AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

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.

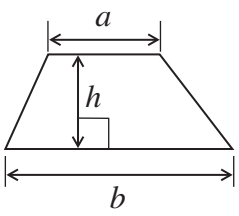
Instructions
- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work that you do not 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.

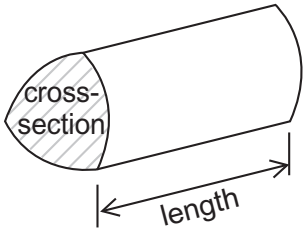
Advice
- In all calculations, show clearly how you work out your answer.

Formulae Sheet: Foundation Tier

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



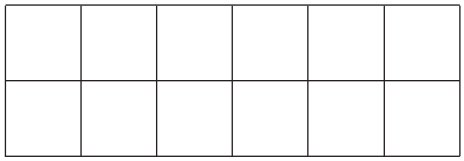
Volume of prism = area of cross section × length



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

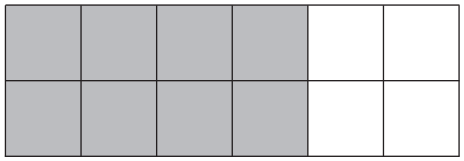
1 (a) Shade 25% of this centimetre grid.

[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

2 Here are some units.

metres	kilograms	litres	millilitres
kilometres	centimetres	grams	tonnes

Choose the best unit to complete each sentence.

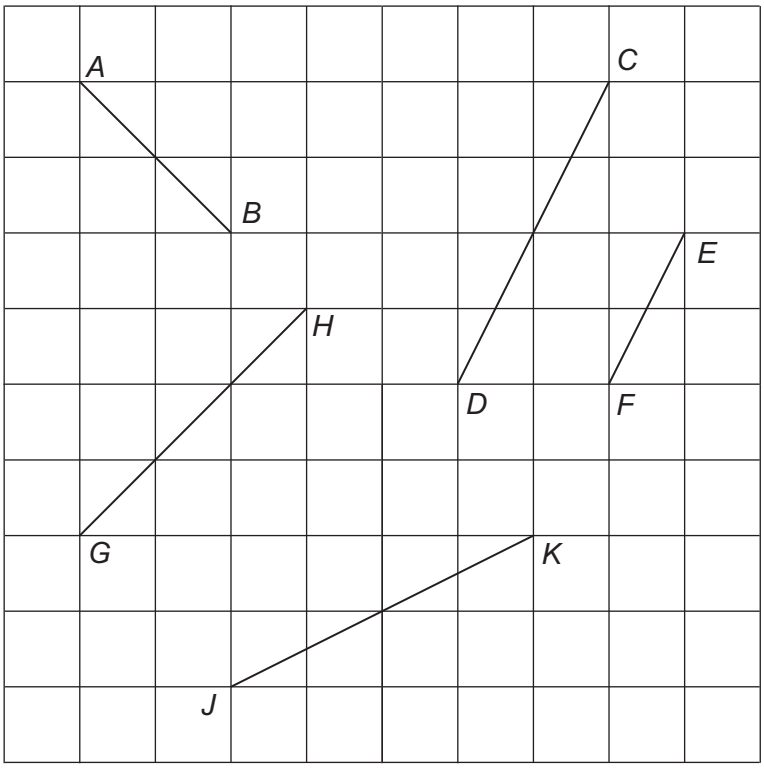
[3 marks]

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*

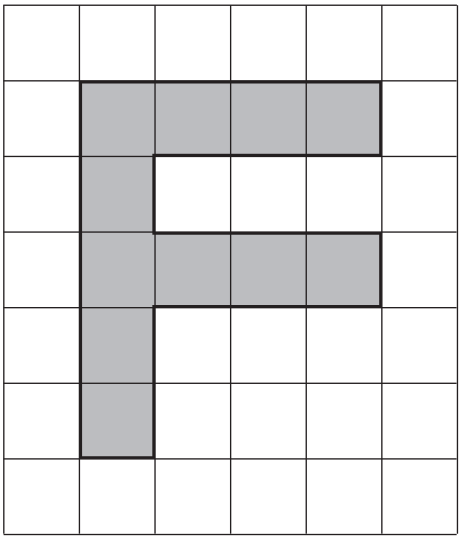
3 (c) Which **two** lines are the same length?
Circle your answers.

[1 mark]

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

6

4 (a)



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

[2 marks]

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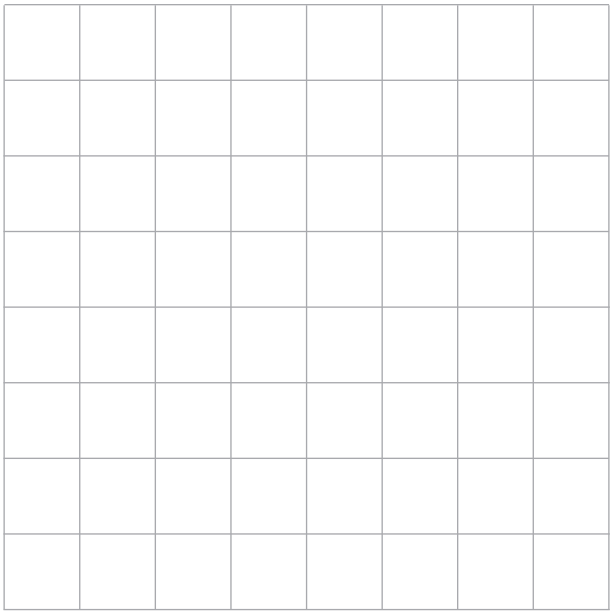
Answer .....

4 (b) Draw a rectangle on this centimetre grid with

perimeter 18 cm

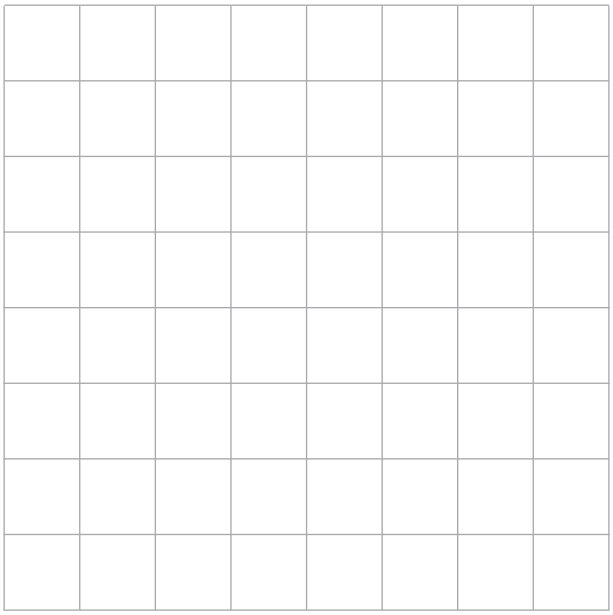
[1 mark]



4 (c) Draw a rectangle on this centimetre grid with

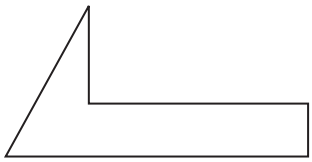
perimeter 16 cm and area 12 cm^2

[2 marks]



5

5 The diagram shows a half-arrow.

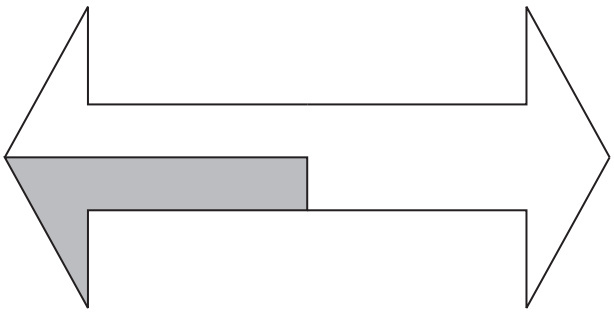


5 (a) Four half-arrows are joined to make this shape.

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

[2 marks]

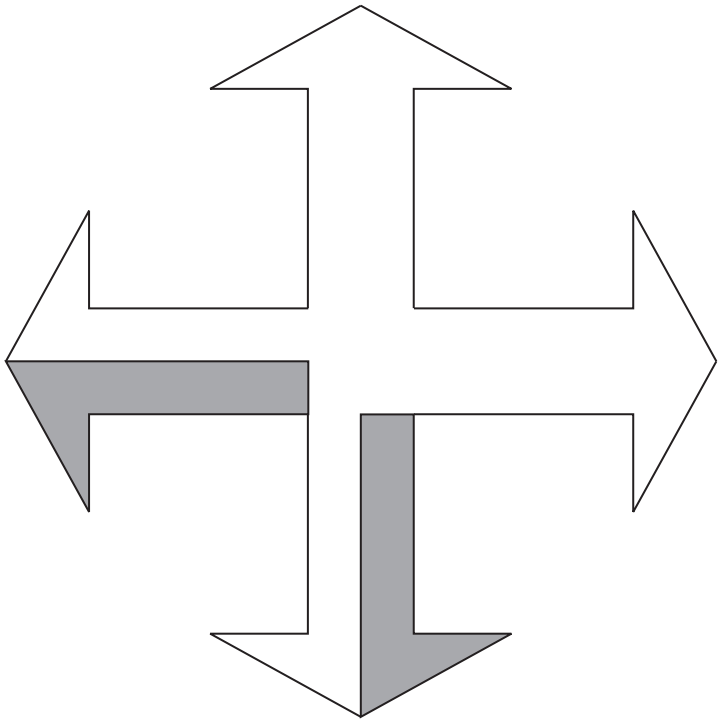
5 (b) One of the four half-arrows is shaded in this diagram.



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

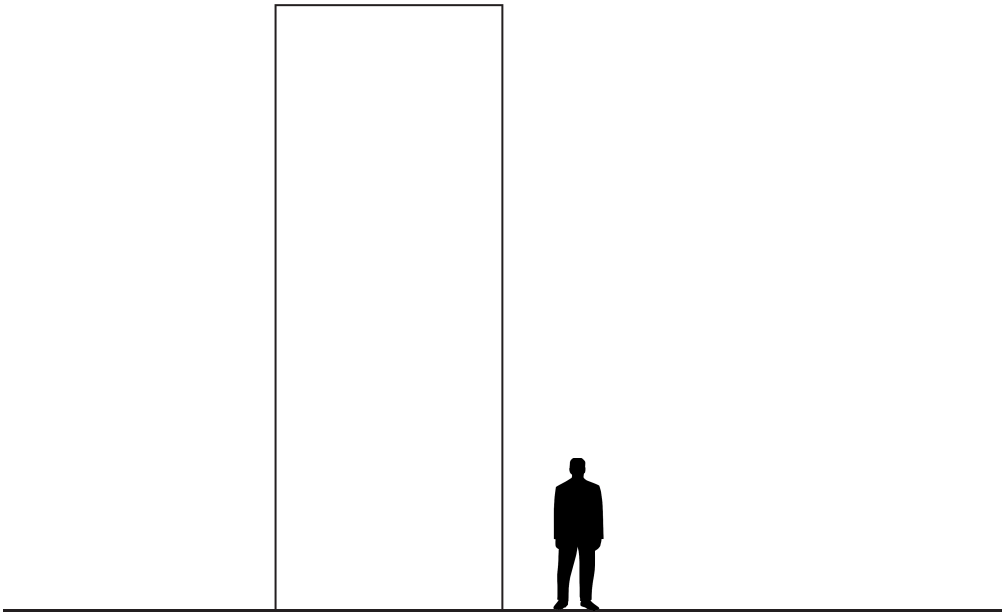
rotational symmetry of order 4

[1 mark]

Turn over for the next question

4

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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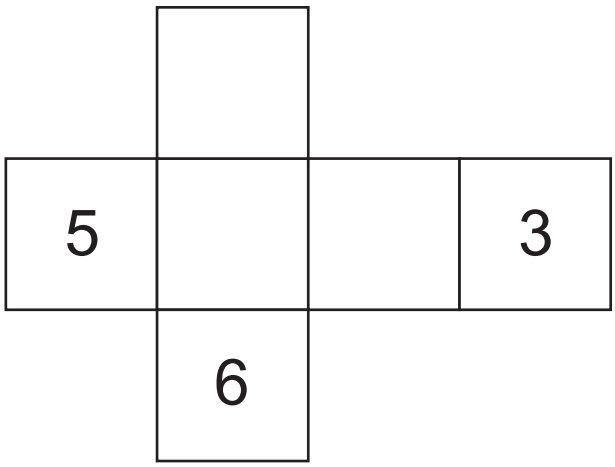
Answer ..... m

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

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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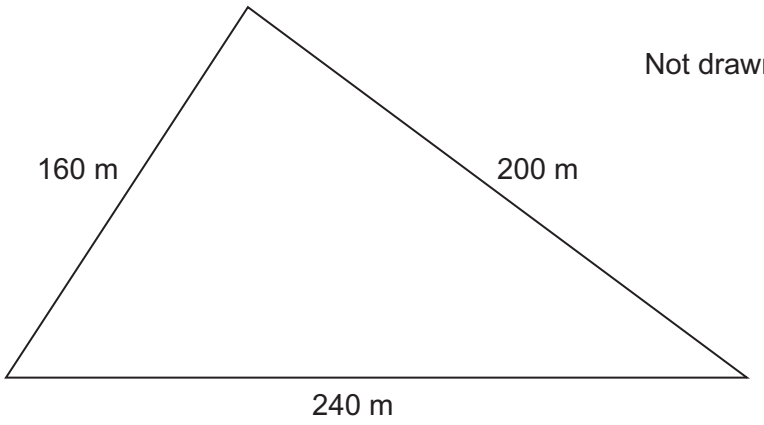
Adult .....

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.

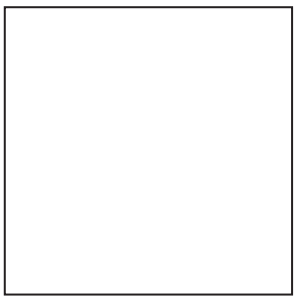
[3 marks]

Scale: 1 cm represents 20 m

7

Turn over ▶

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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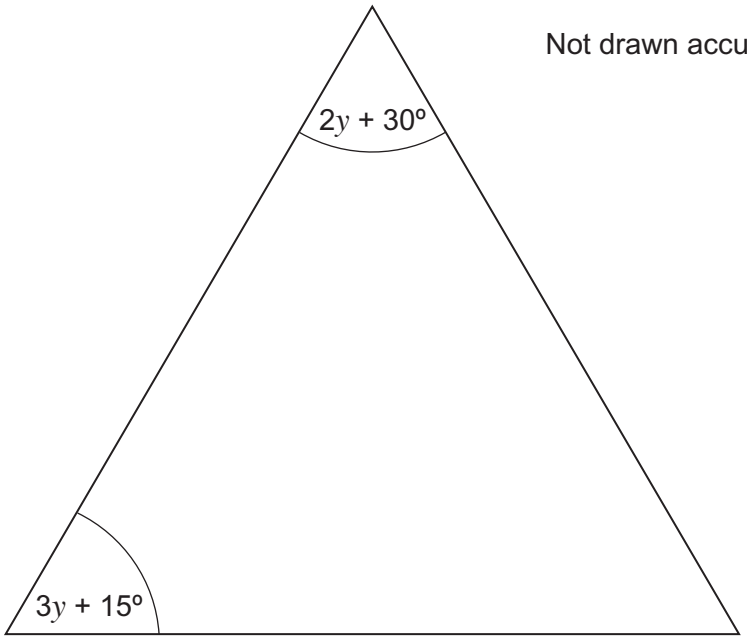
Answer ..... cm

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



Show that the triangle is equilateral when $y = 15°$

[3 marks]

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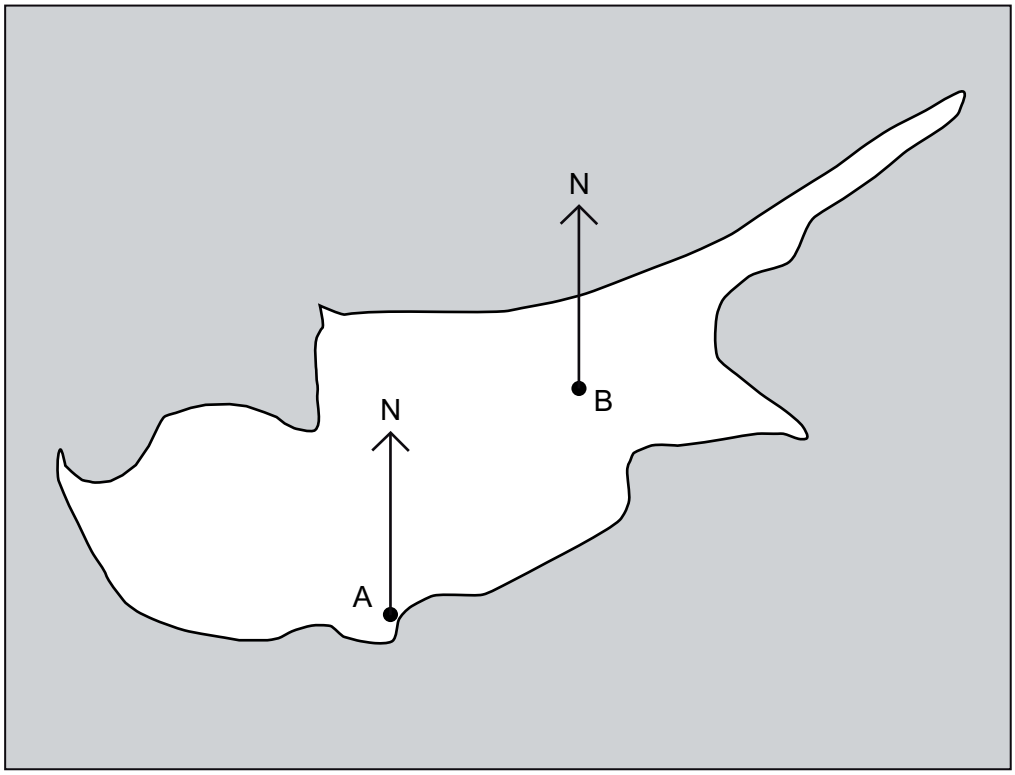
Turn over ▶

***12** Here is a map.

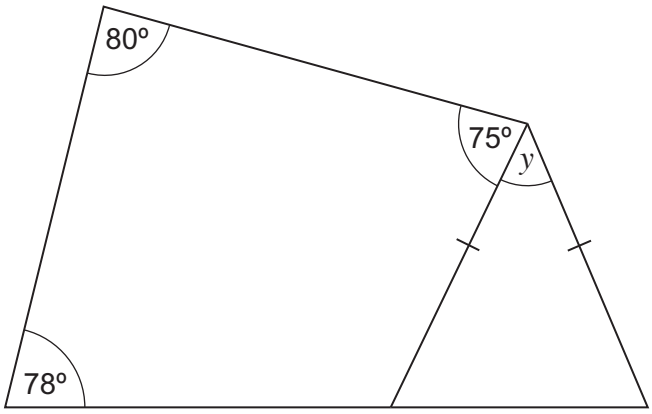


Measure and write down the three-figure bearing of B from A.

[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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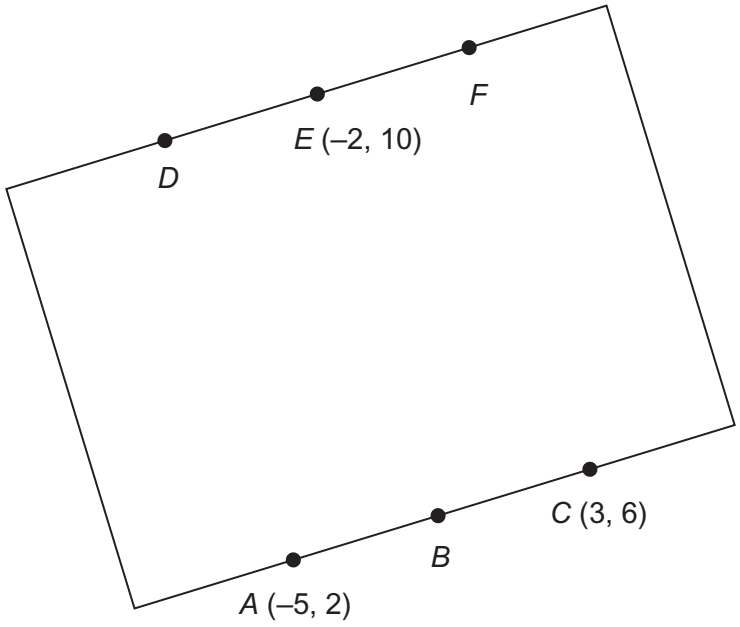
Answer ..... degrees

6

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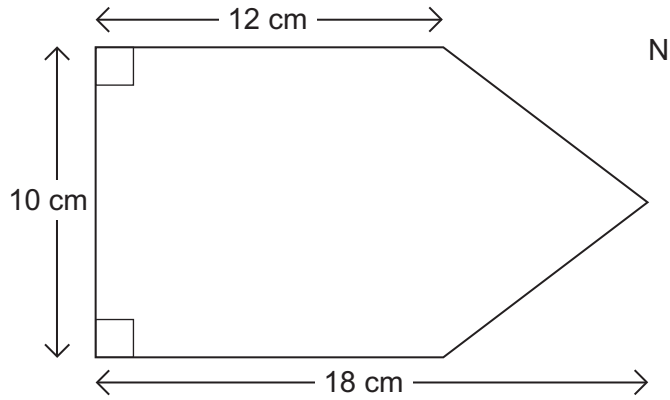
B (..... , ...)

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

F (..... , ...)

15 Work out the area of this pentagon.



Not drawn accurately

[3 marks]

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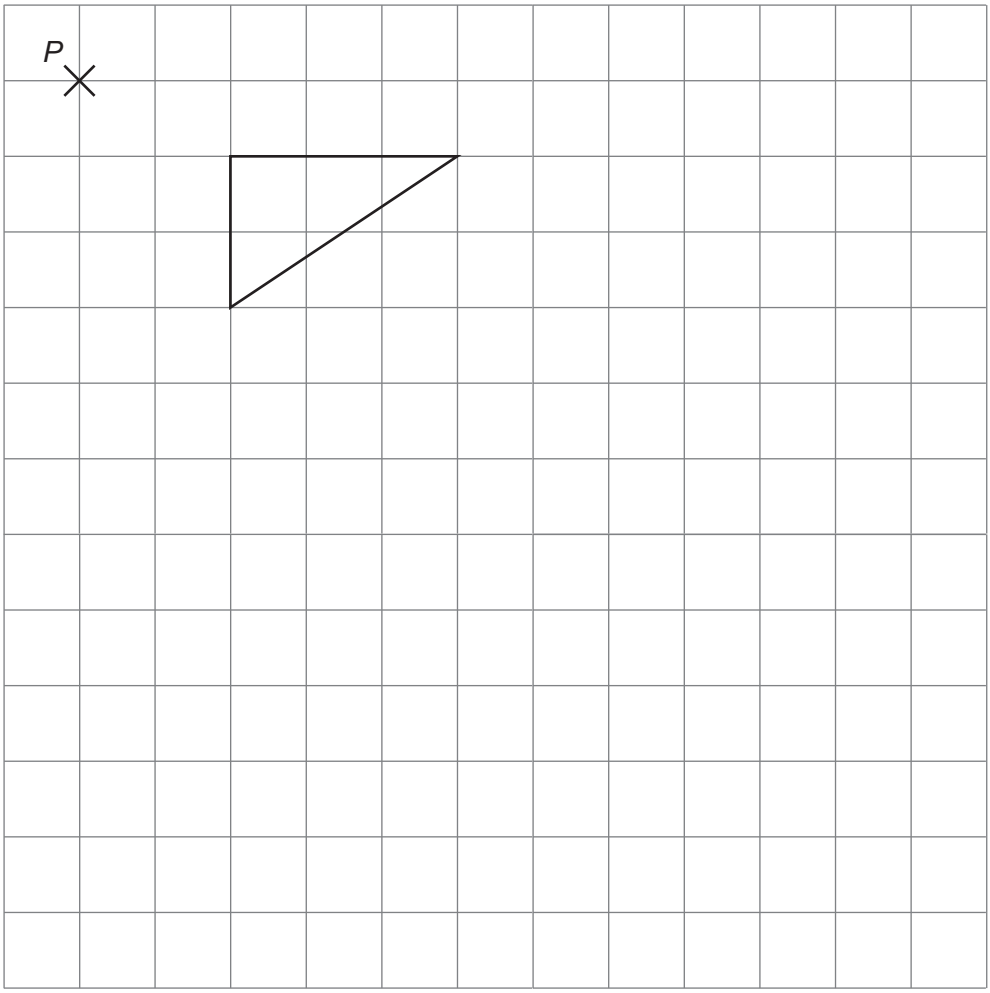
Answer ..... cm^2

Turn over for the next question

7

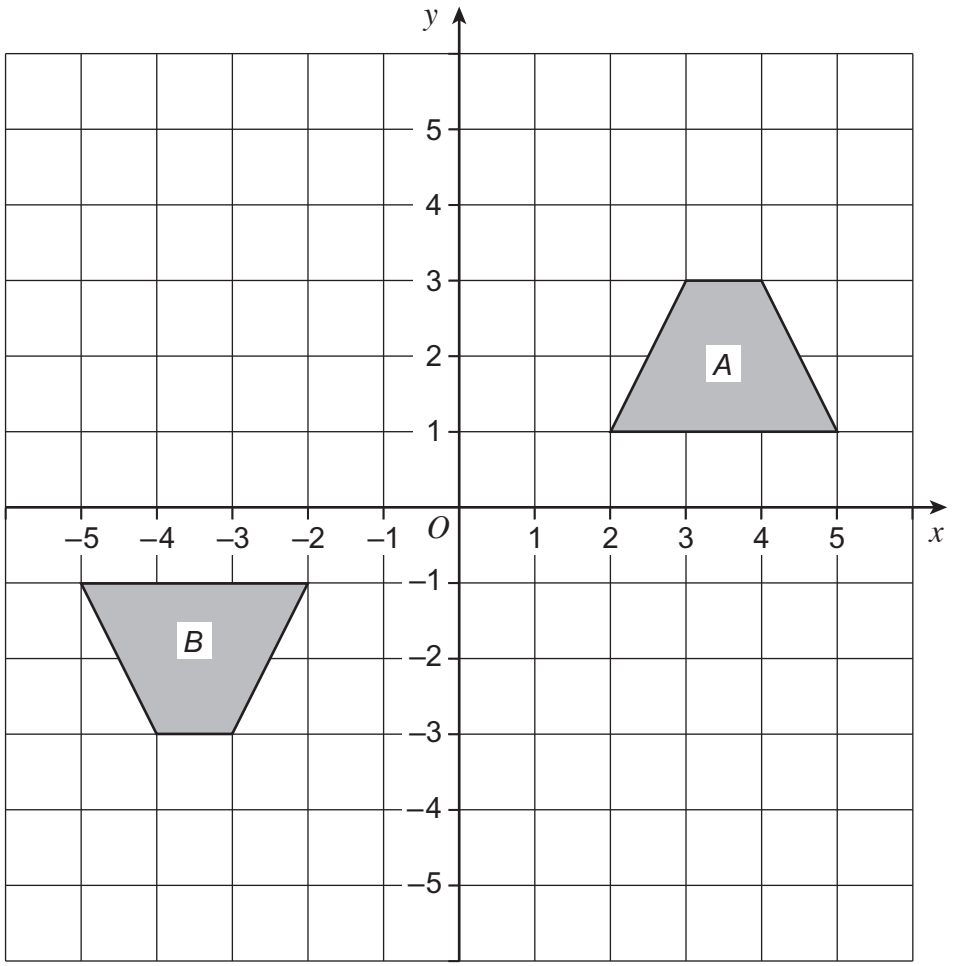
16 (a) Enlarge this shape by scale factor 2 with centre of enlargement point *P*.

[3 marks]



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

[3 marks]



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***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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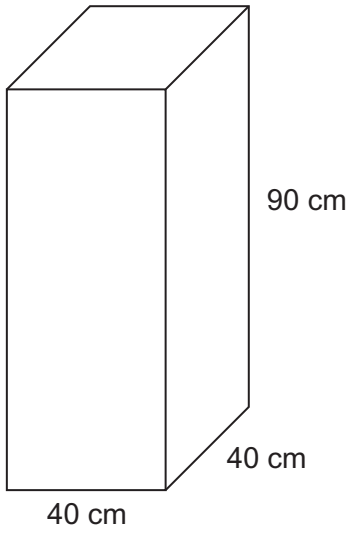
Answer £ .....

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



The tank is full of water.

1 litre = 1000 cm^3

How many gallons of water are in the tank?

[4 marks]

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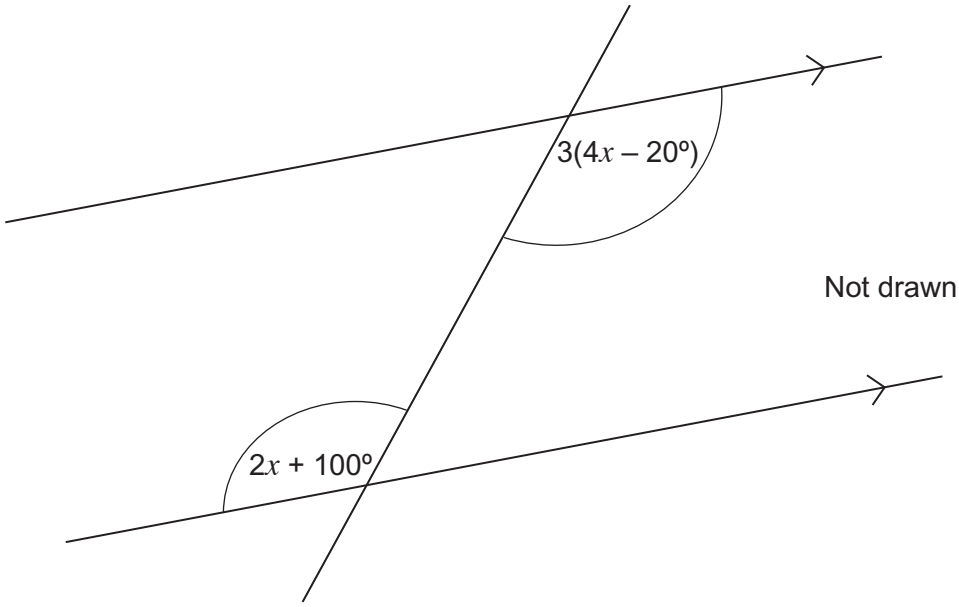
Answer ..... gallons

7

Turn over ▶

19 The diagram shows three straight lines.



Not drawn accurately

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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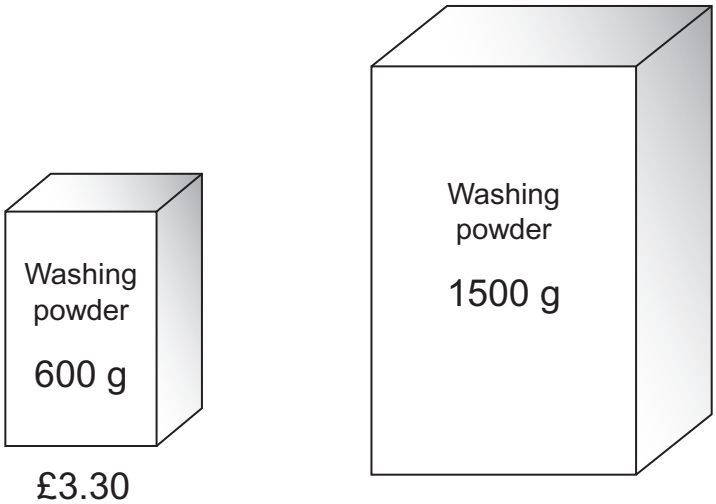
x = ... degrees

Turn over for the next question

5

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



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

[6 marks]

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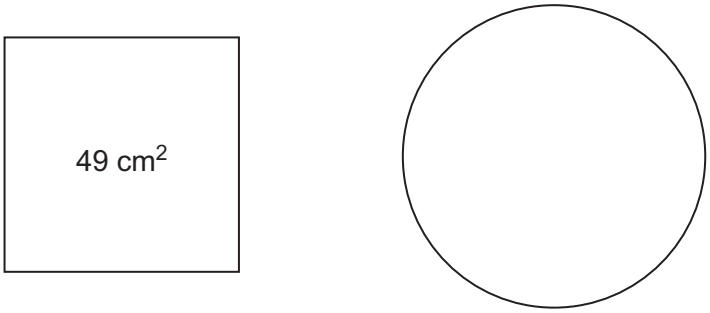
Answer .....

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

DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED