



Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

GCSE MATHEMATICS

F

Foundation Tier Unit 3 Geometry and Algebra

Tuesday 10 November 2015

Morning

Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:

- a calculator
- mathematical instruments.



Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- 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. Cross through any work that you do not want to be marked.
- 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 11, 12, 17 and 20. 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.



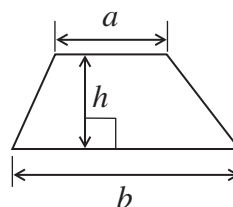
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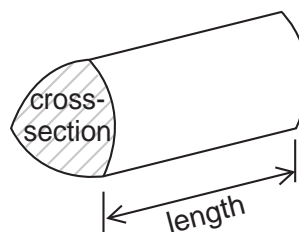
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Formulae Sheet: Foundation Tier

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



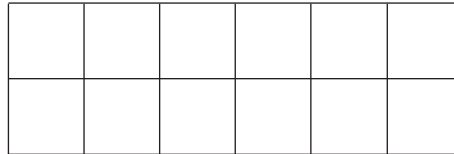
Volume of prism = area of cross section \times length



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

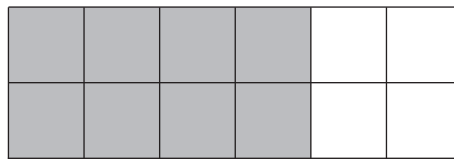
1 (a) Shade 25% of this centimetre grid.

[1 mark]



1 (b) Work out the fraction of this centimetre grid that is shaded.
Give your answer in its simplest form.

[2 marks]



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Answer

3

Turn over ►



2 Here are some units.

- | | | | |
|------------|-------------|--------|-------------|
| metres | kilograms | litres | millilitres |
| kilometres | centimetres | grams | tonnes |

Choose the best unit to complete each sentence.

[3 marks]

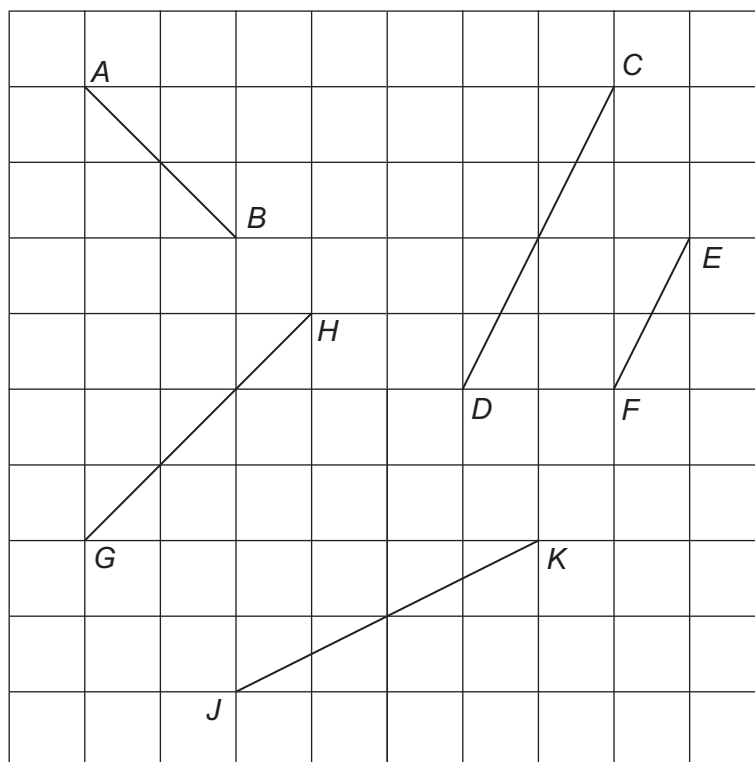
The length of a classroom is measured in

The mass of an average human is measured in

The amount of water in a full bath is measured in



- 3 The diagram shows five lines on a square grid.



- 3 (a) Which **two** lines are parallel?
Circle your answers.

[1 mark]

AB *CD* *EF* *GH* *JK*

- 3 (b) Which **two** lines are perpendicular?
Circle your answers.

[1 mark]

AB *CD* *EF* *GH* *JK*

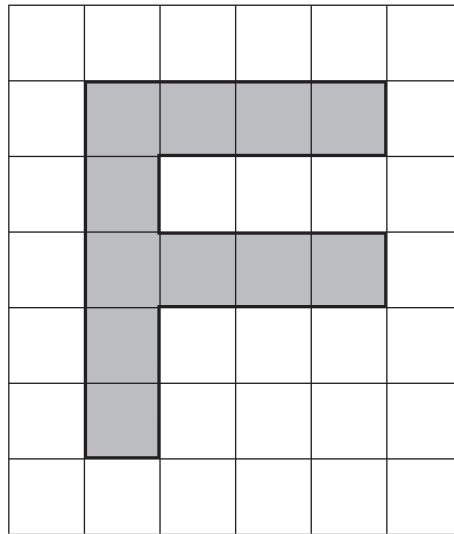
- 3 (c) Which **two** lines are the same length?
Circle your answers.

[1 mark]

AB *CD* *EF* *GH* *JK*



4 (a)



Work out the shaded area on this centimetre grid.
State the units of your answer.

[2 marks]

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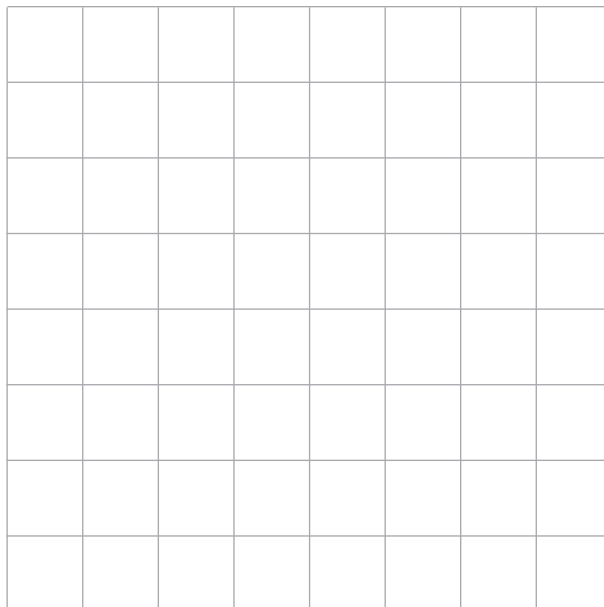
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Answer



- 4 (b)** Draw a rectangle on this centimetre grid with
perimeter 18 cm

[1 mark]

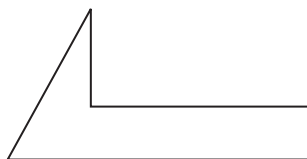


- 4 (c)** Draw a rectangle on this centimetre grid with
perimeter 16 cm and area 12 cm^2

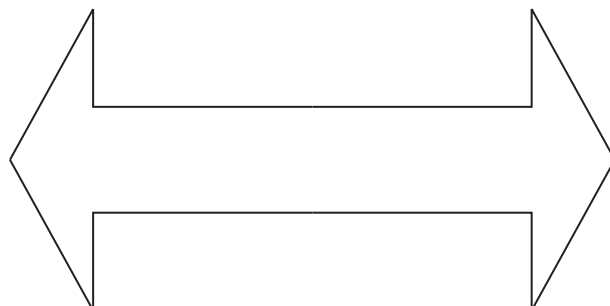
[2 marks]



- 5 The diagram shows a half-arrow.



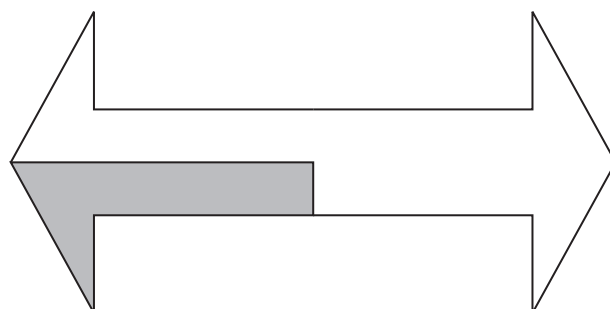
- 5 (a) Four half-arrows are joined to make this shape.



Draw **all** the lines of symmetry on the shape.

[2 marks]

- 5 (b) One of the four half-arrows is shaded in this diagram.

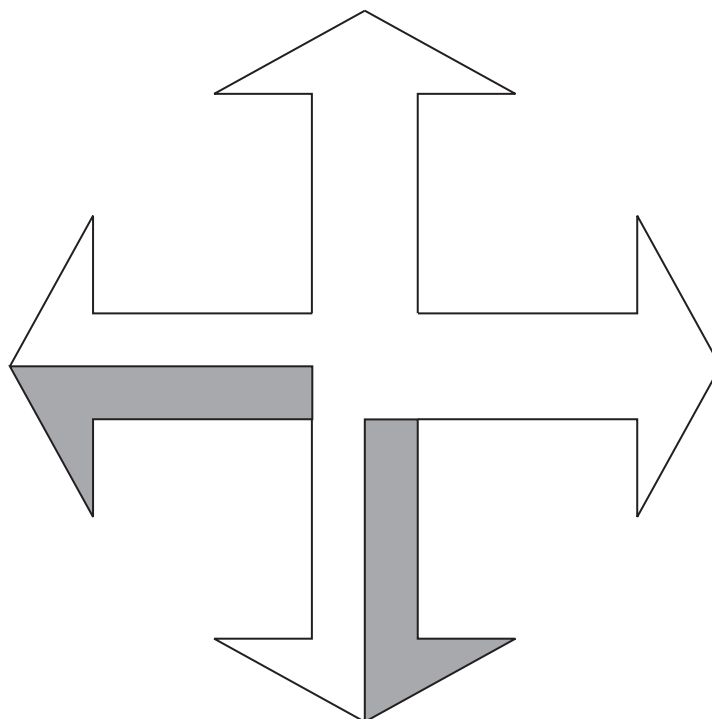


Shade **one more** half-arrow so that the diagram has one line of symmetry.

[1 mark]



5 (c) Two half-arrows are shaded in this diagram.



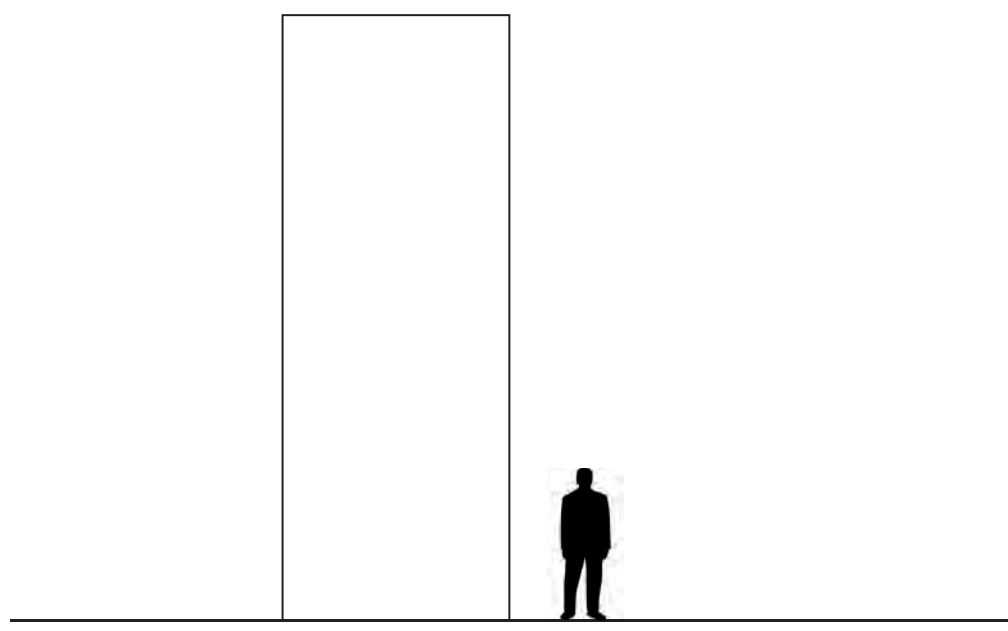
Shade **two more** half-arrows so that the diagram has rotational symmetry of order 4

[1 mark]

Turn over for the next question



6 Here is a diagram of a man standing by a building.



The actual height of the man is 1.7 m

Work out an estimate for the height of the building.

[3 marks]

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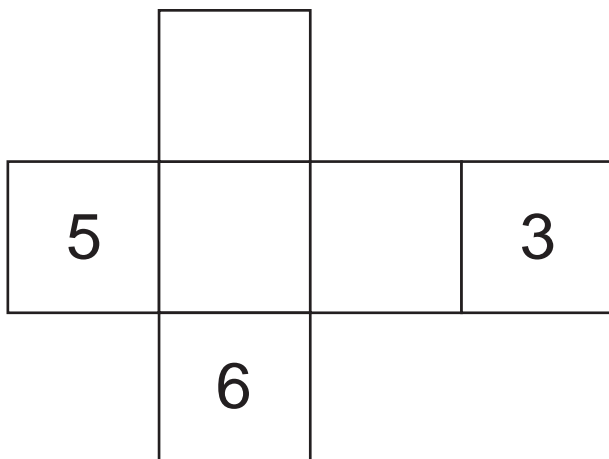
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Answer m



7 The diagram shows the net of a cube.



Put numbers on the blank faces so that opposite faces of the cube add up to 7 [2 marks]

8 5 miles = 8 kilometres

Which is longer, 26 miles or 45 km?
You **must** show your working.

[2 marks]

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Answer

7

Turn over ►



9 An adult ticket costs £65.50
A child ticket costs £35.25

9 (a) Kate has £105
She buys one adult ticket and one child ticket.

How much money does she have left?

[2 marks]

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Answer £

9 (b) Gina buys 5 tickets.
She pays exactly £267

How many of each type of ticket does she buy?

[2 marks]

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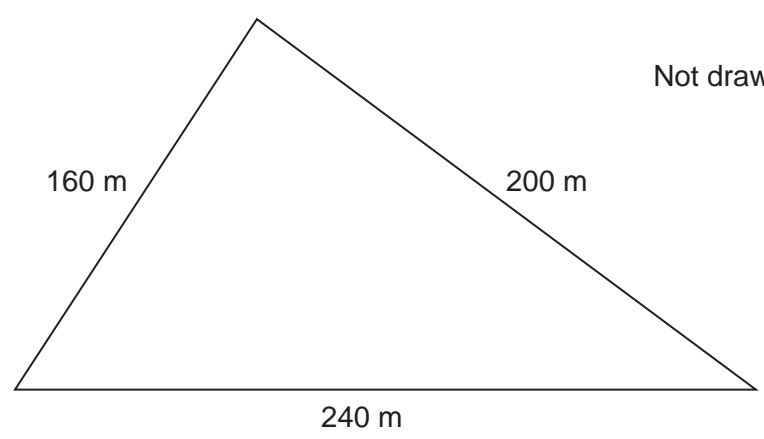
Adult

Child



10

Construct an accurate scale drawing of this triangle.



Use the scale 1 cm represents 20 m

The base has been drawn for you.

[3 marks]



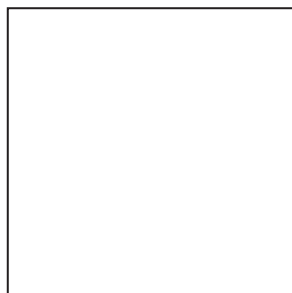
Scale: 1 cm represents 20 m

Turn over ►

7



11 (a) The diagram shows a square.



Not drawn accurately

$(4x + 3)$ cm

Work out the perimeter of the square when $x = 4.5$

[3 marks]

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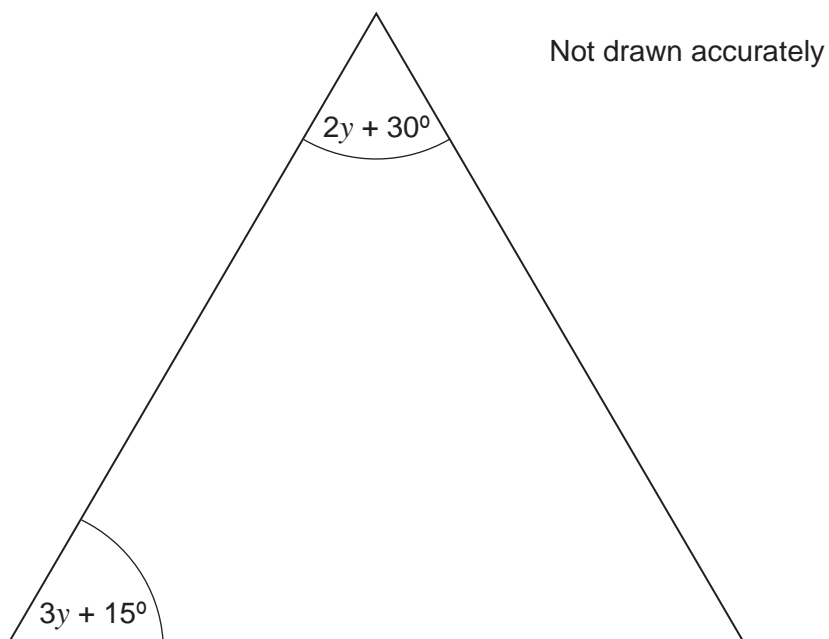
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Answer cm



***11 (b)** The diagram shows a triangle.



Show that the triangle is equilateral when $y = 15^\circ$

[3 marks]

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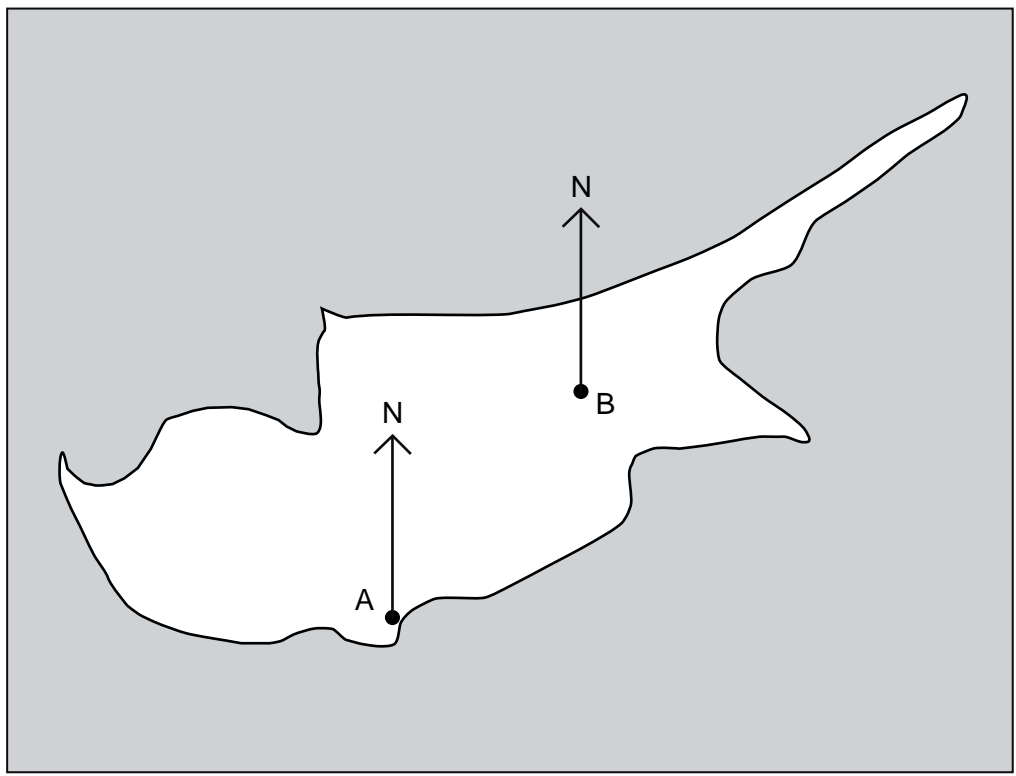
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6

Turn over ►



*12 Here is a map.



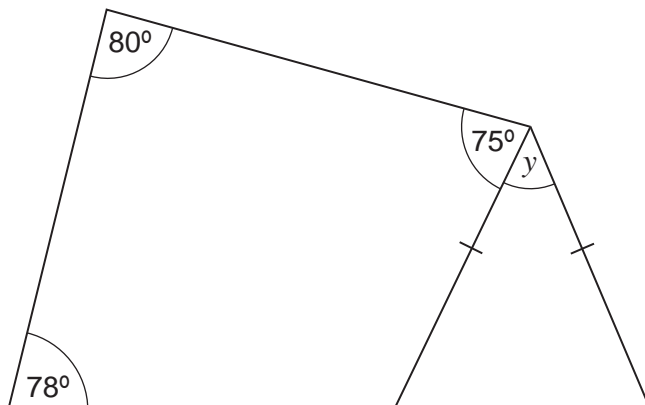
Measure and write down the three-figure bearing of B from A.

[2 marks]

Answer°



13 An isosceles triangle and a quadrilateral are joined to make this shape.



Not drawn accurately

The base of the shape is a straight line.

Work out the size of angle y .

[4 marks]

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Answer degrees

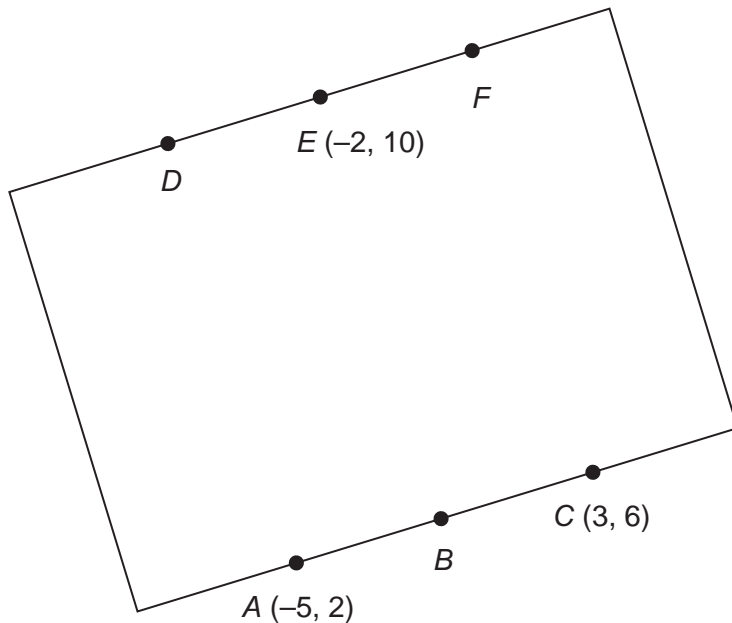
6

Turn over ►



14 The diagram shows a rectangle with dots on two sides.
 The coordinates of A , C and E are shown in the diagram.

$AC = DF$



Not drawn accurately

The dots on each side are equally spaced.

Work out the coordinates of B , D and F .

[4 marks]

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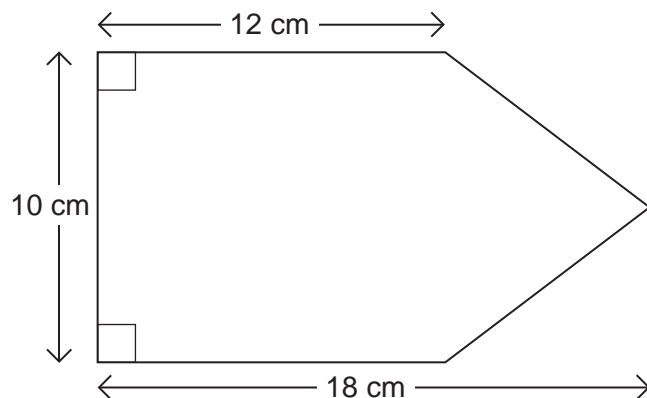
B (..... ,)

D (..... ,)

F (..... ,)



15 Work out the area of this pentagon.



Not drawn accurately

[3 marks]

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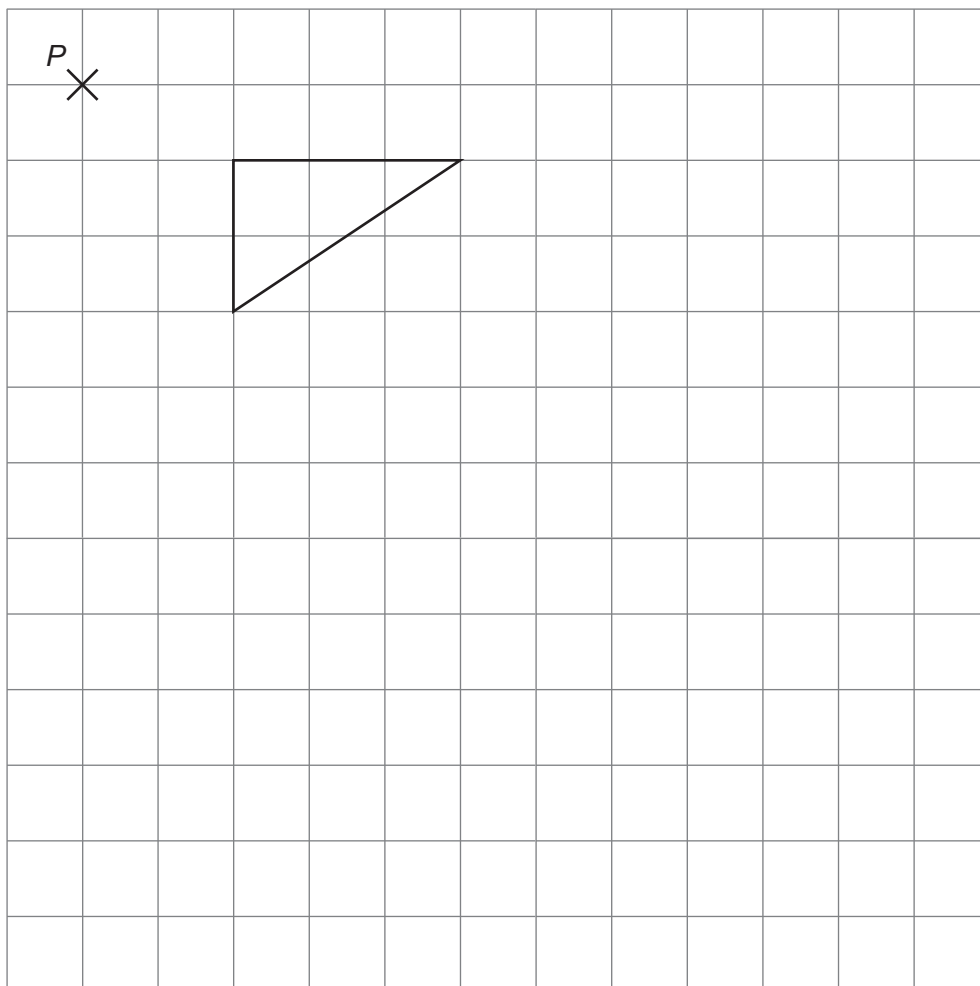
Answer cm²

Turn over for the next question



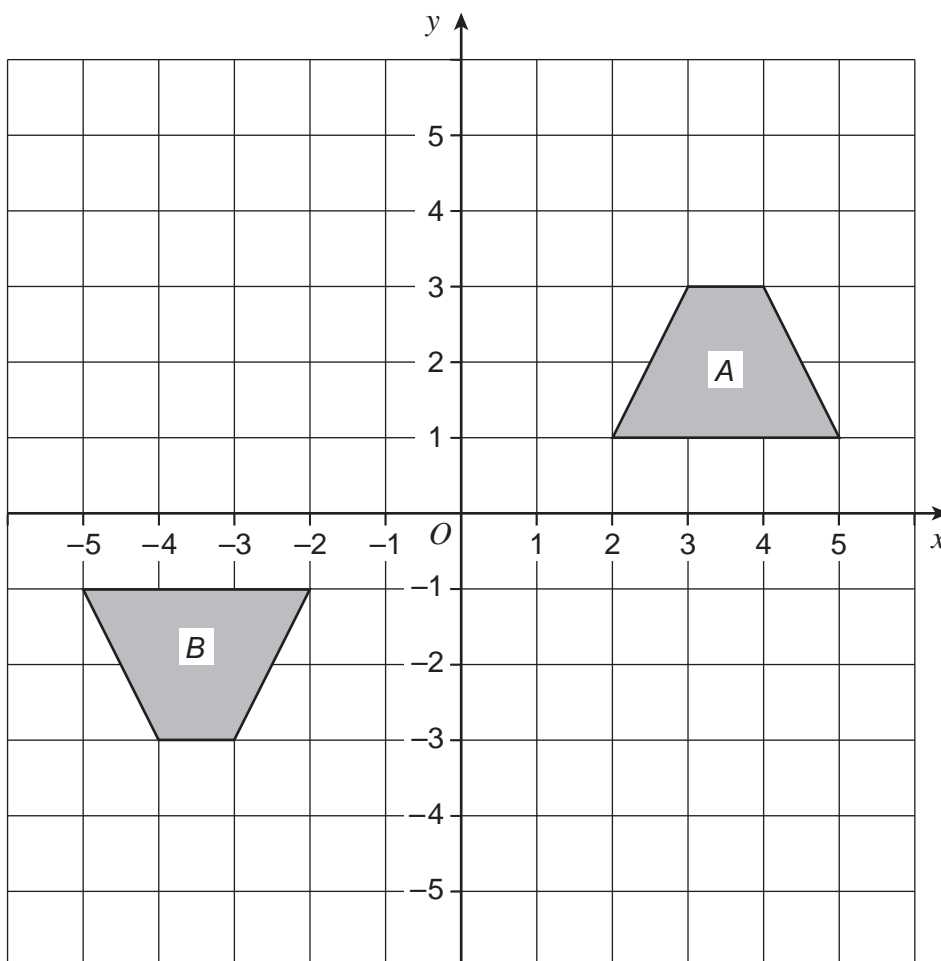
16 (a) Enlarge this shape by scale factor 2 with centre of enlargement point P .

[3 marks]



16 (b) Describe fully the **single** transformation that maps shape A to shape B.

[3 marks]



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6

Turn over ►



***17** A gardener uses this formula to work out how much he charges to make a lawn.

$$C = \frac{7(14 + A)}{3}$$

C is the charge in £

A is the area in m^2

He makes a rectangular lawn measuring 12.5 m by 17.6 m

How much does he charge?

[3 marks]

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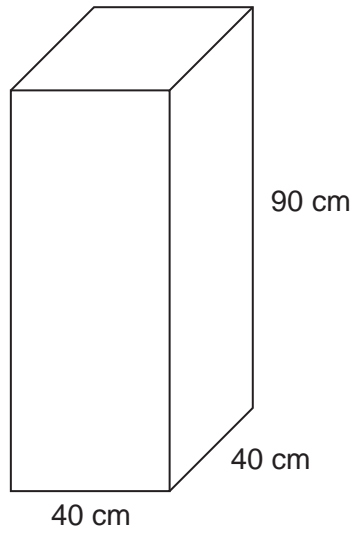
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Answer £



18 The diagram shows a water tank in the shape of a cuboid.



The tank is full of water.

1 litre = 1000 cm³

How many gallons of water are in the tank?

[4 marks]

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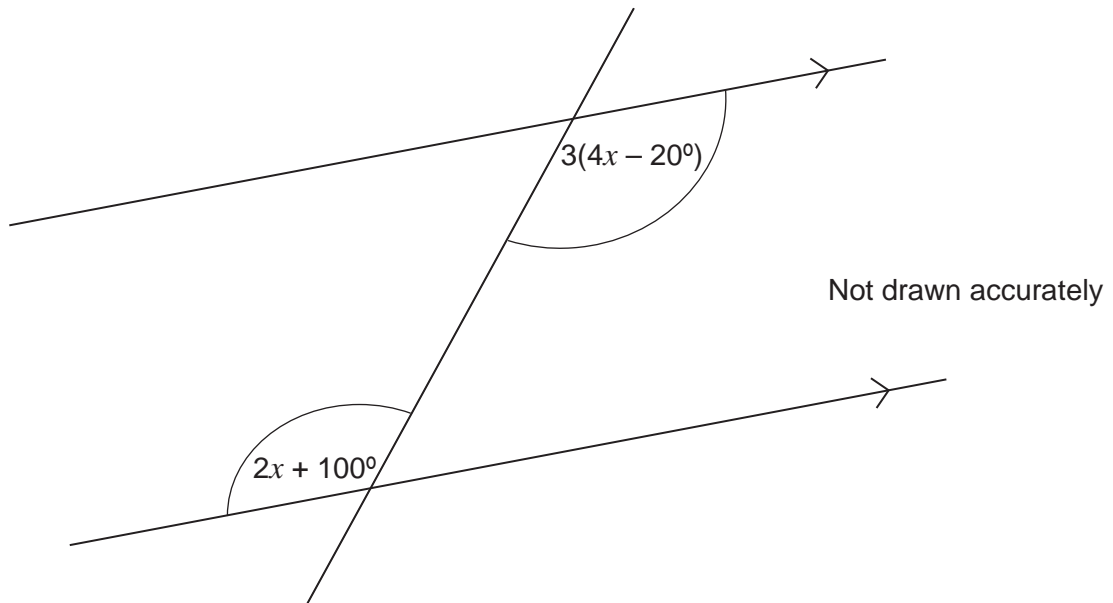
Answer gallons

7

Turn over ►



- 19 The diagram shows three straight lines.



- 19 (a) Which of the following describes the pair of angles marked?
Circle your answer.

[1 mark]

Alternate

Corresponding

Interior

Vertically opposite



19 (b) Work out the value of x .

[4 marks]

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$x =$ degrees

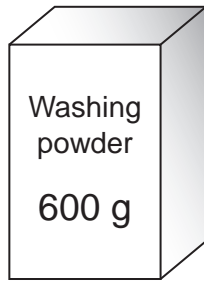
Turn over for the next question

5

Turn over ►



***20** Washing powder is sold in two sizes, 600 grams and 1500 grams.



£3.30



Was £9.60
Now 15% off

Which size is better value for money?
You **must** show your working.

[6 marks]

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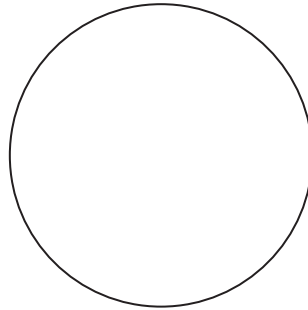
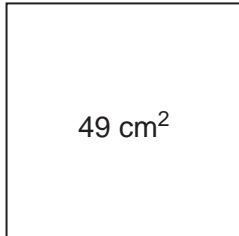
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Answer



21 The diagram shows a square and a circle.

Not drawn accurately



The **area** of the square is 49 cm^2

The **perimeter** of the square is equal to the **circumference** of the circle.

Work out the radius of the circle.
Give your answer to 1 decimal place.

[5 marks]

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Answer cm

END OF QUESTIONS

11



There are no questions printed on this page

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ANSWER IN THE SPACES PROVIDED**

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