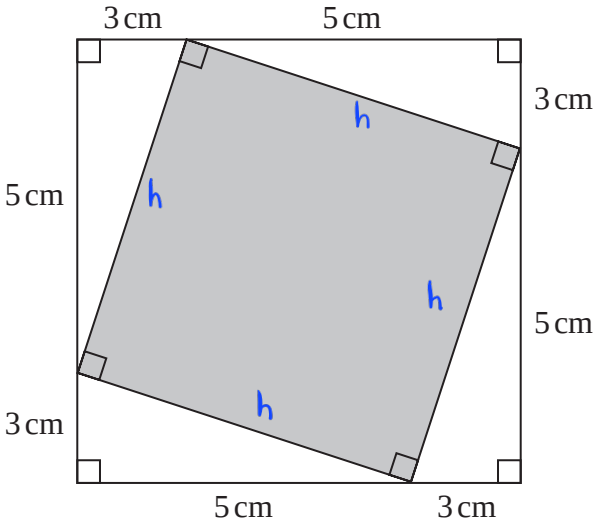
1 This diagram shows two squares.





$h^2 = a^2 + b^2$

Work out the area of the square shown shaded in the diagram.

work out Pythagoras to find length h

$h^2 = a^2 + b^2$

$h^2 = 3^2 + 5^2$ (1)

$h^2 = 34$

$h = \sqrt{34}$ (1)

Use the h value found to calculate the area of shaded region

Area of shaded region :

$A = h \times h$

$= \sqrt{34} \times \sqrt{34}$

$= 34 \text{ cm}^2$ (1)

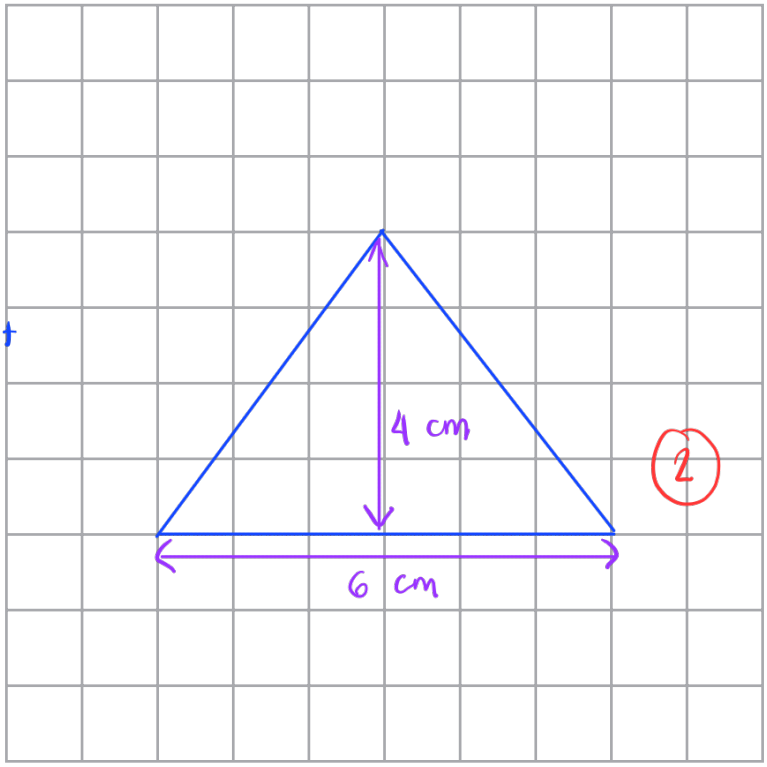
(1)

34 cm^2

.....

(Total for Question 1 is 4 marks)

2 On the centimetre grid, draw an isosceles triangle with an area of $12\,cm^2$



Area of triangle:

$\frac{1}{2}$ x base x height

$12\ cm^2 = \frac{1}{2} \times b \times h$

$b \times h = 24\ cm^2$

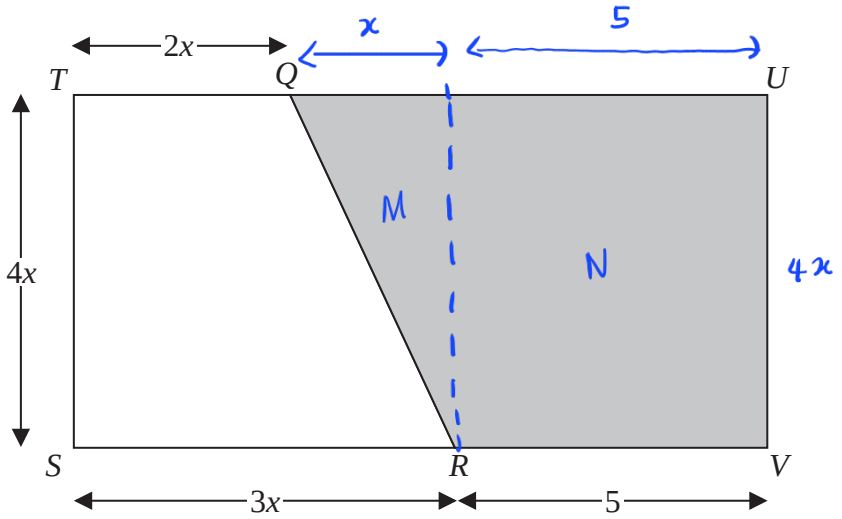
can be $b = 6$, $h = 4$

or $b = 8$, $h = 3$

2

(Total for Question 2 is 2 marks)

3 The diagram shows rectangle *STUV*.
TQU and *SRV* are straight lines.
All measurements are in cm.



The area of trapezium *QUVR* is A cm^2

Show that $A = 2x^2 + 20x$

Area of triangle = $\frac{1}{2} \times l \times h$

Area of triangle M : $\frac{1}{2} \times x \times 4x$

$= 2x^2$ (1)

Area of square N : $5 \times 4x$

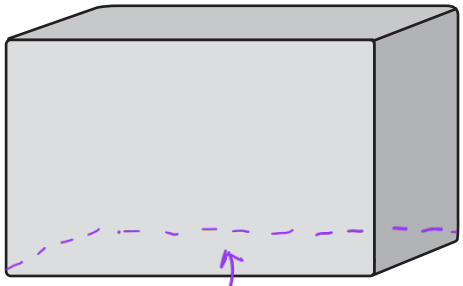
$= 20x$

Area of trapezium QUVR = Area of M + area of N (1)

$A = 2x^2 + 20x$ (1)

(Total for Question 3 is 3 marks)

4



$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

A storage tank exerts a force of 10 000 newtons on the ground.

The base of the tank in contact with the ground is a 4 m by 2 m rectangle.

Work out the pressure on the ground due to the tank.

Method of finding area of base of the tank

$4\text{ m} \times 2\text{ m} = 8\text{ m}^2$

Pressure on the ground : $\frac{10\,000\text{ N}}{8\text{ m}^2}$ (1)

$= 1250\text{ Nm}^{-2}$ (1)

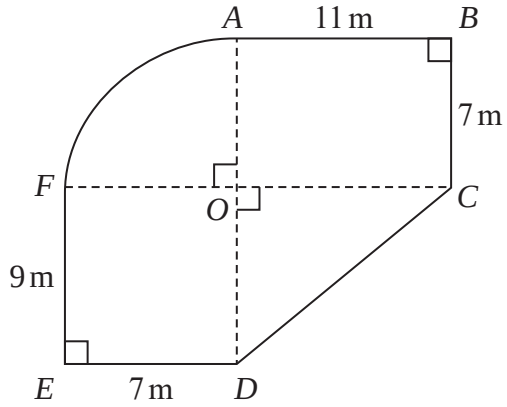
$$\begin{array}{r} 1250 \\ 8\overline{)10\,000} \\ -8 \\ \hline 20 \\ -16 \\ \hline 40 \\ -40 \\ \hline \end{array}$$

1250 ..... newtons / m^2

(Total for Question 4 is 2 marks)

5 The diagram shows a plan of Jason's garden.

ABCO and *DEFO* are rectangles.
CDO is a right-angled triangle.
AFO is a sector of a circle with centre *O* and angle *AOF* = 90°



Jason is going to cover his garden with grass seed.
Each bag of grass seed covers 14 m^2 of garden.
Each bag of grass seed costs £10.95

Work out how much it will cost Jason to buy all the bags of grass seed he needs.

Finding the area of all sections :

Area of ABCO = 11 m × 7 m = 77 m^2

Area of DEFO = 9 m × 7 m = 63 m^2

Area of AOF = $\frac{1}{4} \times \pi \times (7\text{ m})^2 = 38.4845\text{ m}^2$

Area of COD = $\frac{1}{2} \times 11\text{ m} \times 9\text{ m} = 49.5\text{ m}^2$ (1)

Finding total area of all sections :

$77 + 63 + 49.5 + 38.4845 = 227.9845\text{ m}^2$ (1)

Finding total bags of grass to cover his garden :

$\frac{227.9845\text{ m}^2}{14\text{ m}^2} = 16.28$ (1)

∴ He needs to buy 17 bags of grass (round up)

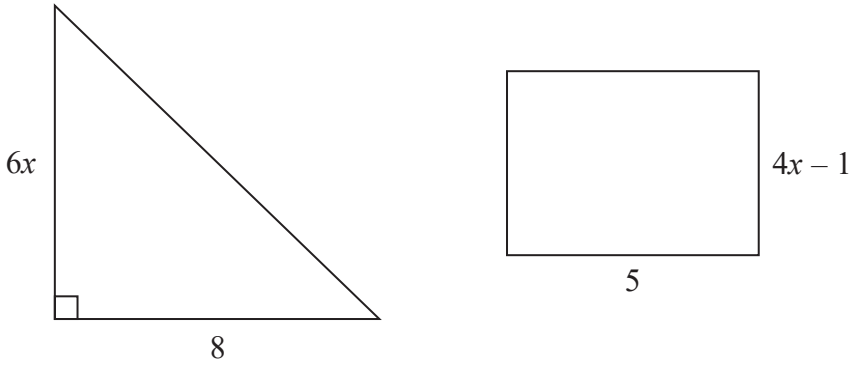
Finding total cost :

17 × £10.95 = £186.15 (1)

£ 186.15 (1)

(Total for Question 5 is 5 marks)

6 Here is a triangle and a rectangle.



All measurements are in centimetres.

The area of the triangle is $10\,cm^2$ greater than the area of the rectangle.

Work out the value of x.

Area of triangle = $\frac{1}{2} \times h \times l$

Area of triangle = $\frac{1}{2} \times 6x \times 8$

$= 24x$ (1)

Area of rectangle = $h \times l$

Area of rectangle = $5(4x-1)$

$= 20x - 5$ (1)

Area of triangle = Area of rectangle + 10

$24x = 20x - 5 + 10$ (1)

$24x - 20x = 5$

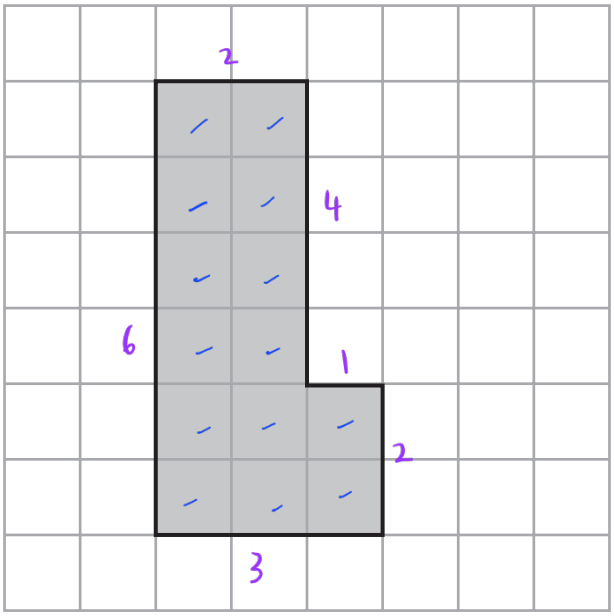
$4x = 5$

$x = \frac{5}{4} = 1.25$ (1)

$x =$ 1.25

(Total for Question 6 is 4 marks)

7 The diagram shows a shape on a centimetre grid.



(a) Find the area of the shape.

1 small box = 1 cm^2

The shape has 14 boxes = 14 × 1 cm^2

= 14 cm^2

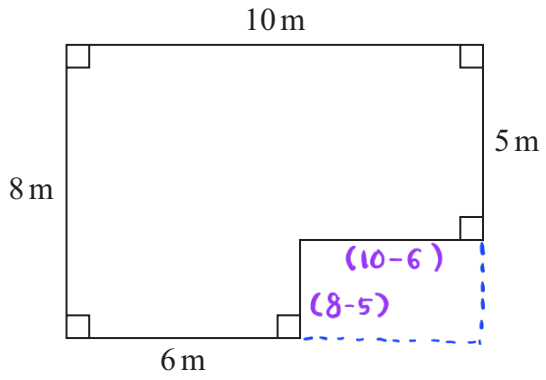
14 (1)

..... cm^2

(1)

(Total for Question 7 is 1 mark)

8 The diagram shows a plan of a floor.



Petra is going to cover the floor with paint.

Petra has 3 tins of paint.
There are 2.5 litres of paint in each tin.

Petra thinks 1 litre of paint will cover $10\,m^2$ of floor.

(a) Assuming Petra is correct, does she have enough paint to cover the floor?
You must show all your working.

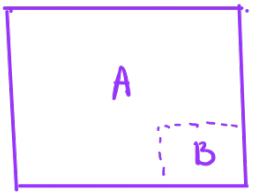
Finding how many litre of paints Petra has :

$$3 \text{ tins} \times \frac{2.5 \text{ litres}}{1 \text{ tin}} = 7.5 \text{ litres}$$

Finding area of floor can be covered with Petra's paint :

$$7.5 \text{ litres} \times \frac{10 \text{ m}^2}{1 \text{ litre}} = 75 \text{ m}^2 \quad (1)$$

Finding area of Petra's floor :



Area of A : 10 m x 8 m

: 80 m^2

Area of B : (10-6) m x (8-5) m

: 4 m x 3 m

: 12 m^2 (1)

(4)

Area of floor : Area A - area B : 80 - 12 : 68 m^2 (1)

∴ 68 < 75. Yes, Petra has enough paint. (1)

Actually, 1 litre of paint will cover 11 m^2 of floor.

(b) Does this affect your answer to part (a)?
You must give a reason for your answer.

No. She will have more paint since 1 litre of paint can cover more than what she had assumed. (1)

(1)

(Total for Question 8 is 5 marks)