

Name: _____

Maths Genie Stage 10

Test A

Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
- **Calculators may be used.**



Information

- The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

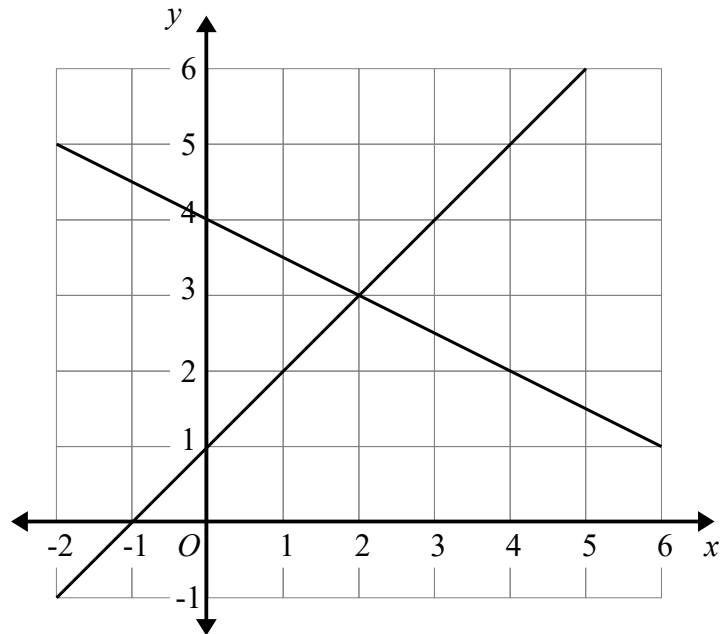
Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

1 Write down the exact value of $\sin(30^\circ)$

.....
(Total for Question 1 is 1 mark)

2 The graphs of the straight lines with equations $y = x + 1$ and $2y = 8 - x$ have been drawn on the grid.



Use the graphs to solve the simultaneous equations

$$\begin{aligned}y &= x + 1 \\ 2y &= 8 - x\end{aligned}$$

.....
(Total for Question 2 is 2 marks)

3 Given that $a : b = 5:4$ and $a : c = 4:3$

Find the ratio $a : b : c$

Give your answer in its simplest form.

.....
(Total for Question 3 is 2 marks)

4 It takes 5 painters 6 days to complete a job.

Work out how many days it would take 3 painters to complete the same job.

..... days

(Total for Question 4 is 2 marks)

5 Solve the simultaneous equations

$$3x + 5y = -4$$

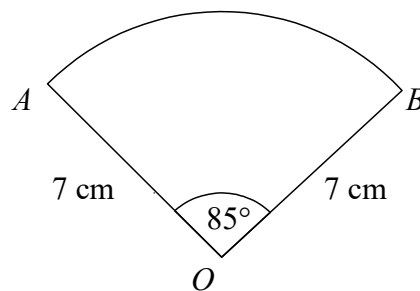
$$3x - 2y = 31$$

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 5 is 3 marks)

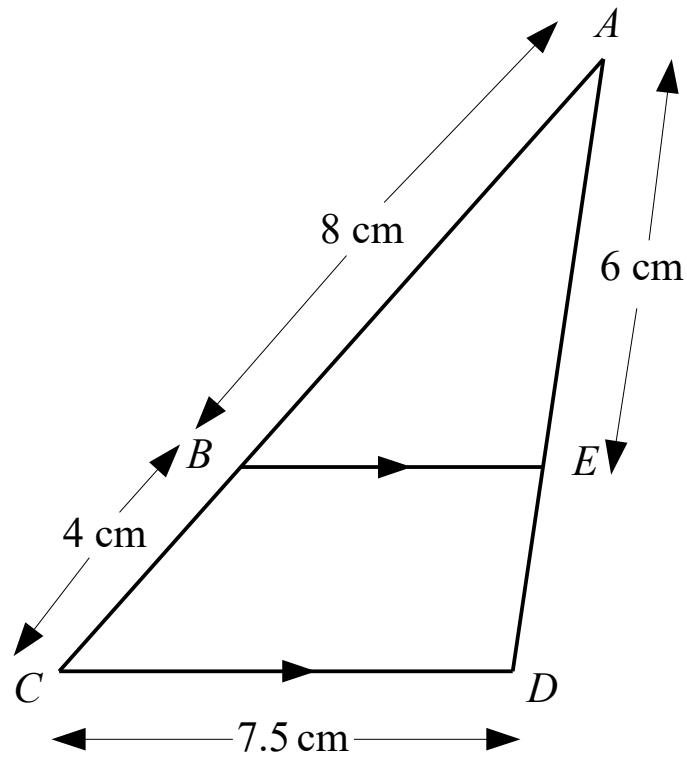
6 AOB is a sector of a circle, centre O and radius 7 cm.
The angle of the sector is 85° .



Find the **perimeter** of the sector.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 6 is 3 marks)



BE is parallel to CD .

$AB = 8$ cm, $BC = 4$ cm, $CD = 7.5$ cm, $AE = 6$ cm.

- (a) Calculate the length of BE .

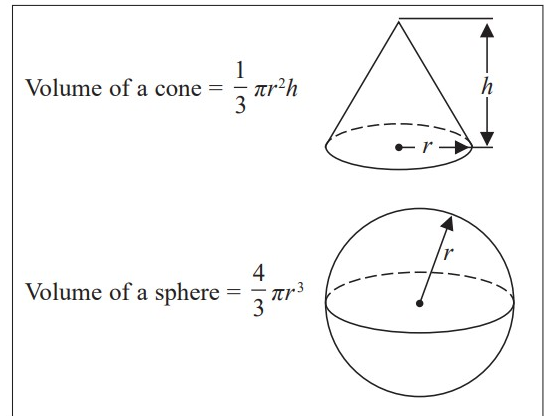
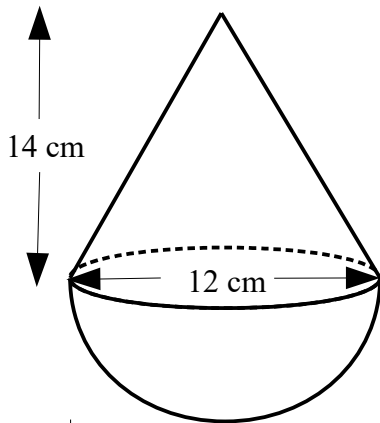
..... cm
(2)

- (b) Calculate the length of ED .

..... cm
(2)

(Total for Question 7 is 4 marks)

- 8 The diagram shows a solid shape.
The shape is a cone on top of a hemisphere.



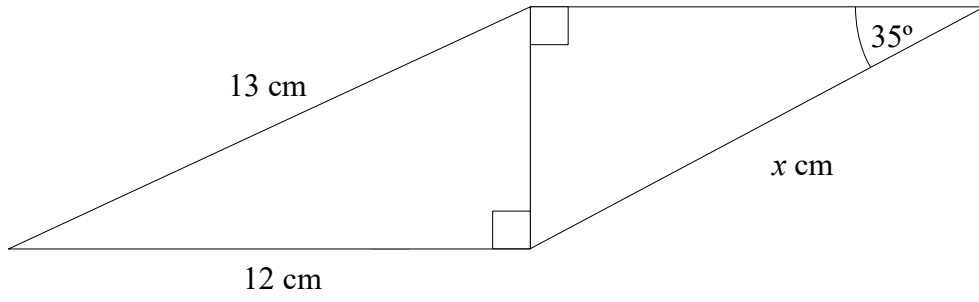
The height of the cone is 14 cm.
The base of the cone has a diameter of 12 cm.
The diameter of the hemisphere is 12 cm.

Work out the total volume of the solid shape.
Give your answer in terms of π .

..... cm³

(Total for Question 8 is 4 marks)

9



Work out the value of x .
Give your answer to 1 decimal place.

.....
(Total for Question 9 is 4 marks)