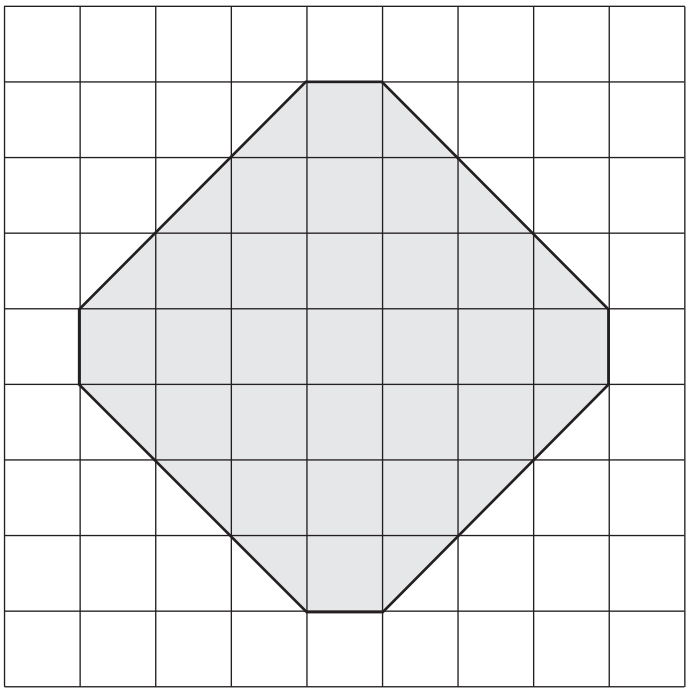
Answer ..... cm^2

2 (b) The diagram shows a shape on a centimetre grid.



Work out the area of the shape.

[3 marks]

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Answer ..... cm^2

4

3 Two judges record the times of each runner in a race.
The **slower** time for each runner is used as their official time.

Runner	1st judge	2nd judge	Official time
Alf	2 minutes 5 seconds	123 seconds	..... seconds
Ben	1 minute 58 seconds	115 seconds	..... seconds
Carl	2 minutes 8 seconds	130 seconds	..... seconds
Dan	1 minute 54 seconds	115 seconds	..... seconds

3 (a) Complete the table with the official times in **seconds**.

[3 marks]

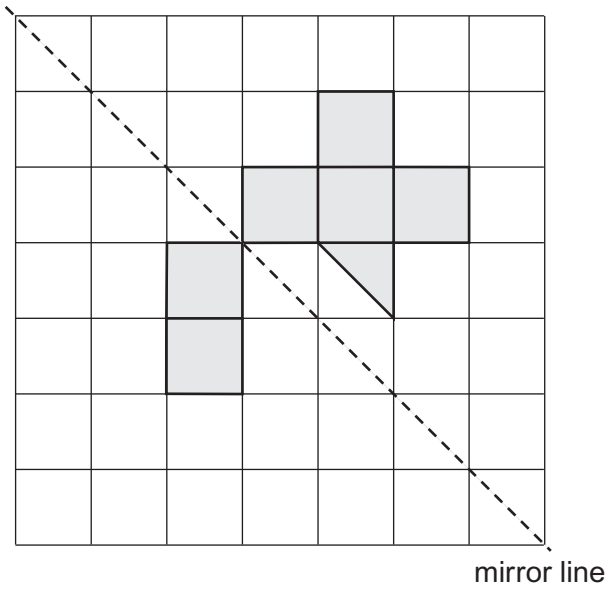
3 (b) Who won the race?
Circle your answer.

[1 mark]

Alf Ben Carl Dan

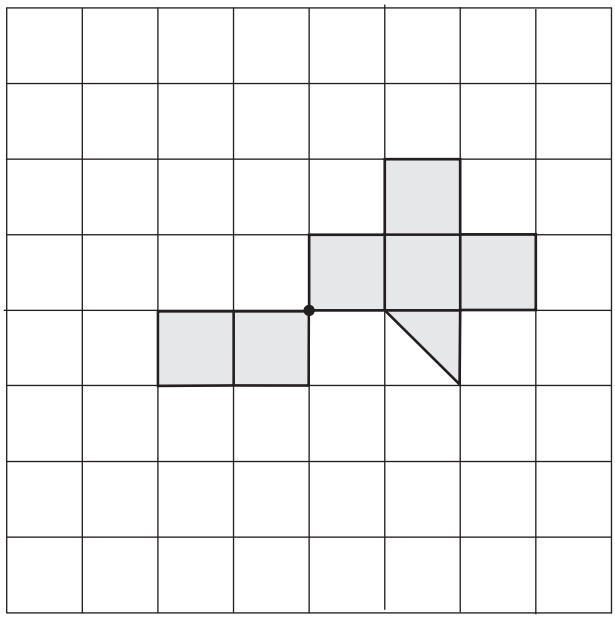
4 (a) Shade **two more** squares and **one more** triangle so that the diagram has reflective symmetry about the mirror line.

[2 marks]



4 (b) Shade **two more** squares and **one more** triangle so that this diagram has rotational symmetry of order 2

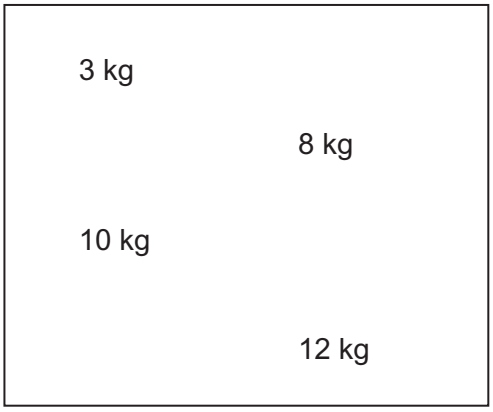
[2 marks]



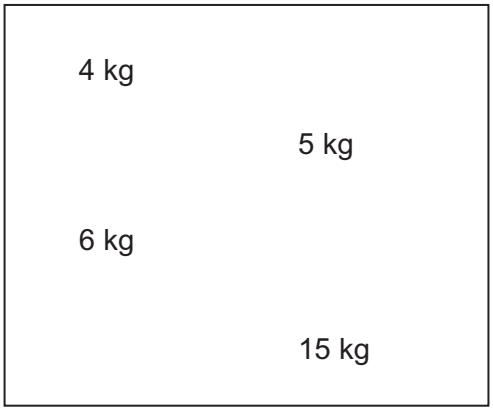
8

5 (a) The diagram shows Box A and Box B.
Each box holds four weights.

Box A



Box B



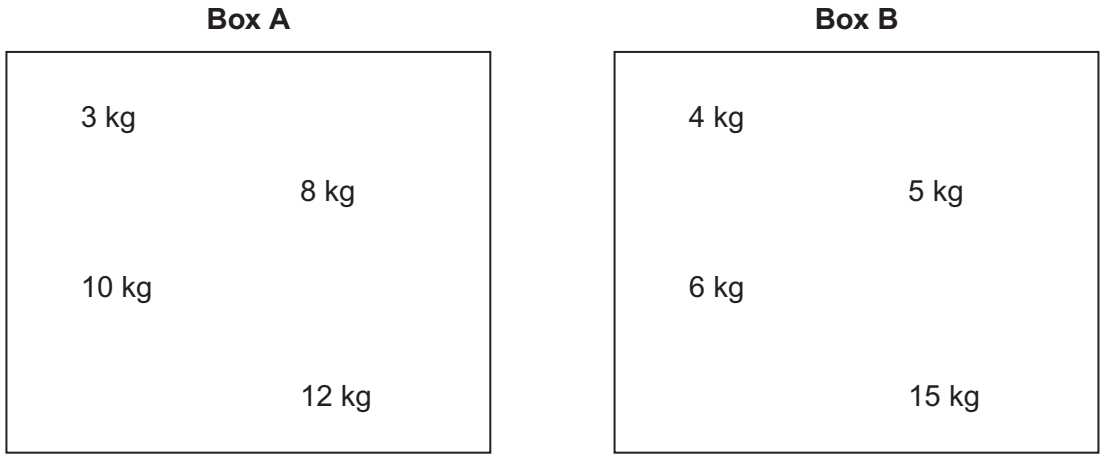
One of the weights is taken out of Box A.
The boxes now weigh the same.

Which weight is taken out?
Circle your answer.

[1 mark]

3 kg 8 kg 10 kg 12 kg

5 (b) Here are the two boxes again.



One of the weights is moved from Box A to Box B.
The total weight in Box B is now double the total weight in Box A.

Which weight is moved?
Circle your answer.

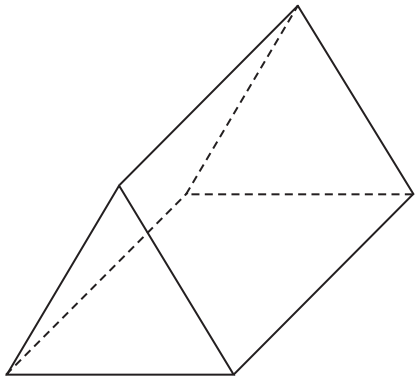
[1 mark]

3 kg 8 kg 10 kg 12 kg

Turn over for the next question

2

6 (a) The diagram shows a triangular prism.



Write down the number of faces, edges and vertices.

[3 marks]

Faces .....

Edges .....

Vertices .....

6 (b) The volume of the prism is 40 cm^3

Will the prism fit inside an empty cube with volume 125 cm^3?
Tick a box.

☐ Yes ☐ No ☐ Cannot tell

Give a reason for your answer.

[2 marks]

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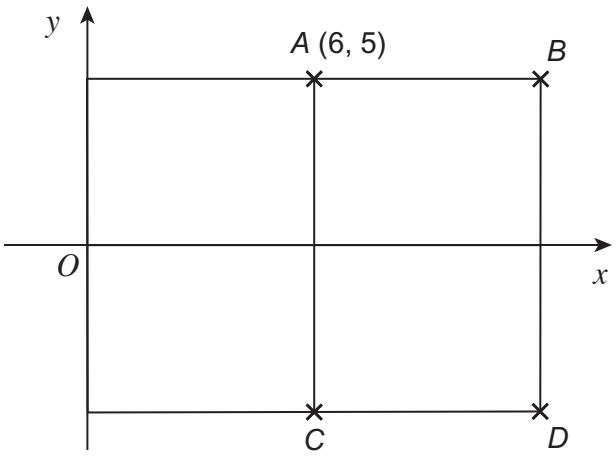
7 Four identical small rectangles are joined together to make a large rectangle.
A is the point (6, 5)

Not drawn accurately



Work out the coordinates of *B*, *C*, and *D*.

[3 marks]

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B (..... , ...)

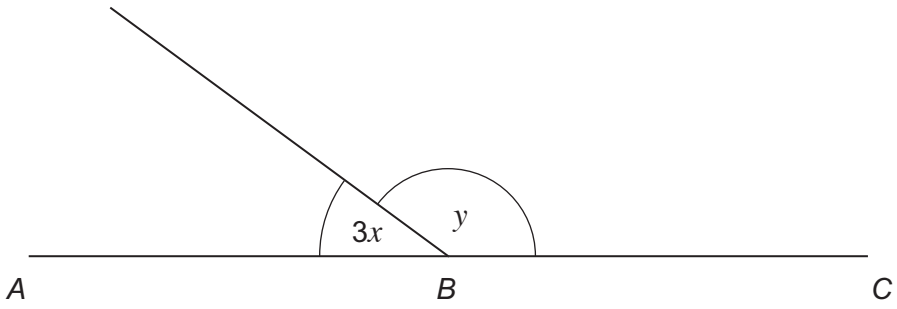
C (..... , ...)

D (..... , ...)

8

Turn over ▶

8 (a) *ABC* is a straight line.



Not drawn accurately

Work out the value of y when $x = 15^\circ$

[2 marks]

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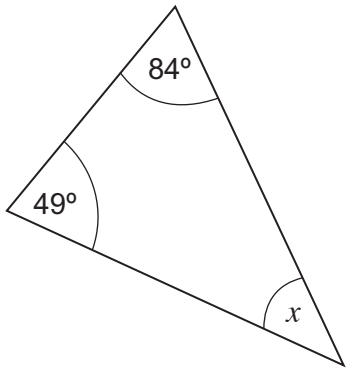
Answer ..... degrees

8 (b) Work out the size of angle x.

[2 marks]



Not drawn accurately

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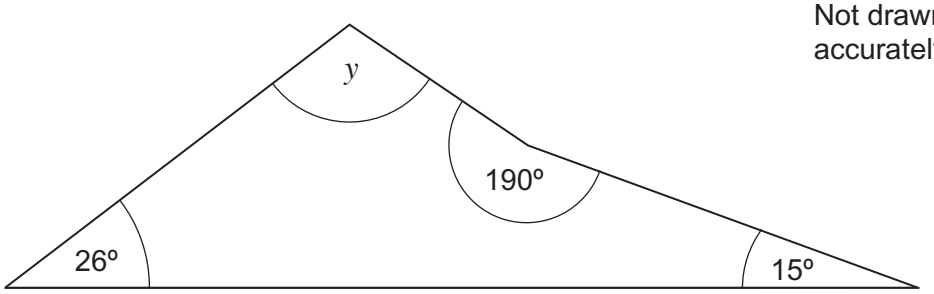
Answer ..... degrees

8 (c) Work out the size of angle y.

[2 marks]

Not drawn accurately



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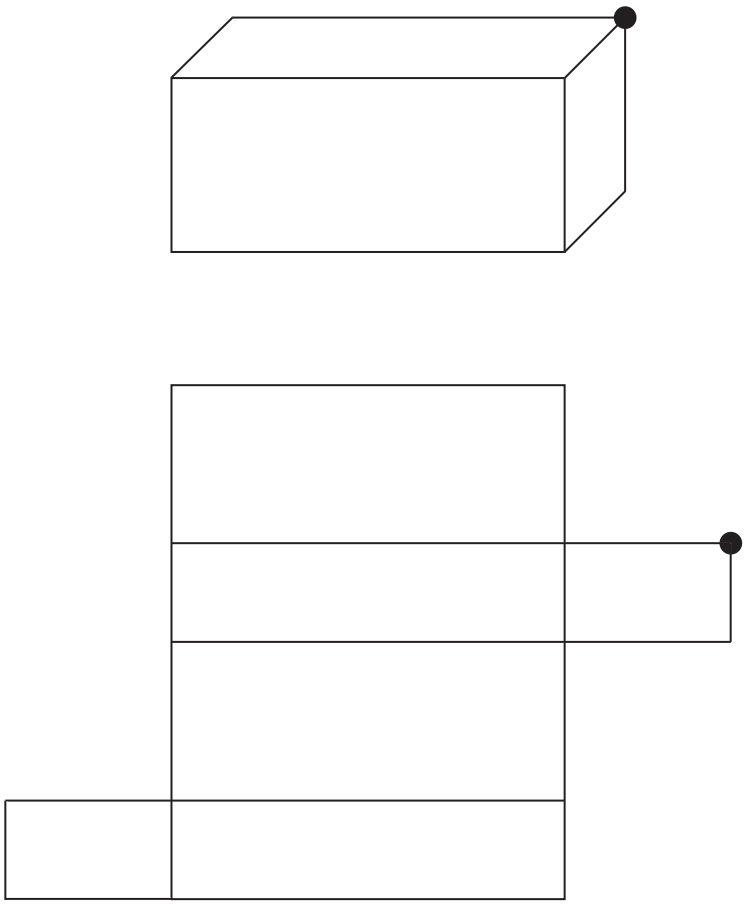
Answer ..... degrees

Turn over for the next question

6

9 The diagrams show a cuboid and its net.
A dot is shown at one vertex.



9 (a) On the net, draw **two more** dots to show the points that meet with the dot shown when the cuboid is made.

[2 marks]

9 (b) In this cuboid

length = width + height

The length of the cuboid = 7 cm

Work out the total length of all the edges of the cuboid.

[3 marks]

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Answer ..... cm

Turn over for the next question

5

10 The table shows stopping distance for a car when braking.

Speed (mph)	Stopping distance (metres)
20	12
30	23
40	36
50	53
60	73

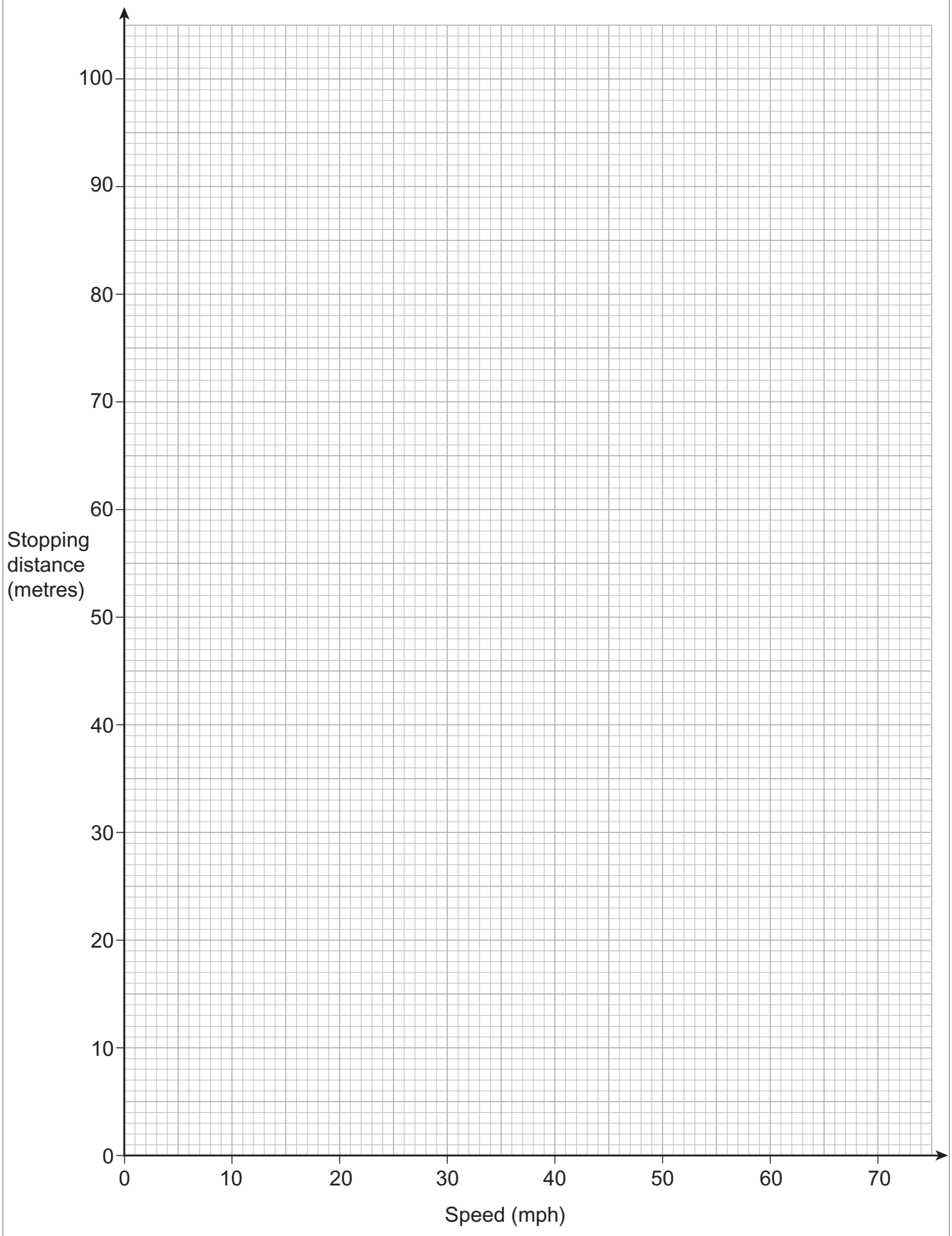
10 (a) Plot this data on the grid opposite.
Join your points with a smooth curve.

[2 marks]

10 (b) Extend your smooth curve to estimate the stopping distance at 70 mph

[2 marks]

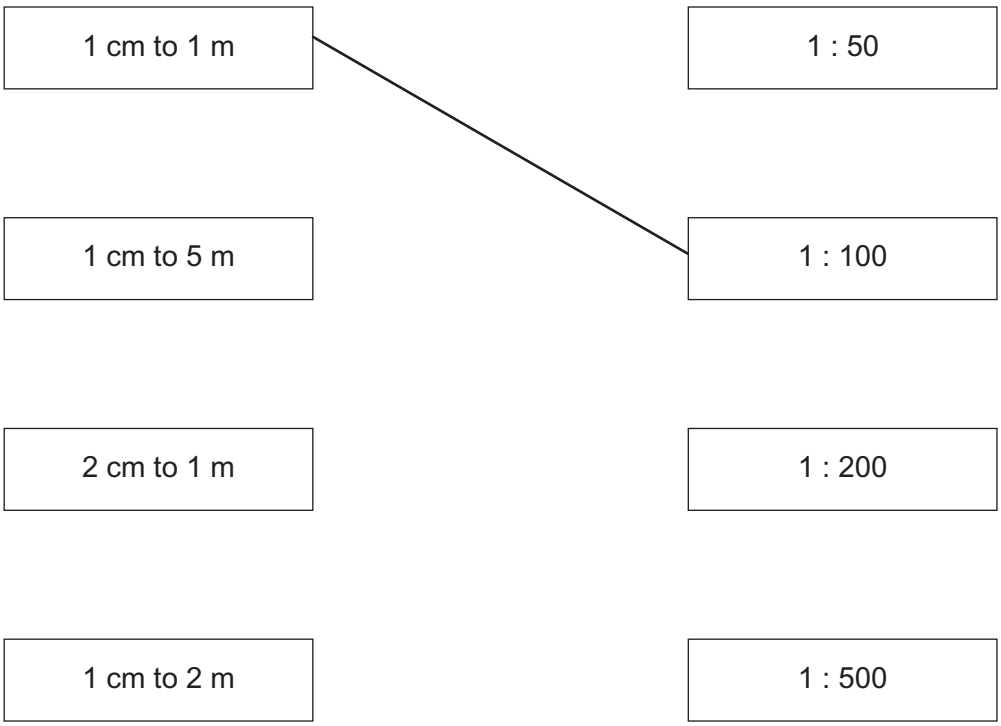
Answer ..... metres



4

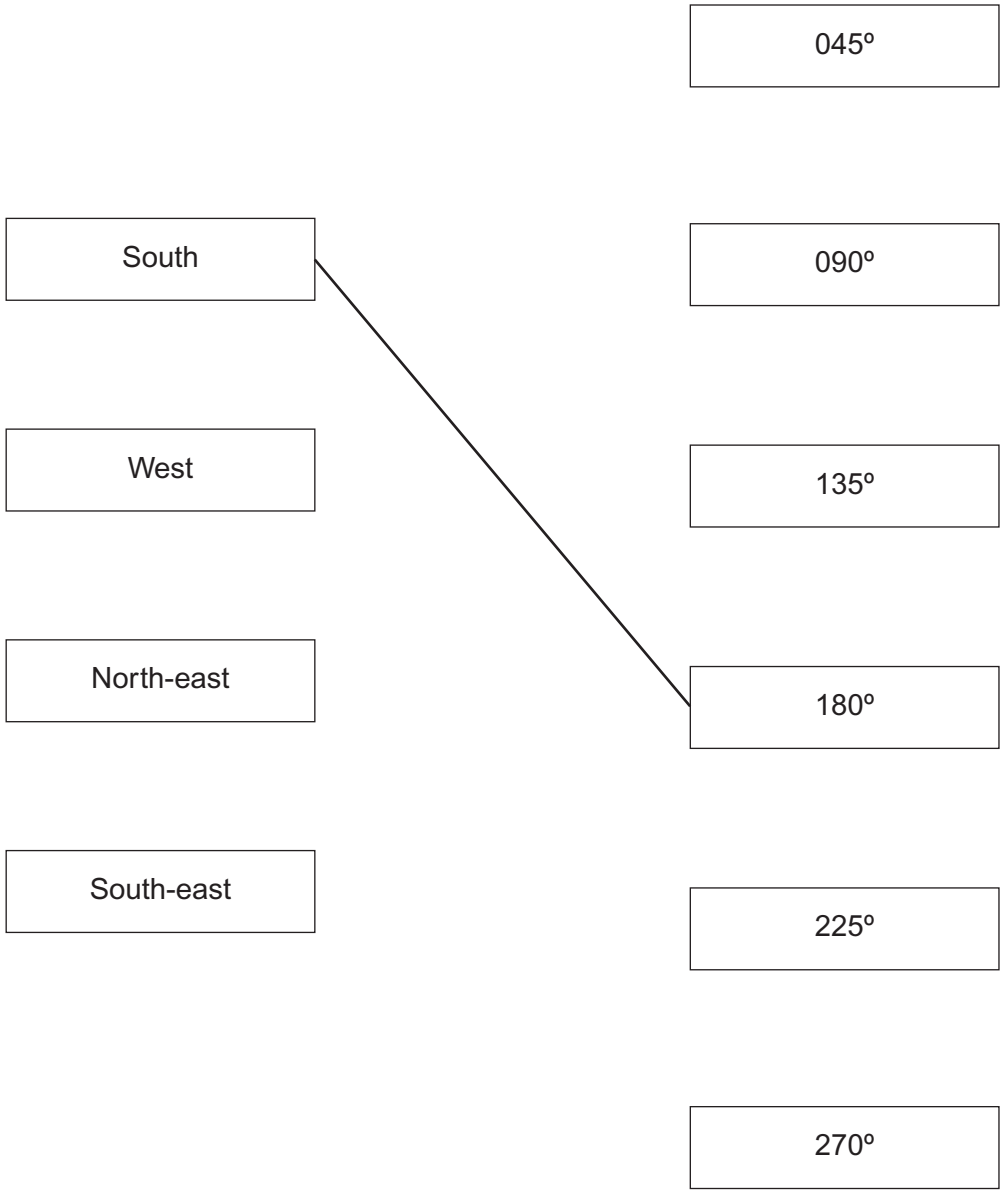
11 (a) Match the scales that are the same.
The first one has been done for you.

[2 marks]



11 (b) Match the bearings that are the same.
The first one has been done for you.

[3 marks]

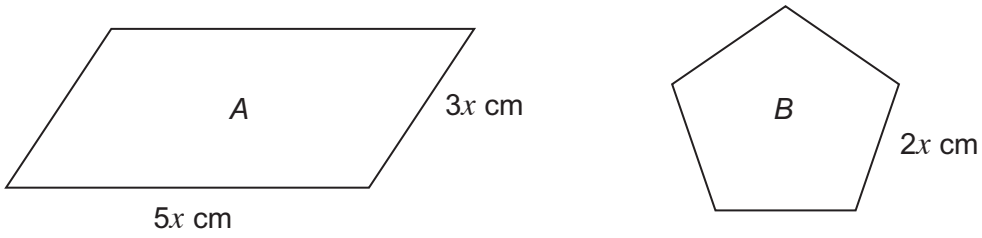


5

Turn over ▶

12 The diagram shows parallelogram *A* and regular pentagon *B*.

Not drawn accurately



Work out the ratio Perimeter *A* : Perimeter *B*

Simplify your answer.

[4 marks]

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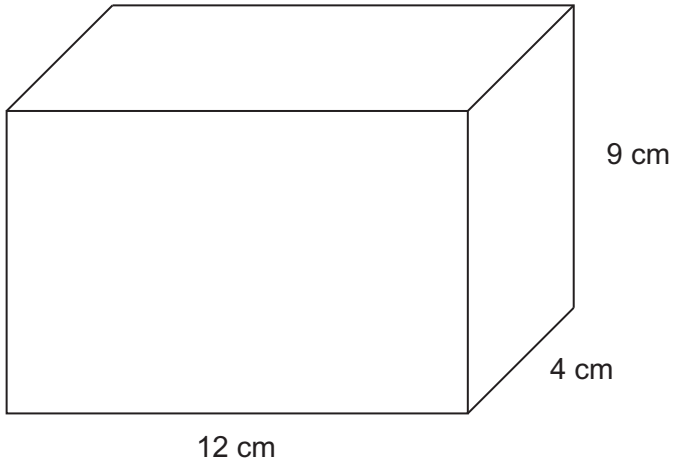
Answer ..... : .....

13



Work out the volume of the cuboid.
State the units of your answer.

[3 marks]

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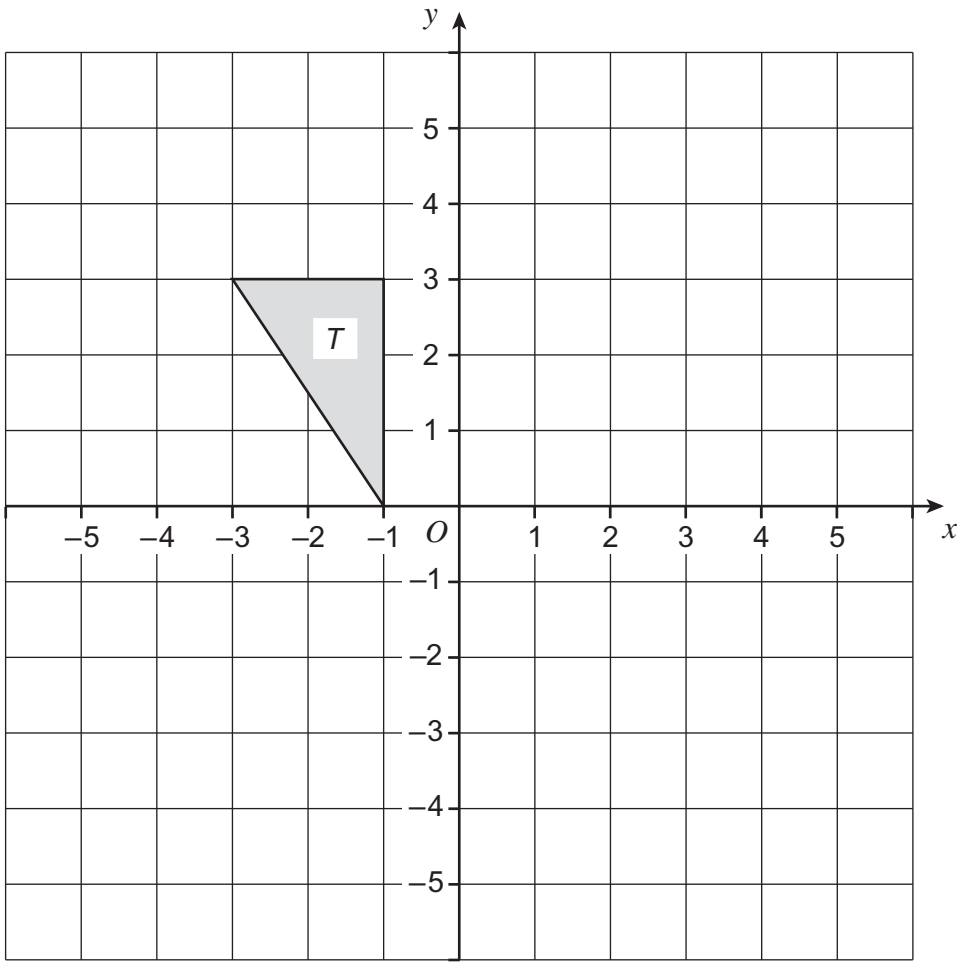
Answer .....

Turn over for the next question

7

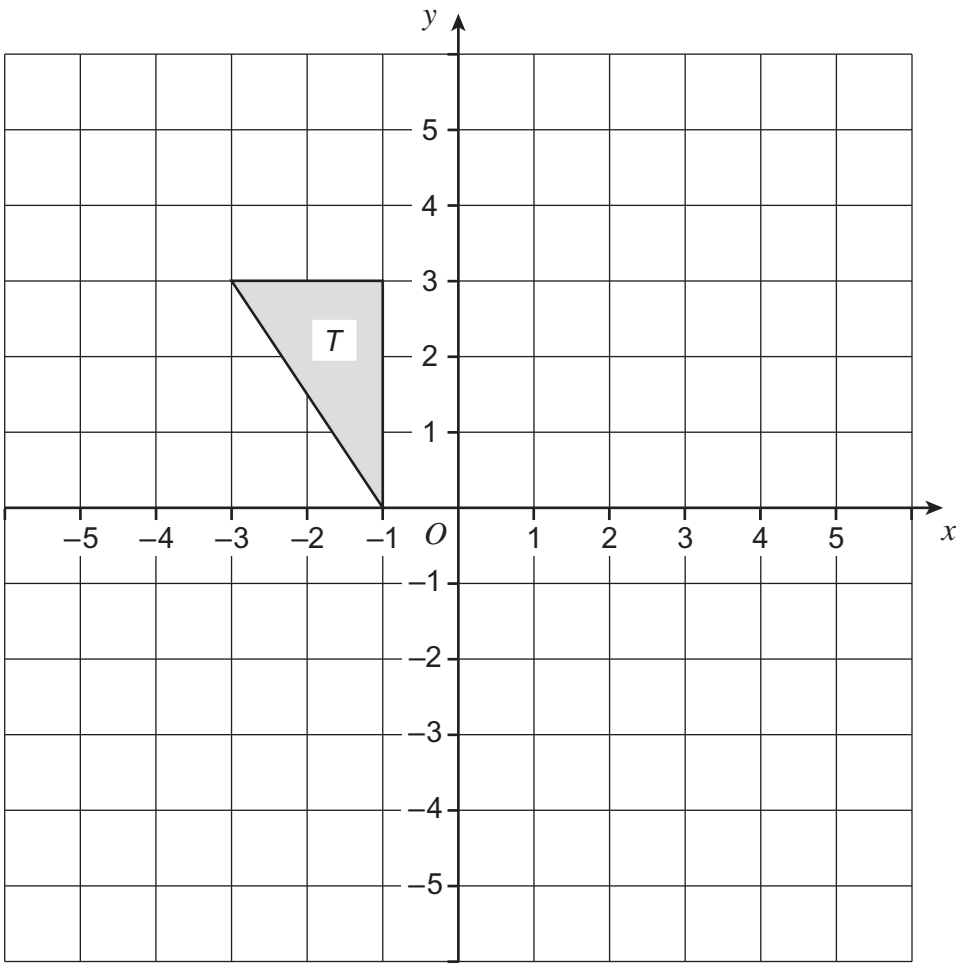
14 (a) Translate triangle T by the vector $\begin{pmatrix} 4 \\ -5 \end{pmatrix}$

[2 marks]



14 (b) Reflect triangle T in the line $y = -1$

[2 marks]



Turn over for the next question

4

***15** A company claims the following miles per gallon for two cars.

Car *A*	68 miles per gallon
Car *B*	55 miles per gallon

The driver of car *A*

gets 30% **fewer** miles per gallon than claimed
and drives 15 000 miles.

The driver of car *B*

gets three-quarters of the miles per gallon claimed
and drives 12 000 miles.

Which driver uses more fuel?
You **must** show your working.

[5 marks]

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Answer .....

16 A wheel has diameter 0.7 m

16 (a) Work out the circumference.

[2 marks]

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Answer ..... m

***16 (b)** Work out the number of complete turns when the wheel travels 1.6 km
You **must** show your working.

[4 marks]

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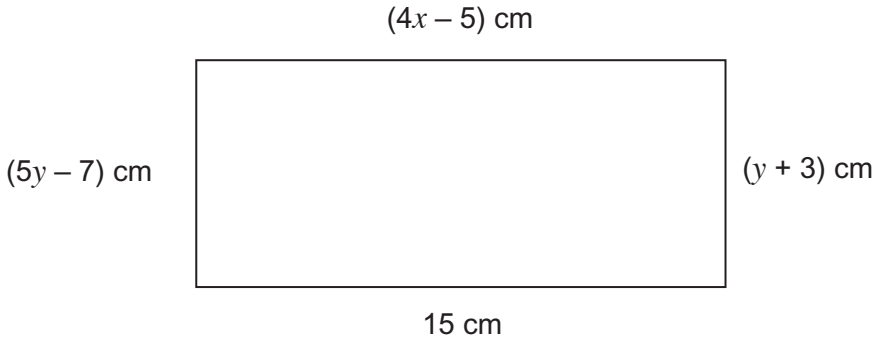
Answer .....

11

17 The diagram shows a rectangle.

Not drawn accurately



***17 (a)** Set up and solve an equation to work out the value of x.

[3 marks]

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x = ...

17 (b) Work out the area of the rectangle.

[5 marks]

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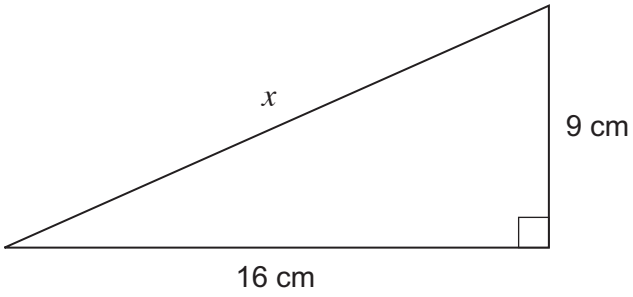
Answer ..... cm^2

Turn over for the next question

8

18



Not drawn accurately

Work out the length x.
Give your answer to 1 decimal place.

[4 marks]

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Answer ..... cm

END OF QUESTIONS

4