

Name: \_\_\_\_\_

# Maths Genie Stage 10

## Test D

### 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.*

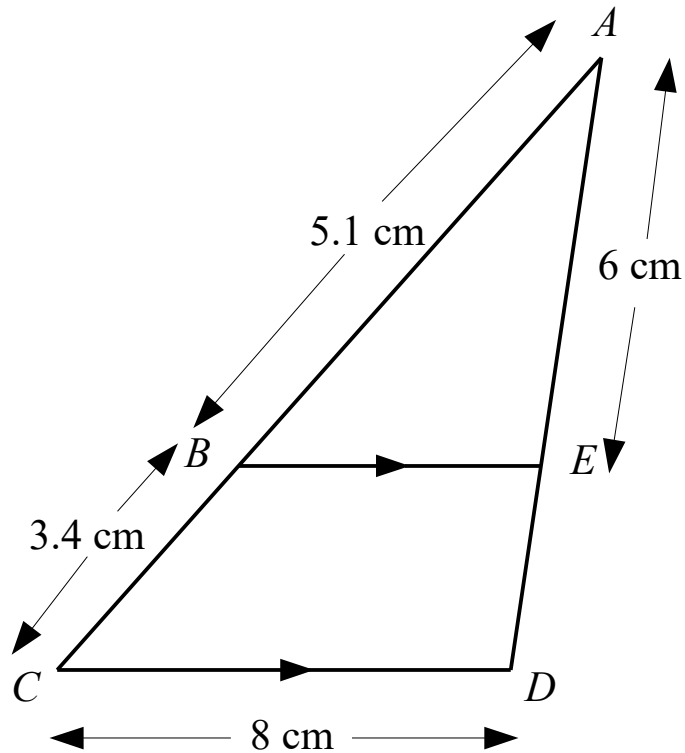
### Advice

- 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  $\cos(60^\circ)$

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

2



$BE$  is parallel to  $CD$ .

$AB = 5.1$  cm,  $BC = 3.4$  cm,  $CD = 8$  cm,  $AE = 6$  cm.

(a) Calculate the length of  $ED$ .

..... cm

(2)

(b) Calculate the length of  $BE$ .

..... cm

(2)

(Total for Question 2 is 4 marks)

- 3 Andy and Bruce share some sweets in the ratio 7:3  
Andy gets  $A$  sweets  
Bruce gets  $B$  sweets

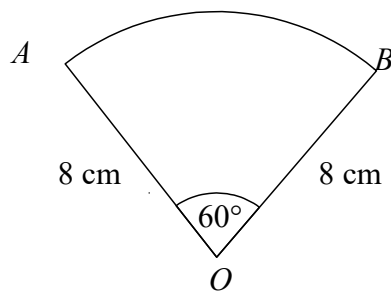
Carla and David share the same amount of sweets as Andy and Bruce.  
They share their sweets in the ratio 5:4.

Carla gets  $C$  sweets  
David gets  $D$  sweets

Find  $A:B:C:D$

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

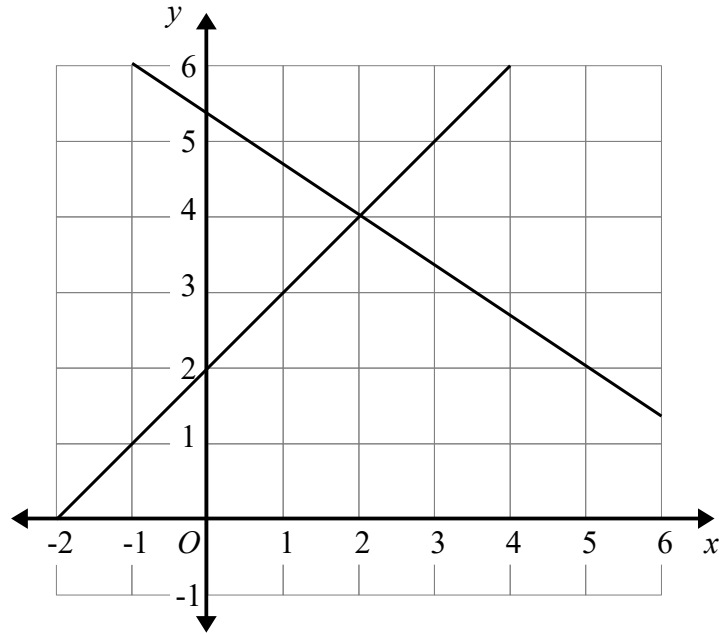
- 4 AOB is a sector of a circle, centre  $O$  and radius 8 cm.  
The angle of the sector is  $60^\circ$ .



Find the length of the arc  $AB$ .  
Give your answer in terms of  $\pi$ .

..... cm  
**(Total for Question 4 is 2 marks)**

- 5 The graphs of the straight lines with equations  $y = x + 2$  and  $2x + 3y = 16$  have been drawn on the grid.



Use the graphs to solve the simultaneous equations

$$\begin{aligned}y &= x + 2 \\ 2x + 3y &= 16\end{aligned}$$

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(Total for Question 5 is 2 marks)

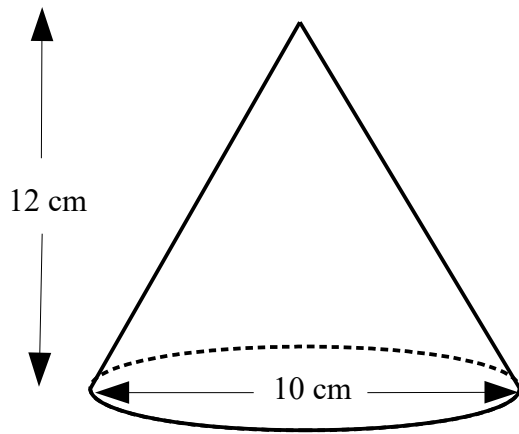
- 6 Solve the simultaneous equations

$$\begin{aligned}3x - 4y &= 24 \\ 7x + 2y &= 39\end{aligned}$$

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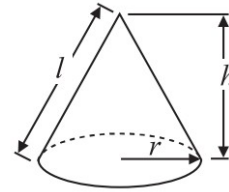
(Total for Question 6 is 3 marks)

7 The diagram shows a solid cone.



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

$$\text{Curved surface area of cone} = \pi r l$$



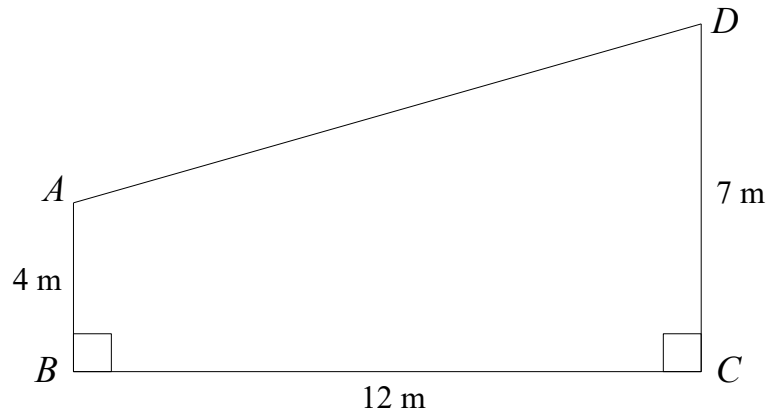
The height of the cone is 12 cm.  
The base of the cone has a diameter of 10 cm.

Work out the total surface area of the cone.  
Give your answer in terms of  $\pi$ .

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(Total for Question 7 is 5 marks)

8



Work out the size of angle  $BAD$ .  
Give your answer to 1 decimal place.

.....°

**(Total for Question 8 is 3 marks)**

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9 It takes 3 builders 8 days to complete a job.

Work out how many days it would take 4 builders to complete the same job.

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**(Total for Question 9 is 2 marks)**

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