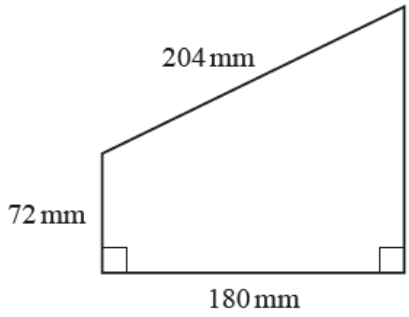
Mensuration – 2022 IGCSE 0580

1. June/2022/Paper-11/No.5

Change 0.56 kilometres into metres.

..... m [1]

2. June/2022/Paper-11/No.23

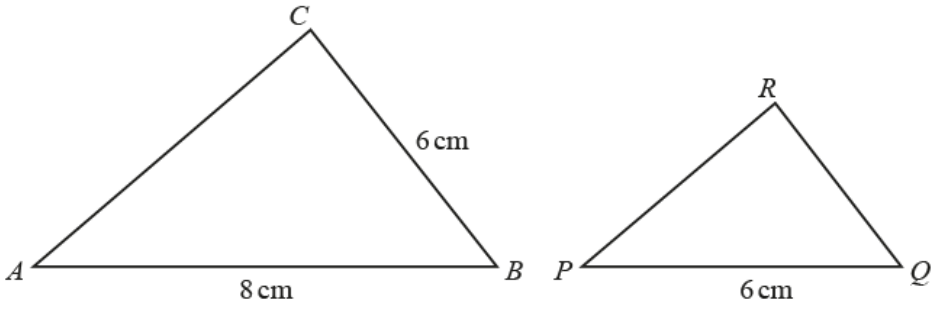


NOT TO SCALE

Work out the area of this trapezium.

..... mm^2 [5]

3. June/2022/Paper-11/No.24



Triangle ABC is mathematically similar to triangle PQR.

Calculate QR.

$QR =$ ..... cm [2]

4. June/2022/Paper-12/No.11

Find the total surface area of a cuboid with length 8 cm, width 6 cm and height 3 cm.

..... cm^2 [3]

5. June/2022/Paper-13/No.4

Work out the area of a rectangle that is 9.5 m long and 6.8 m wide.

..... m^2 [2]

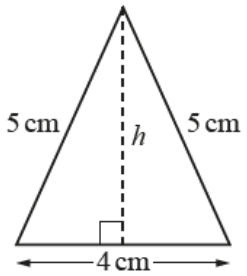
6. June/2022/Paper-13/No.8

A box, in the shape of a cuboid, has volume 357 cm^3.
It has a length of 8.5 cm and a width of 6 cm.

Calculate the height of the box.

..... cm [2]

7. June/2022/Paper-13/No.14



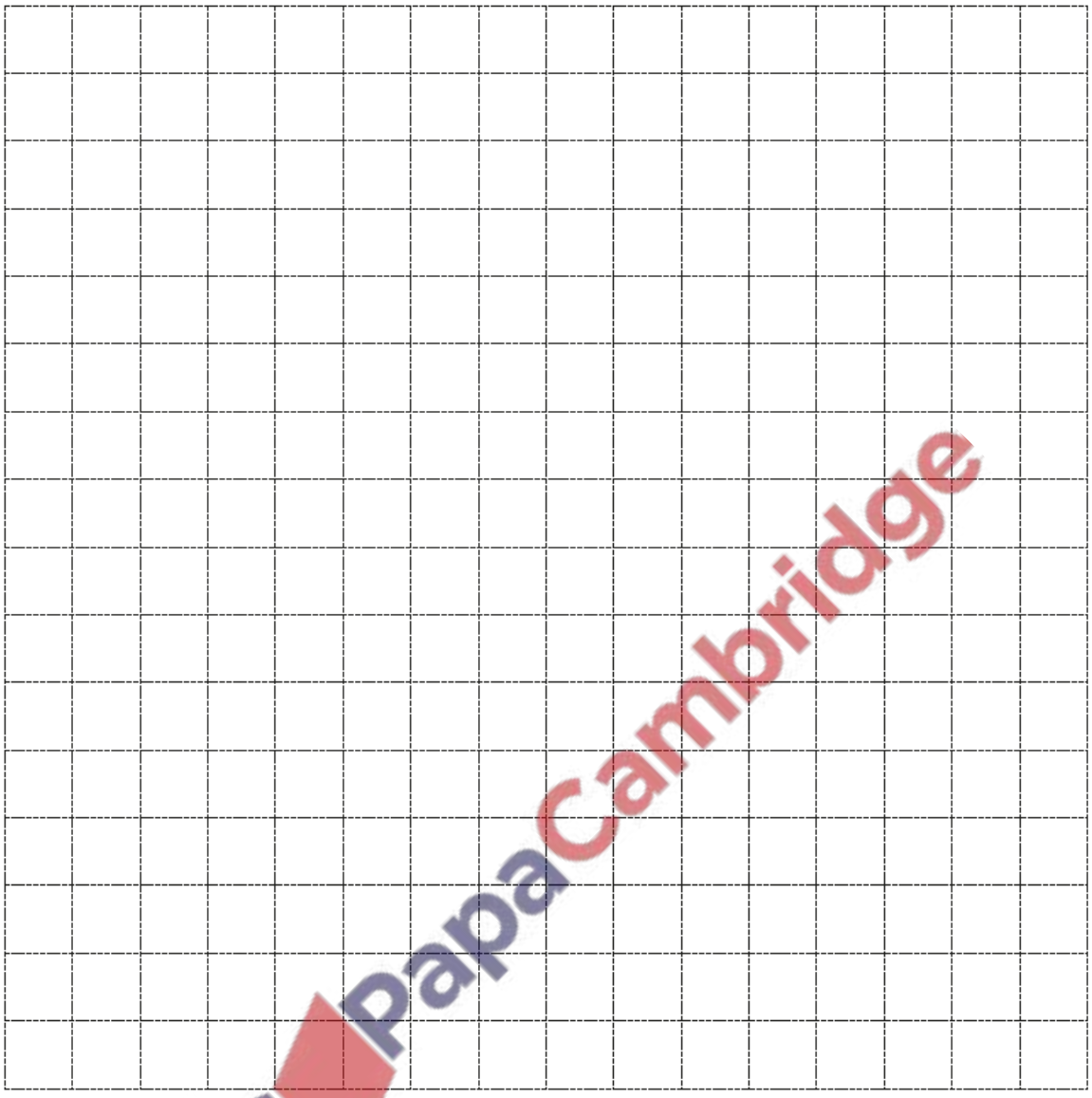
NOT TO SCALE

(a) Calculate the height, h, of the triangle.

h = ... cm [3]

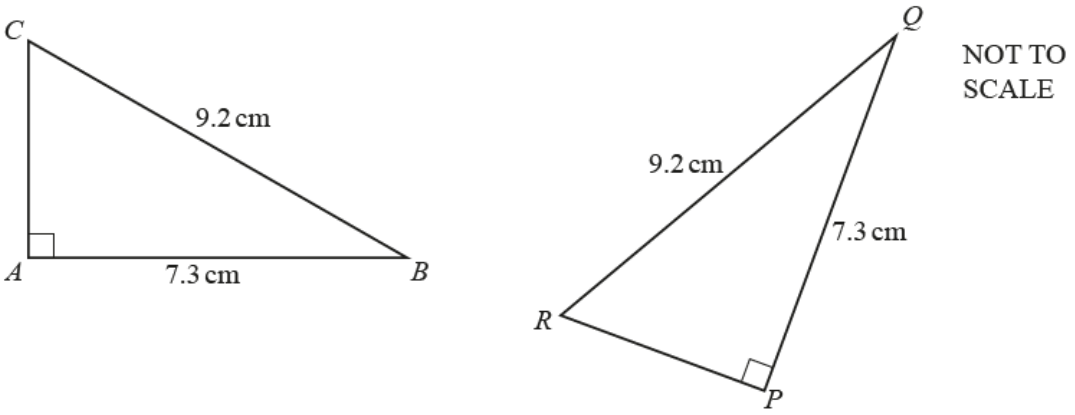
(b) The triangle is one face of a square-based pyramid.

On the 1 cm^2 grid, draw a net of this pyramid.



[3]

8. June/2022/Paper-13/No.17



The diagram shows two right-angled triangles, ABC and PQR.

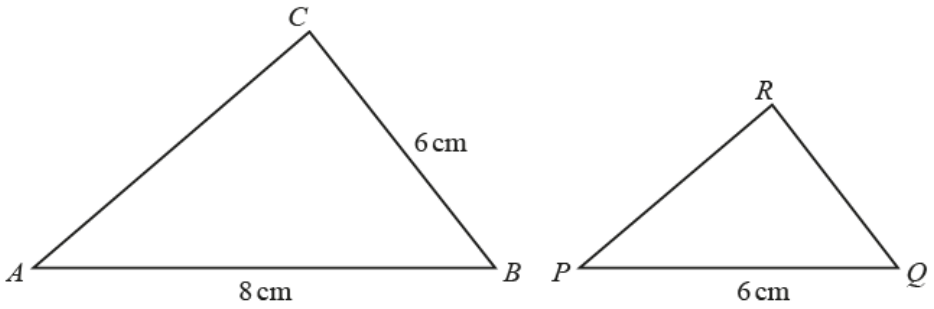
(a) Complete this statement with a geometrical term.

Triangle ABC is ..... to triangle PQR. [1]

(b) Calculate angle ABC.

Angle ABC = ... [2]

9. June/2022/Paper-21/No.11



Triangle ABC is mathematically similar to triangle PQR.

(a) Calculate QR.

$QR =$ ..... cm [2]

(b) The two triangles are the cross-sections of two mathematically similar prisms.
The volume of the larger prism is $320\,\text{cm}^3$.

Calculate the volume of the smaller prism.

..... cm^3 [2]

10. June/2022/Paper-21/No.17

Find the radius of a hemisphere of volume $80\,\text{cm}^3$.

[The volume, V, of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

..... cm [3]

11. June/2022/Paper-21/No.24

A cuboid measures 24 cm by 12 cm by 8 cm.

Calculate the length of a diagonal of the cuboid.

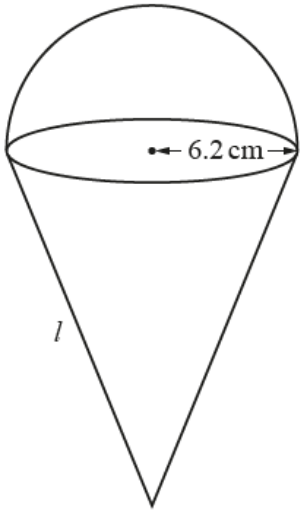
..... cm [3]

12. June/2022/Paper-22/No.5

Find the total surface area of a cuboid with length 8 cm, width 6 cm and height 3 cm.

..... cm^2 [3]

13. June/2022/Paper-22/No.23



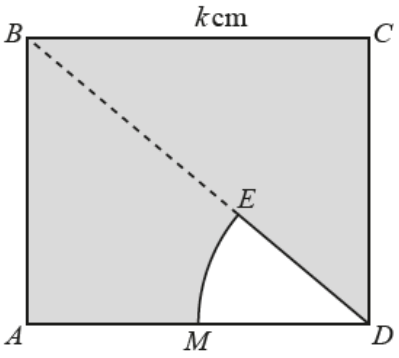
NOT TO
SCALE

The diagram shows a solid metal shape made from a cone and a hemisphere, both with radius 6.2 cm.
The total surface area of the solid shape is 600 cm^2.

Calculate the slant height, l, of the cone.
[The surface area, A, of a sphere with radius r is $A = 4\pi r^2$.]
[The curved surface area, A, of a cone with radius r and slant height l is $A = \pi r l$.]

l = ... cm [4]

14. June/2022/Paper-23/No.20



NOT TO SCALE

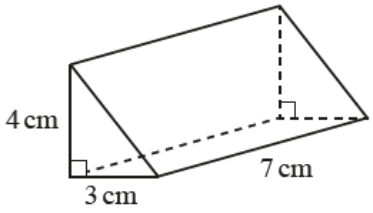
The diagram shows a square $ABCD$ with side length k cm.
MDE is a sector of a circle, centre D.
E lies on the diagonal, BD, of the square.
M is the midpoint of AD.

Find the percentage of the square that is shaded.

..... % [4]

15. June/2022/Paper_31/No.4

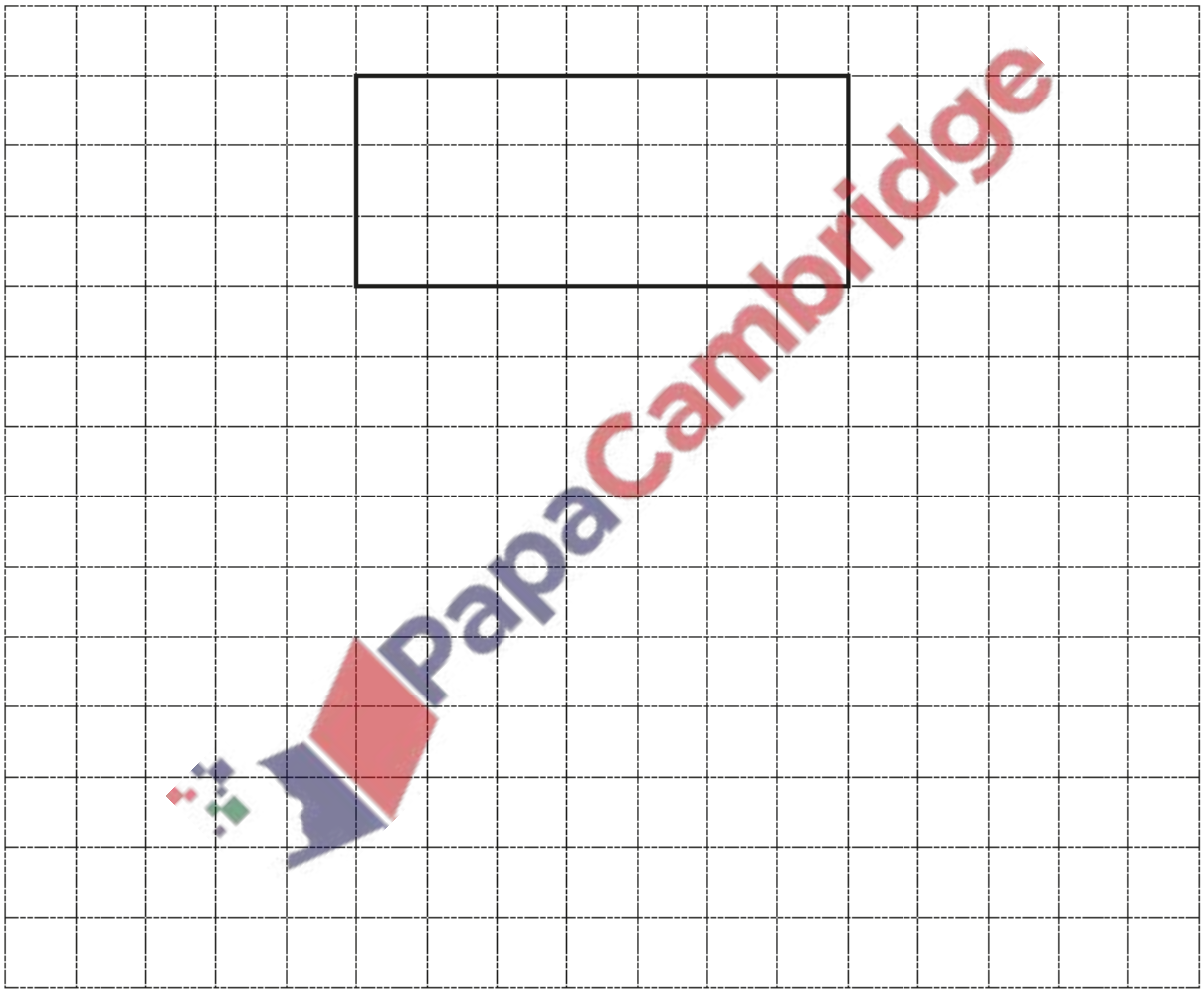
(a)



NOT TO SCALE

The diagram shows a right-angled triangular prism.

(i) On the 1 cm^2 grid, complete a net of this prism.
One face has been drawn for you.

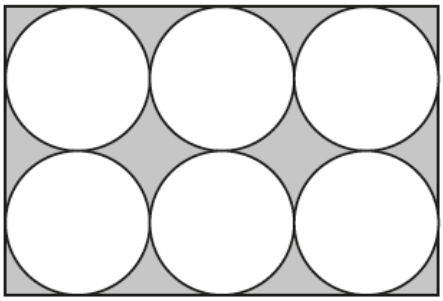


[4]

(ii) Work out the volume of this prism.

..... cm^3 [2]

(b)



NOT TO SCALE

The diagram shows a rectangle with 6 congruent circles inside.
Each circle touches the adjacent circles and the sides of the rectangle.
The radius of each circle is 8 cm.

(i) Show that the length of the rectangle is 48 cm.

[1]

(ii) Find the area of the rectangle.
Give the units of your answer.

.... [3]

(iii) Calculate the percentage of the rectangle that is shaded.

..... % [3]

16. June/2022/Paper_32/No.1c(ii)

(ii) A beach ball is a sphere with radius 15 cm.

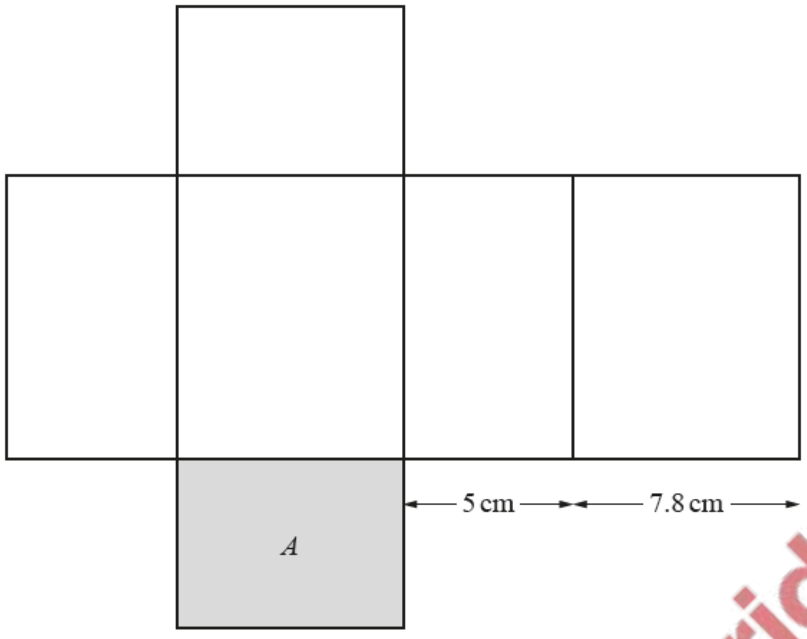
Calculate the volume of the beach ball.
Give the units of your answer.

[The volume, V, of a sphere with radius r is $V = \frac{4}{3}\pi r^3$.]

..... [3]

17. June/2022/Paper_32/No.4

(a) The diagram shows the net of a cuboid.



(i) Work out the area of the shaded rectangle, A.

..... cm^2 [2]

(ii) The volume of the cuboid is 468 cm^3.

Complete the statement.

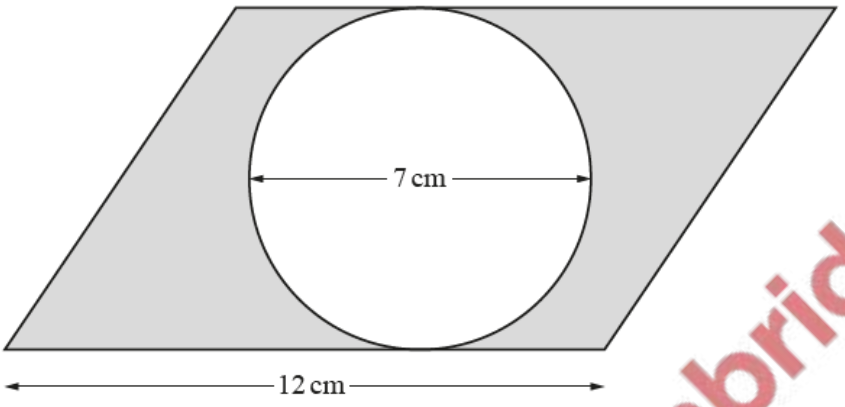
The dimensions of the cuboid are ..... cm by ..... cm by ..... cm [2]

(b) A cylinder has a radius of 8 cm and a height of 12 cm.

Calculate, in terms of π, the volume of the cylinder.

..... cm^3 [2]

(c)



NOT TO SCALE

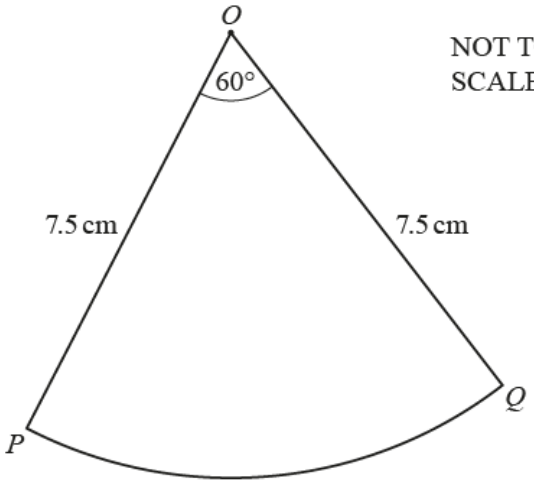
The diagram shows a circle with a diameter of 7 cm and a parallelogram with a base of 12 cm. The circle touches two of the sides of the parallelogram.

Calculate the shaded area.

..... cm^2 [3]

18. June/2022/Paper_33/No.8(c)

(c)



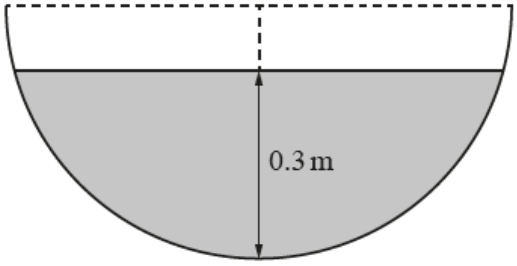
POQ is a sector of a circle, centre *O* and radius 7.5 cm.
The sector angle is 60°.

Calculate the length of the arc *PQ*.

PQ = ... cm [2]

19. June/2022/Paper_41/No.5b(ii)

(ii)



NOT TO SCALE

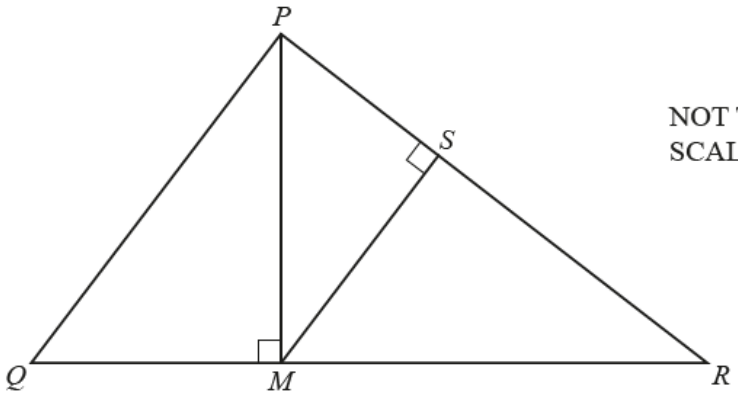
The greatest depth of the water in the container is 0.3 m.
The diagram shows the cross-section.

Calculate the number of litres of water in the container.
Give your answer correct to the nearest integer.

..... litres [6]

20. June/2022/Paper_42/No.9

(a)



NOT TO SCALE

In triangle PQR, M lies on QR and S lies on PR.

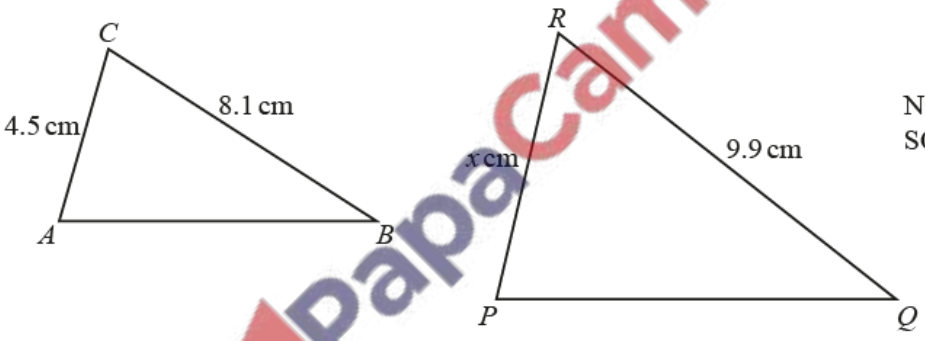
Explain, giving reasons, why triangle PMR is similar to triangle MSR.

.....

.....

..... [3]

(b)



NOT TO SCALE

Triangle ABC is similar to triangle PQR.

(i) Find the value of x.

$x =$ ..... [2]

(ii) The area of triangle PQR is $25\,\text{cm}^2$.

Calculate the area of triangle ABC.

..... cm^2 [2]

21. June/2022/Paper_42/No.12

A curve has equation $y = x^3 - kx^2 + 1$.
When $x = 2$, the gradient of the curve is 6.

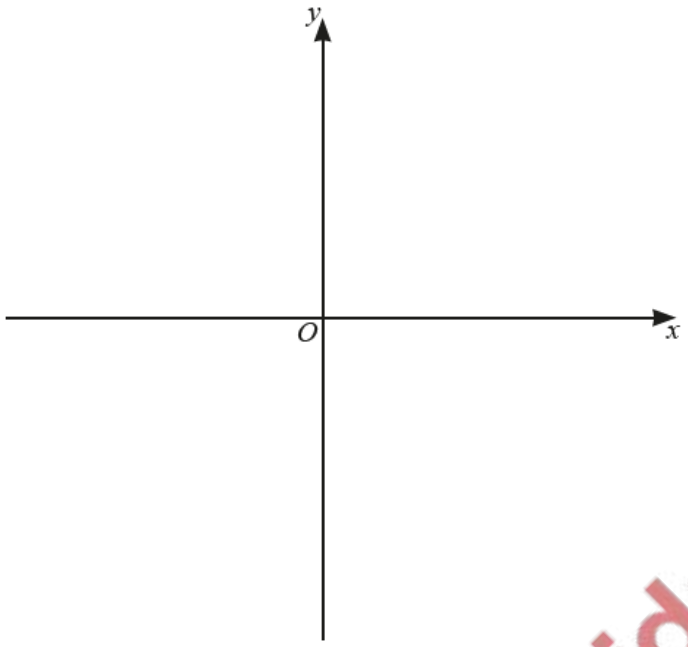
(a) Show that $k = 1.5$.

[5]

(b) Find the coordinates of the two stationary points of $y = x^3 - 1.5x^2 + 1$.
You must show all your working.

(.....) and (.....) [4]

(c) Sketch the curve $y = x^3 - 1.5x^2 + 1$.



[2]

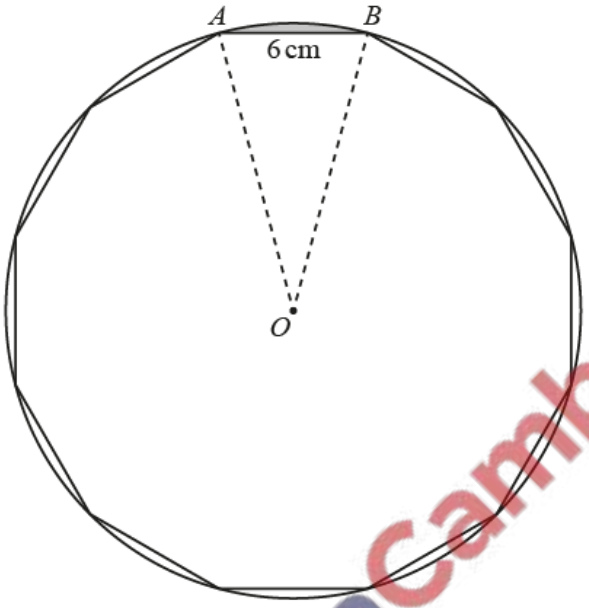
22. June/2022/Paper_43/No.4

A regular 12-sided polygon has side length 6 cm.

(a) Show that one interior angle of the polygon is 150°.

[1]

(b) The polygon is enclosed by a circle, centre O, so that each vertex touches the circumference of the circle.



NOT TO SCALE

(i) Show that the radius, AO, of the circle is 11.6 cm, correct to 1 decimal place.

[3]

(ii) Calculate

(a) the circumference of the circle,

..... cm [2]

(b) the perimeter of the shaded **minor** segment formed by the chord AB.

..... cm [2]

(c) The regular 12-sided polygon is the cross-section of a prism of length 2 cm.

Calculate the volume of the prism.

..... cm^3 [3]