Geometry 2H Assessment

THE ANSWERS

Higher Level

All questions

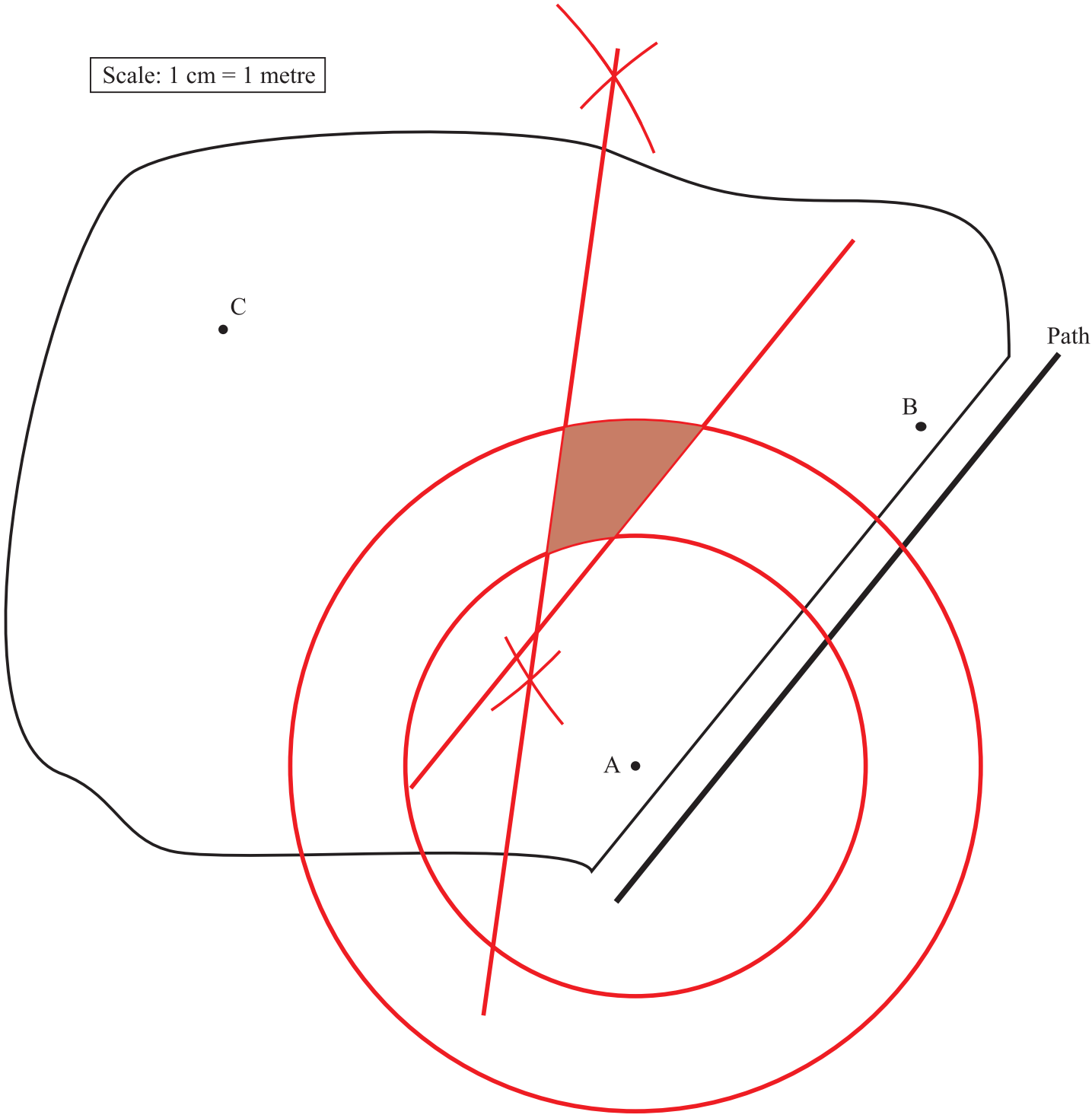
Clip	Grade	Title of clip	Question(s)	Marked out of	Score	%
165	5	Loci	1	5	___	___
166	5	Congruent Triangles	2 - 3	5	___	___
167	5	Sectors of a Circle	4	6	___	___
168	5	Trigonometry	5 - 7	23	___	___
169	5	Spheres	8	6	___	___
170	5	Pyramids	9	3	___	___
171	5	Cones	10 - 11	11	___	___
172	5	Frustums	12	5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

Out of 64

TOTAL SCORE _____

Final Percentage [ ] %

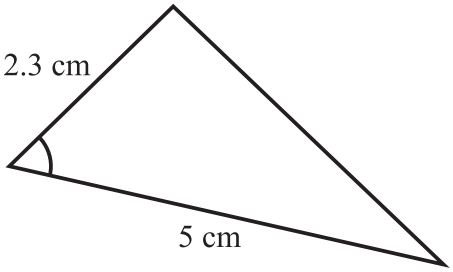
1) This is a picture of a garden with a path running alongside.
Three posts are in the garden at A, B and C.

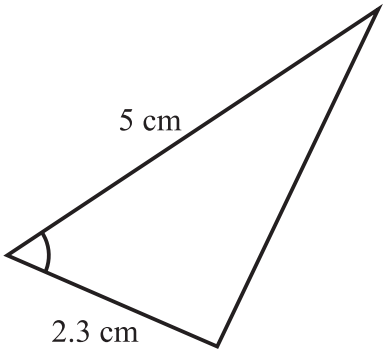


Treasure is buried in the garden so that it is:
between 4 m and 6 m from A,
closer to B than to C,
more than 4 m from the path.

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.

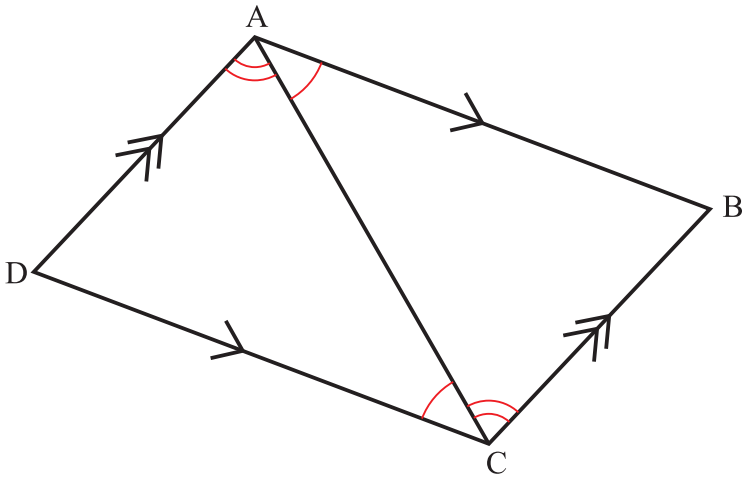
2) Put a cross in the box next to the rule which explains why these two triangles are congruent. **2**





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

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



Angle DAC = angle BCA (alternate angles)

Angle BAC = angle DCA (alternate angles)

Angle ABC = 180 – angle BAC – angle BCA

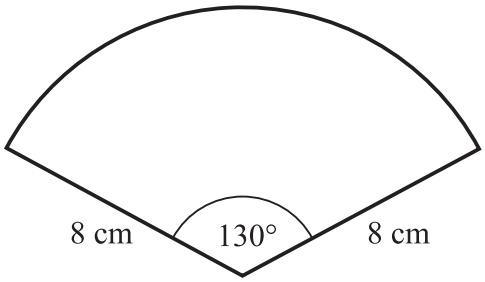
Angle CDA = 180 – angle DCA – angle DAC

Hence angle ABC = angle CDA

AD = CB (given)

Triangle ABC is congruent to triangle CDA (ASA)

4) The diagram shows a sector of a circle.



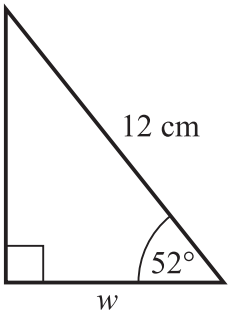
a) Find the area of the sector.
Give your answer to 1 decimal place.

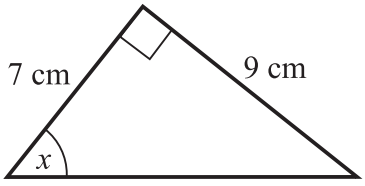
72.6 cm^2 **3**

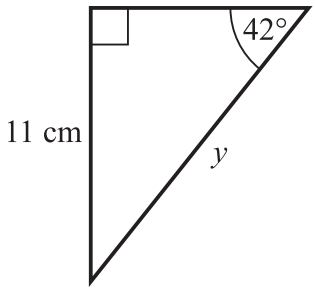
b) Find the perimeter of the sector.
Give your answer to 1 decimal place.

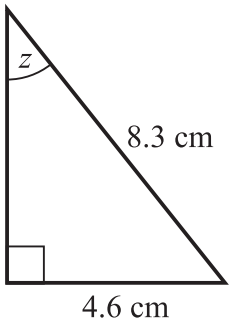
34.2 cm **3**

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



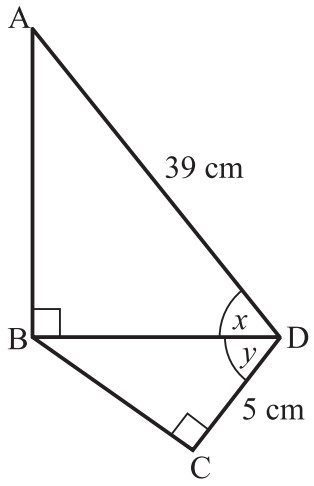






a) $w =$ 7.4 cm **3** b) $x =$ 52.1 ° **3** c) $y =$ 16.4 cm **3** d) $z =$ 33.7 ° **3**

6)



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

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

$$\cos x = \frac{BD}{39} = \frac{1}{3}$$

$$BD = 13$$

Using Pythagoras in BCD, $13^2 = 5^2 + BC^2$

$$BC^2 = 169 - 25$$

$$= 144$$

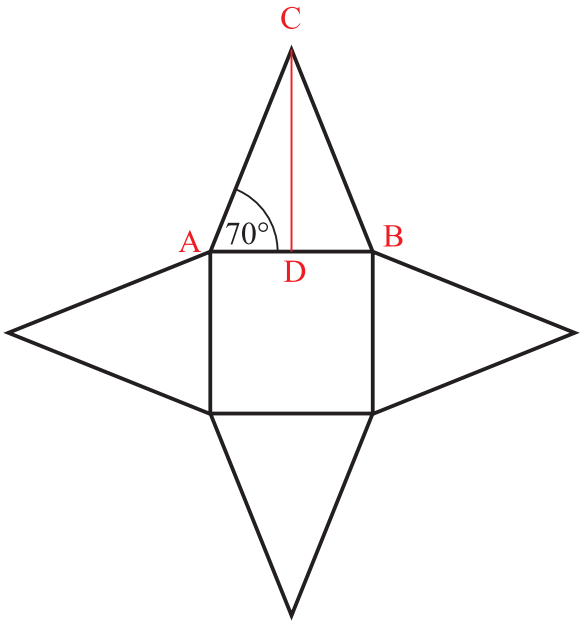
$$BC = 12$$

$$\sin y = \frac{12}{13}$$

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.



Area of square base is 25

AB = 5

$$\text{Tan } 70 = \frac{CD}{AD}$$

$$\text{Tan } 70 = \frac{CD}{2.5}$$

$$CD = 2.5 \times \tan 70$$

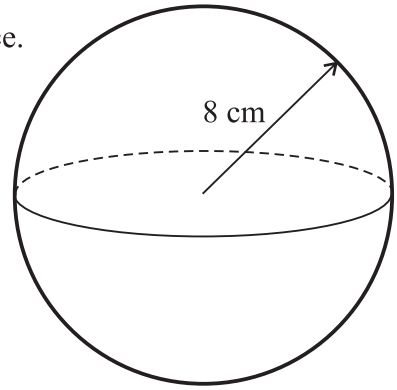
$$CD = 6.869$$

$$\text{Area} = 0.5 \times 5 \times 6.869$$

Area of one triangular face = 17.2 cm^2

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

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



Volume = 2144.7 cm^3 **3**

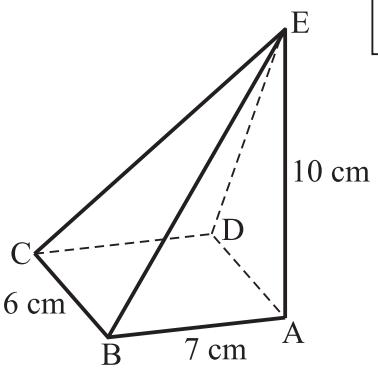
b) Work out the surface area of the sphere, giving your answer to 1 decimal place.

Surface area = 804.2 cm^2 **3**

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

Find the volume of the pyramid.

Volume = $\frac{1}{3}$ × base area × height

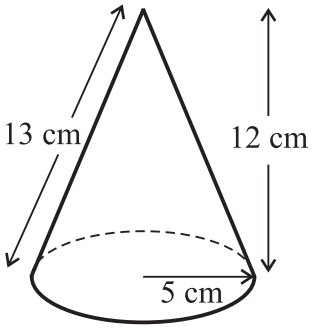


Volume = 140 cm^3 **3**

10) For the cone, shown, find

a) The volume.

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

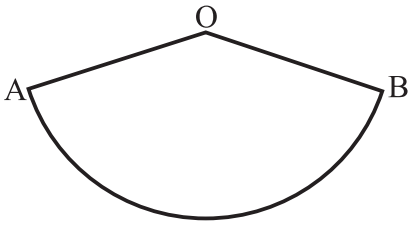


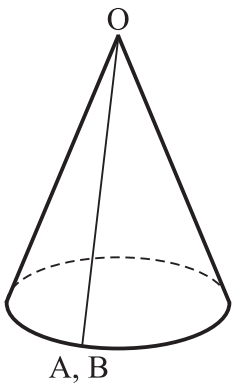
Volume = 314.2 cm^3 **3**

b) The **total** surface area.

Total surface area = 282.7 cm^2 **3**

11) The sector AOB of a circle is shown.





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 8 cm **2**

b) The volume of the cone is 1024π cm^3.

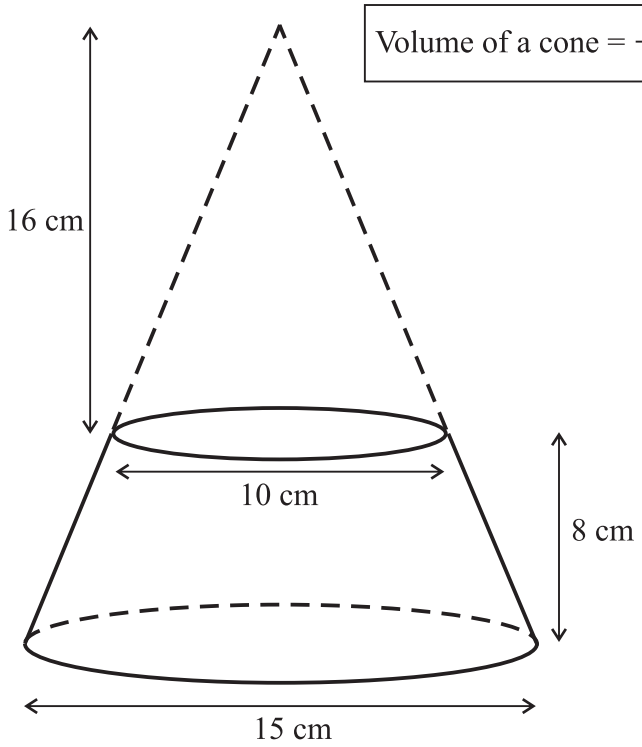
Work out the perpendicular height of the cone.

Perpendicular height is 48 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.

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



Volume of the frustum = 994.8 cm^3 **5**