

Geometry 3F Assessment

Foundation Level



All questions apart from qu 13

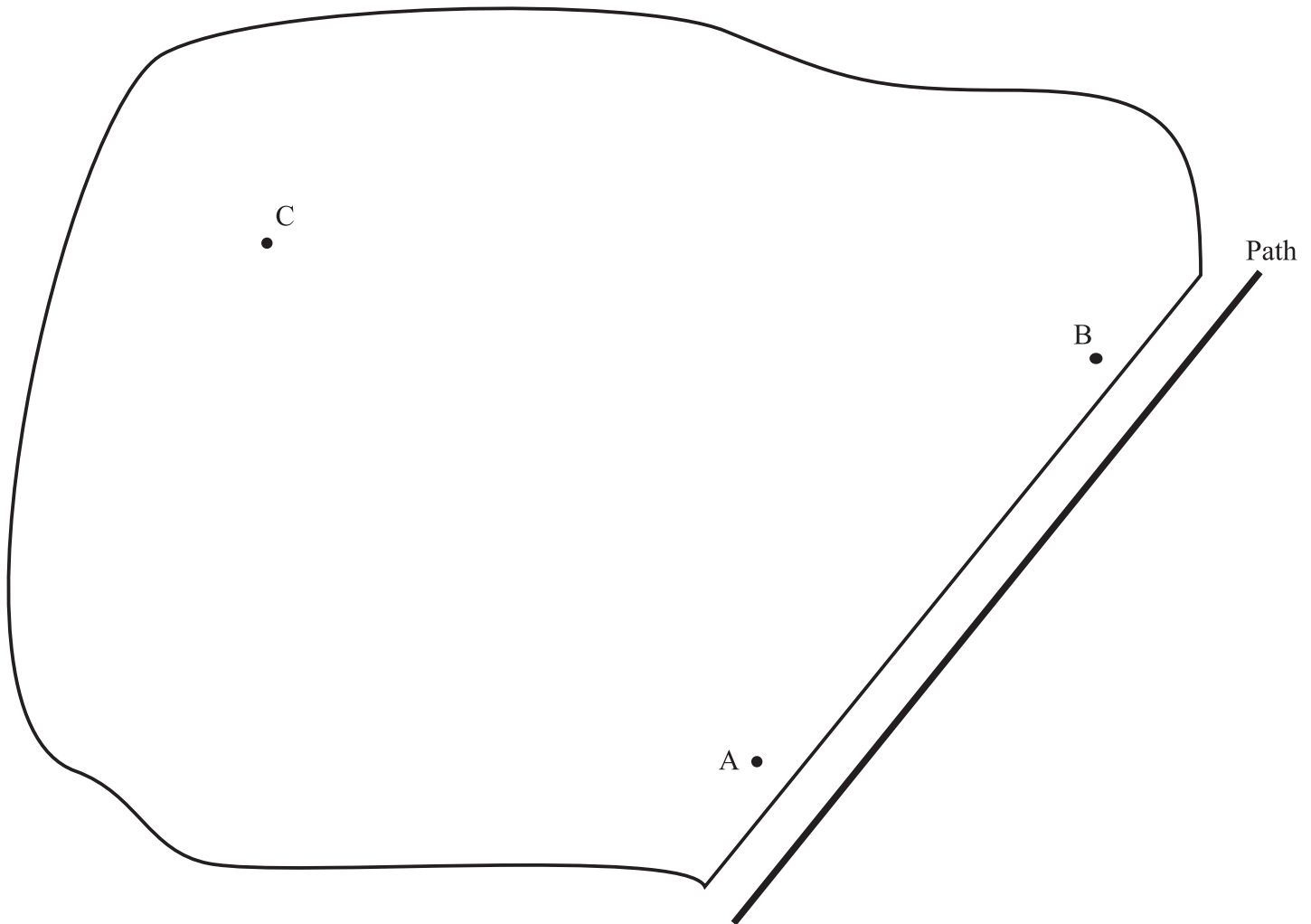
Clip	Grade	Title of clip	Question(s)	Marked out of	Score	%
165.....	5.....	Loci	1	5	___	___
166.....	5.....	Congruent Triangles	2 - 3	5	___	___
167.....	5.....	Sectors of a Circle	4	6	___	___
168.....	5.....	Trigonometry	5 - 7	23	___	___
169.....	5.....	Spheres.....	8	6	___	___
170.....	5.....	Pyramids	9	3	___	___
171.....	5.....	Cones	10 - 11	11	___	___
172.....	5.....	Frustums.....	12	5	___	___
173.....	5.....	Exact Trigonometric Values	13	3	___	___
174.....	5.....	Introduction to Vectors	14	6	___	___

Out of 73 TOTAL SCORE _____

Final Percentage %

- 1) This is a picture of a garden with a path running alongside. Three posts are in the garden at A, B and C.

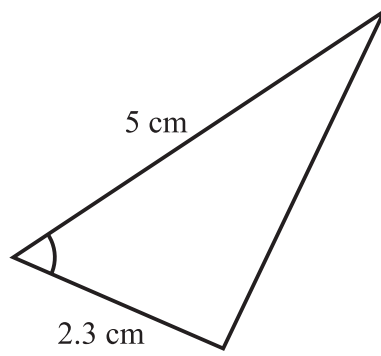
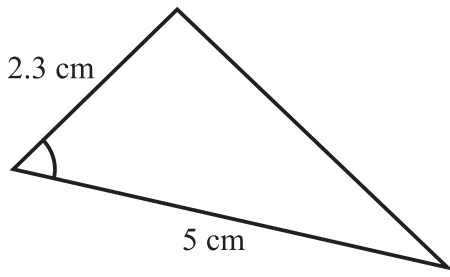
Scale: 1 cm = 1 metre



Treasure is buried in the garden so that it is:
between 4 m and 6 m from A,
closer to B than to C,
more than 4 m from the path.

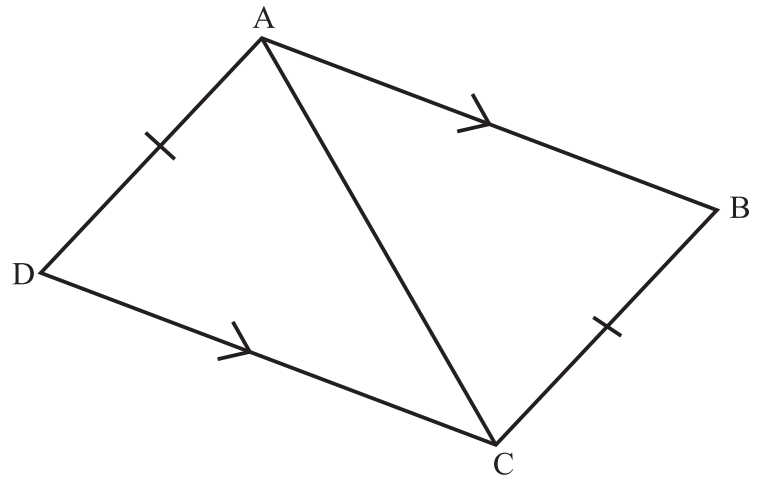
Using ruler and compasses only, shade the area of the garden where the treasure might be buried. 5
You **must** show all your construction arcs.

2) Put a cross in the box next to the rule which explains why these two triangles are congruent. 2



- RHS
- SAS
- ASA
- SSS
- None of the above because they are not congruent.

3) Prove that triangle ABC is congruent to triangle CDA. 3



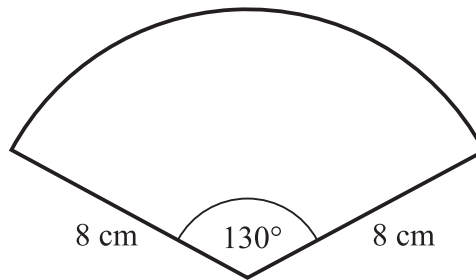
4) The diagram shows a sector of a circle.

- a) Find the area of the sector.
Give your answer to 1 decimal place.

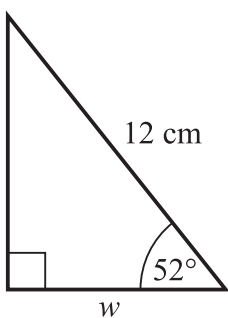
_____ cm² 3

- b) Find the perimeter of the sector.
Give your answer to 1 decimal place.

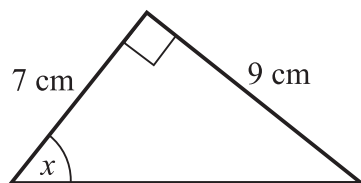
_____ cm 3



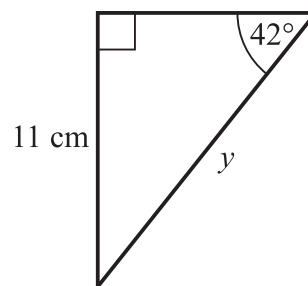
5) Find the lengths of the missing sides and angles.
Give your answers to 1 decimal place.



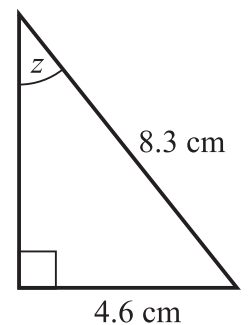
a) $w =$ _____ cm 3



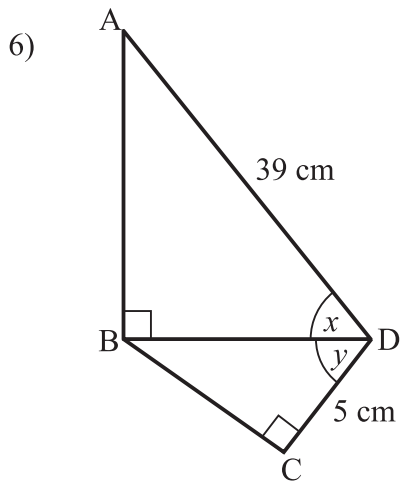
b) $x =$ _____ ° 3



c) $y =$ _____ cm 3



d) $z =$ _____ ° 3



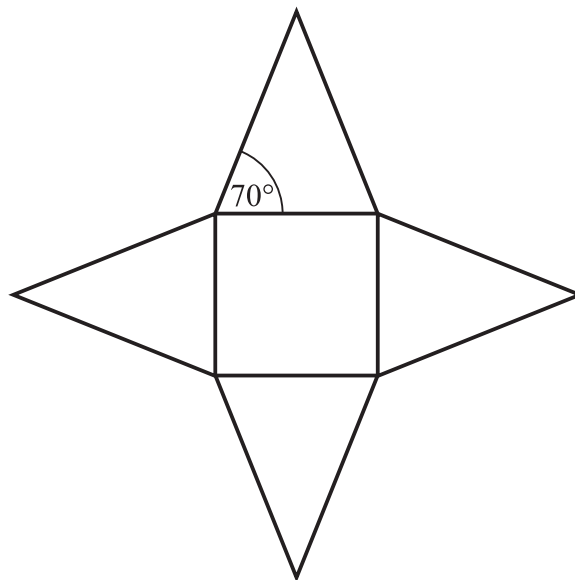
In the diagram, $\cos x = \frac{1}{3}$

Find the value of $\sin y$, showing all your working in the space, below. 6

7) The diagram shows the net of a square-based pyramid.

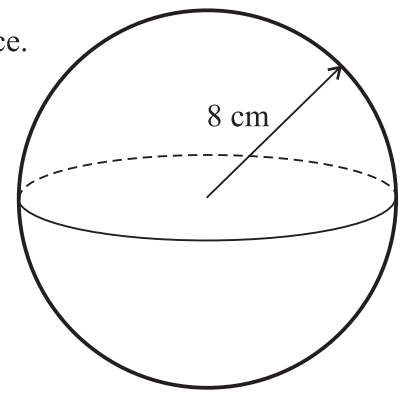
The area of the square base is 25 cm^2 .

Work out the area of one triangular face. 5
You must show all your working.



- 8) a) Work out the volume of the sphere, giving your answer to 1 decimal place.

$\text{Volume} = \frac{4}{3} \pi r^3$ $\text{Surface area} = 4\pi r^2$
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Volume = _____ cm³ 3

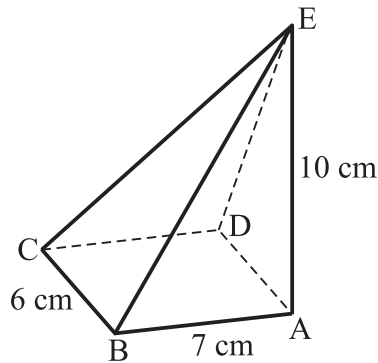
- b) Work out the surface area of the sphere, giving your answer to 1 decimal place.

Surface area = _____ cm² 3

- 9) The pyramid has a rectangular base and E is directly above A.

Find the volume of the pyramid.

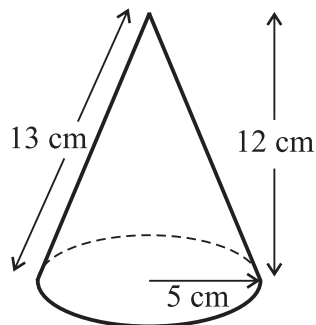
$\text{Volume} = \frac{1}{3} \times \text{base area} \times \text{height}$
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Volume = _____ cm³ 3

- 10) For the cone, shown, find

- a) The volume.



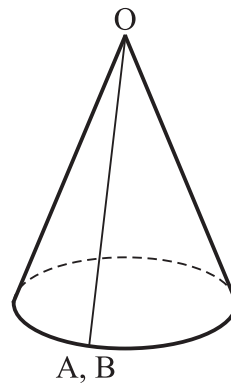
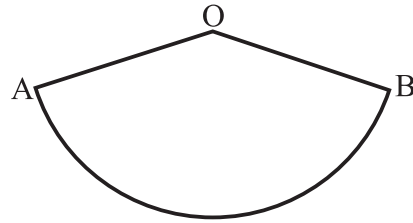
$\text{Volume} = \frac{1}{3} \pi r^2 h$ $\text{Curved surface area} = \pi r l$
--

Volume = _____ cm³ 3

- b) The **total** surface area.

Total surface area = _____ cm² 3

11) The sector AOB of a circle is shown.



$$\text{Volume} = \frac{1}{3} \pi r^2 h$$

The length of its arc is 16π cm.

The sector is folded so that the straight edges meet and form a cone.

a) Calculate the radius of the base of the cone.

Radius is _____ cm 2

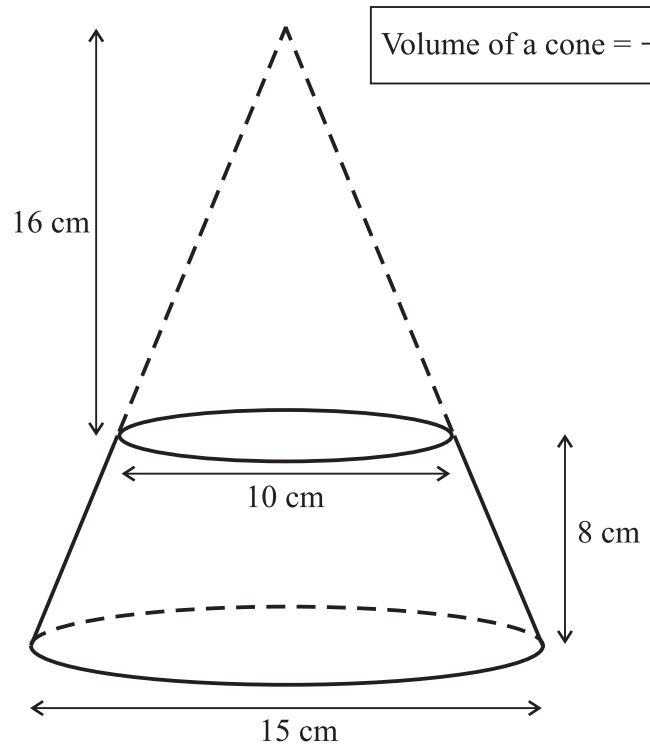
b) The volume of the cone is 1024π cm³.

Work out the perpendicular height of the cone.

Perpendicular height is _____ cm 3

12) The frustum, shown, is made by removing a small cone from a similar large cone.

Work out the volume of the frustum.
Give your answer to 1 decimal place.



$$\text{Volume of a cone} = \frac{1}{3} \pi r^2 h$$

Volume of the frustum = _____ cm³ 5

13) Write down the **exact** value of (do **not** use a calculator for this question):

a) $\cos 30^\circ$ _____ 1

b) $\sin 45^\circ$ _____ 1

c) $\tan 30^\circ$ _____ 1

14) Here are two column vectors $\mathbf{f} = \begin{pmatrix} -2 \\ 5 \end{pmatrix}$ $\mathbf{g} = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$

Work out

a) $2\mathbf{g} = \begin{pmatrix} \\ \end{pmatrix}$ 2

b) $\mathbf{f} + \mathbf{g} = \begin{pmatrix} \\ \end{pmatrix}$ 2

c) $3\mathbf{g} - \mathbf{f} = \begin{pmatrix} \\ \end{pmatrix}$ 2