1 The diagram shows a shape.
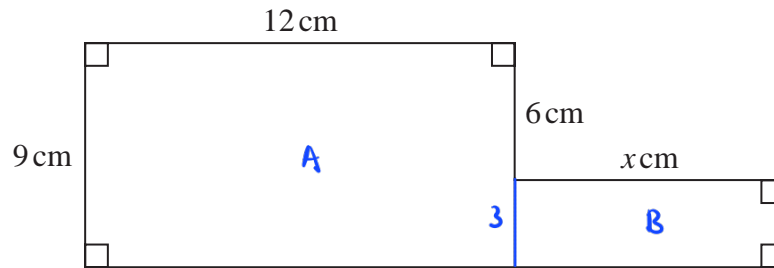
12 cm

Diagram **NOT** accurately drawn

6 cm

9 cm   A x cm

3   B

The shape has area 129 cm^2

Work out the value of x.

Total Area : Area of shape A + Area of shape B

$129 = (12 \times 9) + 3x$ ①

$129 = 108 + 3x$ ①

$3x = 129 - 108$

$3x = 21$

$x = \dfrac{21}{3}$ ①

$= 7$ ①

$x = \underline{\quad 7 \quad}$

(Total for Question 1 is 4 marks)

2
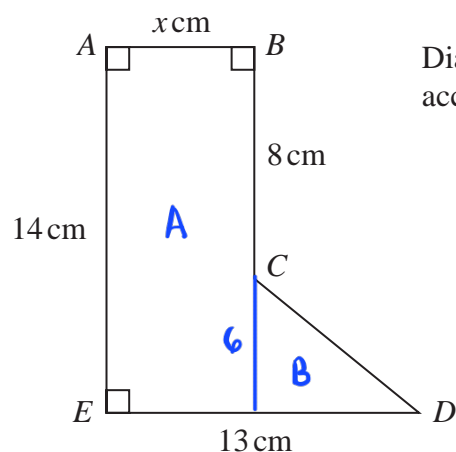
The diagram shows the shape *ABCDE*.

The area of the shape is 91.8 cm²

Work out the value of *x*.

Area of A = 14 cm × x cm

   = 14x cm² ①

Area of B = $\frac{1}{2}$ × 6 cm × (13 - x) cm

   = (39 - 3x) cm²

Area of shape = Area of A + Area of B

91.8 = 14x + 39 - 3x ①

91.8 - 39 = 11x ①

52.8 = 11x

x = $\frac{52.8}{11}$

   = 4.8 ①

$x =$ ....4.8................

(Total for Question 2 is 4 marks)
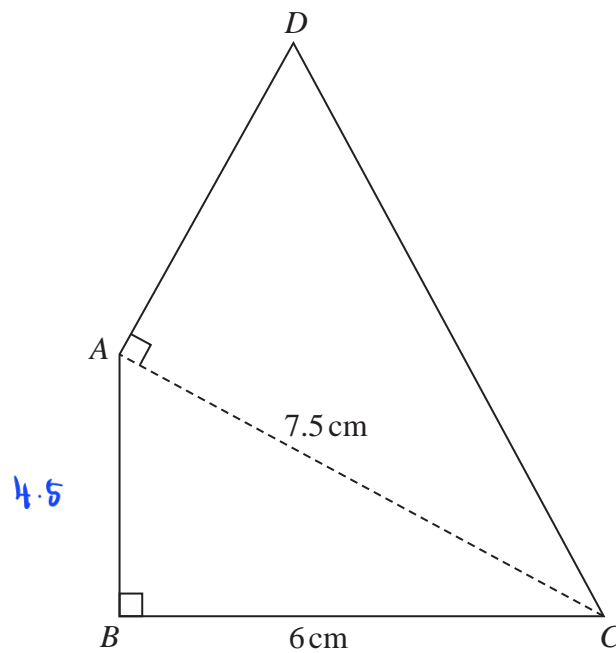
3 The diagram shows a quadrilateral *ABCD*

Diagram **NOT**
accurately drawn

In the diagram, *ABC* and *DAC* are right-angled triangles.

$BC = 6\,\text{cm}$ $AC = 7.5\,\text{cm}$

The area of quadrilateral *ABCD* is $31.5\,\text{cm}^2$

Work out the length of *AD*

By using Pythagoras' theorem :

length AB = $\sqrt{7.5^2 - 6^2}$ ①

= 4.5 cm ①

Area of triangle ABC : $\frac{1}{2} \times 6 \times 4.5 = 13.5\ cm^2$ ①

Area of triangle ADC : $31.5 - 13.5 = 18\ cm^2$ ①

$\frac{1}{2} \times AD \times 7.5 = 18$

AD = $\frac{18}{7.5} \times 2$ ①

= 4.8 cm ①

4.8 .... cm

(Total for Question 3 is 6 marks)

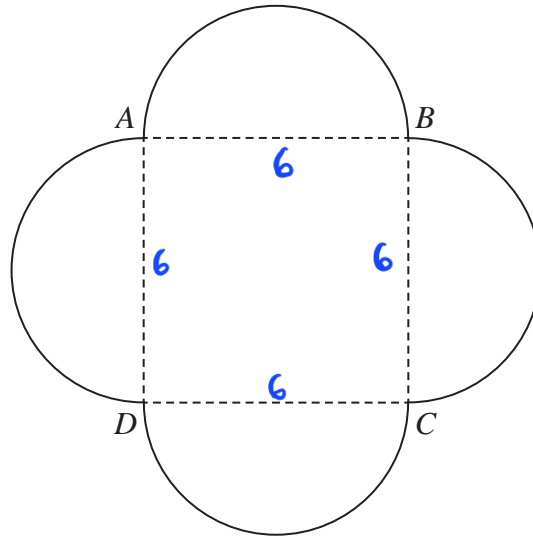**4** The diagram shows a shape made from a square *ABCD* and 4 identical semicircles.

Diagram **NOT** accurately drawn

As shown in the diagram, the semicircles have *AB*, *BC*, *CD* and *DA* as diameters.

The area of the square is $36\,\text{cm}^2$

Calculate the total area of the shape.
Give your answer correct to one decimal place.

Finding length of sides of ABCD :

$$x^2 = 36$$
$$x = 6 \text{ cm} \quad ①$$

∴ length of side of square = diameter of semicircle = 6 cm

Area of each semicircle :

$$\frac{1}{2} \times \pi \times \left(\frac{6}{2}\right)^2 = \frac{9}{2}\pi \quad ①$$

Area of 4 semicircle : $4 \times \frac{9}{2}\pi$

$$= 18\pi$$

Total area = area of square + area of 4 semicircle

$$= 36 + 18\pi \quad ①$$

$$= 92.5 \text{ cm}^2 \quad ①$$

.................92.5................ cm^2

(Total for Question 4 is 4 marks)

5 The diagram shows an 8-sided shape *ABCDEFGH*.
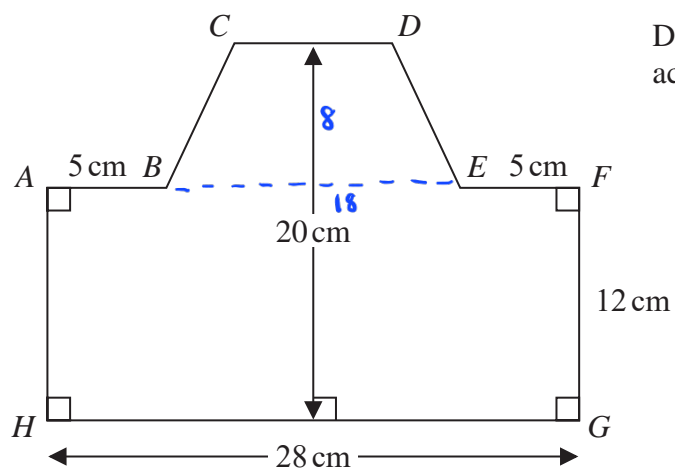
Diagram **NOT**
accurately drawn

HG = 28 cm   *FG* = 12 cm   *AB* = *EF* = 5 cm
The height of the shape is 20 cm
CD is parallel to *HG*

The area of shape *ABCDEFGH* is 434 cm²

Find the length of *CD*.

Area AFGH : 28 × 12 = 336 cm² ①

Area BCDE : $\frac{1}{2}$ × 8 × (18+CD) cm² ①

Total area : 434 = 336 + $\frac{1}{2}$ × 8 × (18+CD)

98 = 4(18+ CD) ①

24.5 − 18 = CD

CD = 6.5 cm ①

6·5
.... cm

(Total for Question 5 is 4 marks)

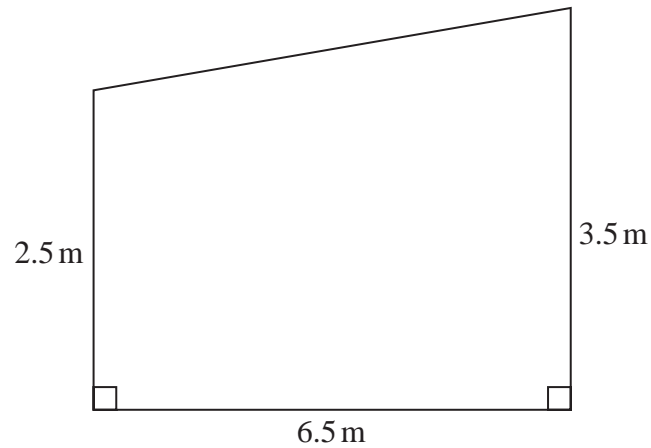**6** The diagram shows a classroom wall in the shape of a trapezium.

Diagram **NOT** accurately drawn

2.5 m

3.5 m

6.5 m

Dion wants to paint the classroom wall completely twice.
He knows that each tin of paint will cover $12 \, m^2$

He is going to have to buy all the paint he needs.

Work out the least number of tins of paint that Dion will need to buy.
Show your working clearly.

Area $= \frac{1}{2} \times 6.5 \times (2.5 + 3.5)$

②

$= 19.5$

$19.5 \times 2 = 39$

①

$39 \div 12 = 3.25$

$\approx$ She needs 4 tins of paint

①

4

(Total for Question 6 is 4 marks)

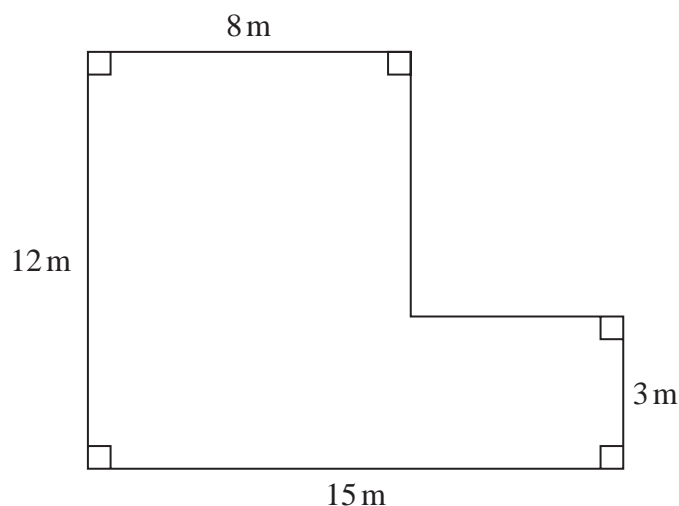**7** The diagram shows the plan of a floor.

8 m

Diagram **NOT**
accurately drawn

12 m

3 m

15 m

Indira is going to paint the floor.
She needs to buy enough tins of paint to cover the floor with one coat of paint.

Each tin of paint covers an area of $7\,\text{m}^2$
Each tin of paint costs £23.90

Indira buys the least possible number of tins of paint.

Work out the total cost of the tins of paint that Indira buys.
Show your working clearly.

Area of floor : $12 \times 8 + 7 \times 3$

$= 96 + 21$ ①

$= 117 \text{ m}^2$ ①

$\dfrac{117}{7} = 16.7$

≈ 17 ①

$17 \times 23.90 = 406.30$ ① ①

£ 406.30

(Total for Question 7 is 5 marks)