1 The diagram shows a shape.
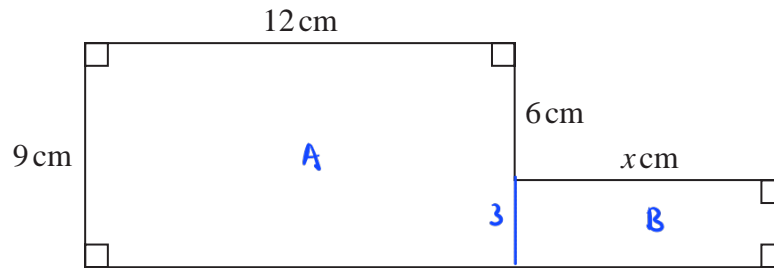
12 cm

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
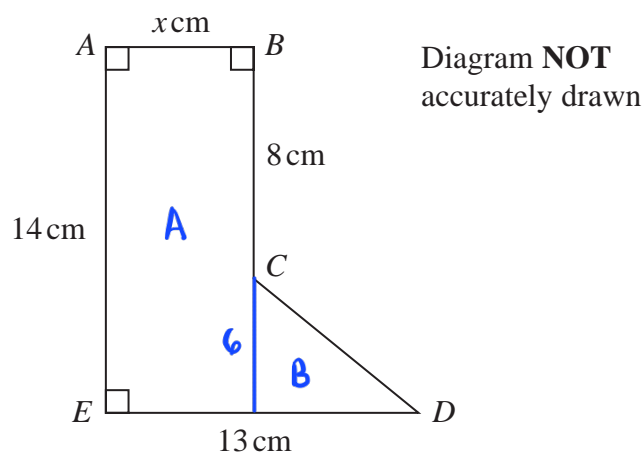
$= 7$ ①

$x = $ ....7.......................

(Total for Question 1 is 4 marks)

2

A $\xrightarrow{x\,\text{cm}}$ B

Diagram **NOT** accurately drawn

8 cm

14 cm   A

C

6   B

E   D

13 cm

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

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

= 4.8 ①

4.8

$x = \text{.....................................}$

(**Total for Question 2 is 4 marks**)

3 The diagram shows a quadrilateral *ABCD*

D

A

7.5 cm

4·5

B   6 cm   *C*
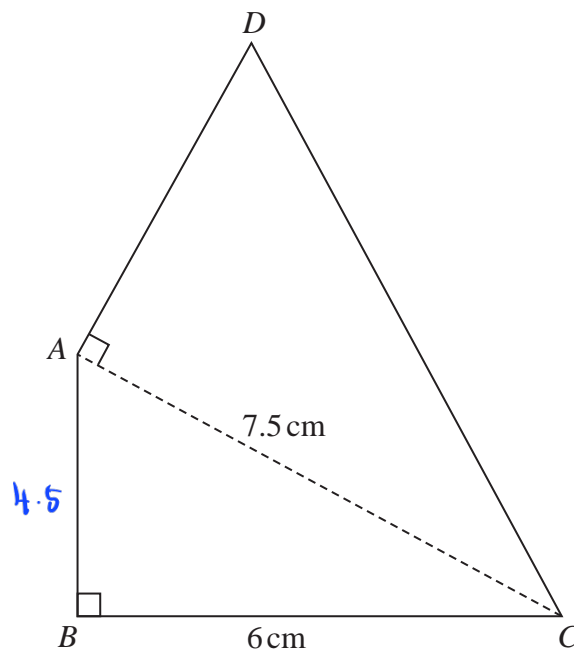
Diagram **NOT**
accurately drawn

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

   BC = 6 cm   *AC* = 7.5 cm

The area of quadrilateral *ABCD* is 31.5 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.
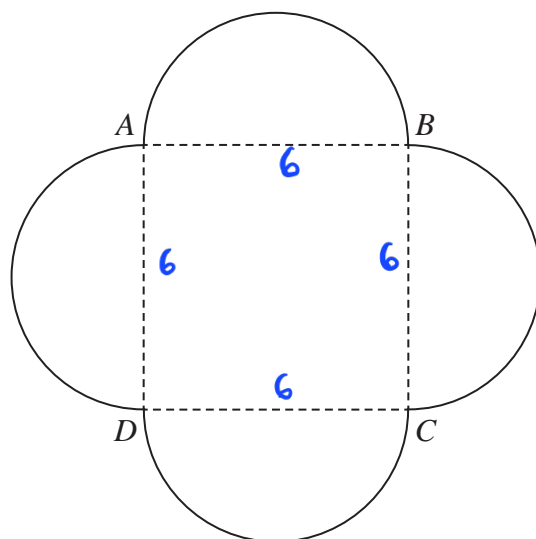

Diagram **NOT** accurately drawn

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

The area of the square is 36cm^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*.
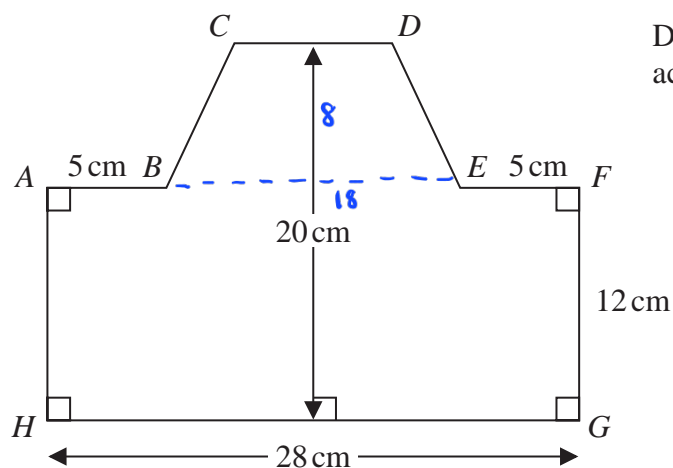
Diagram **NOT** accurately drawn

$HG = 28$ 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 : $28 \times 12 = 336$ cm² ①

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

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

$98 = 4(18 + CD)$ ①

$24.5 - 18 = CD$

$CD = 6.5$ cm ①

6.5

.... cm

(Total for Question 5 is 4 marks)