

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

# Maths Genie Stage 10

## Test C

### 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.**



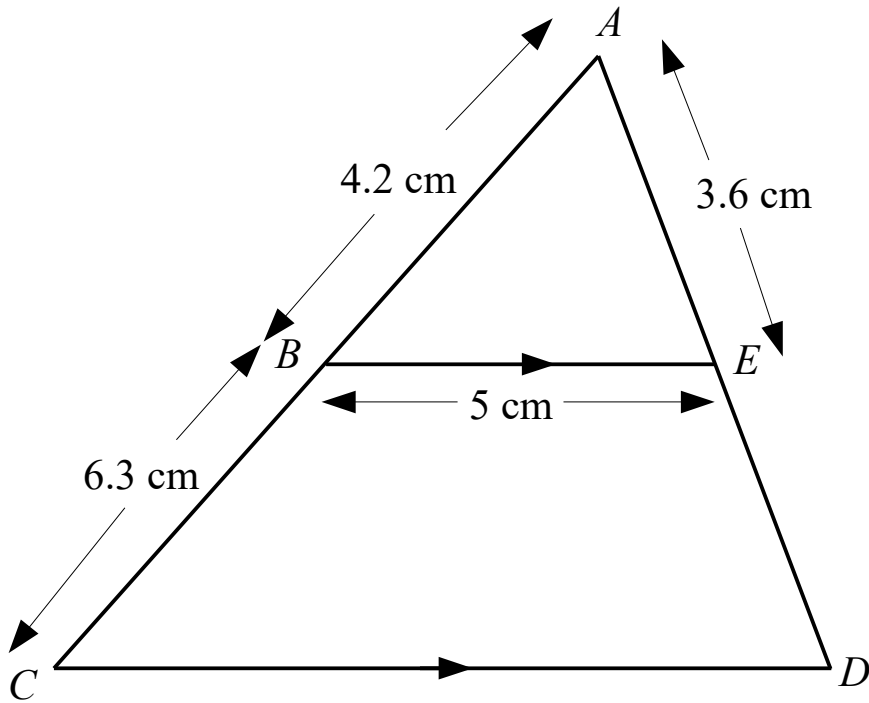
### Information

- 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



*BE* is parallel to *CD*.  
*ABC* and *AED* are straight lines.  
*AB* = 4 cm, *BC* = 6 cm, *BE* = 5 cm, *AE* = 4.8 cm.

(a) Calculate the length of *CD*.

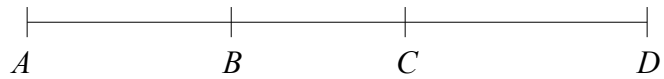
..... cm  
(2)

(b) Calculate the length of *ED*.

..... cm  
(2)

**(Total for Question 1 is 4 marks)**

2 The points  $A$ ,  $B$ ,  $C$  and  $D$  lie in order on a straight line.

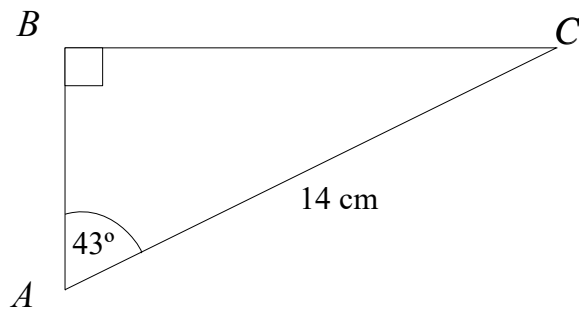


$$AB:BD = 2:3 \quad \text{and} \quad AC:CD = 5:4$$

Find  $AB:BC:CD$

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

3

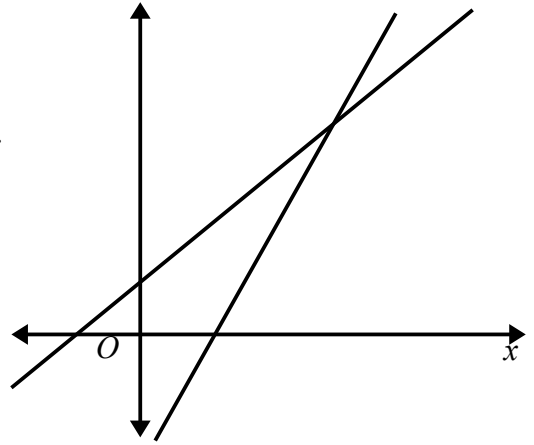


Calculate the length  $AB$ .

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

- 4 The diagram shows two straight lines.  
The equation of the lines are  $y = 2x + 1$  and  $y = 3x - 6$

Work out the coordinates of the point where the line intersect.



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**(Total for Question 4 is 3 marks)**

- 5 Sweets are sold in small packs and in big packs.  
There is a total of 192 sweets in 4 small packs and 3 big packs.  
There is a total of 177 sweets in 5 small packs and 2 big packs.

Work out the number of sweets in each small pack and in each big pack.

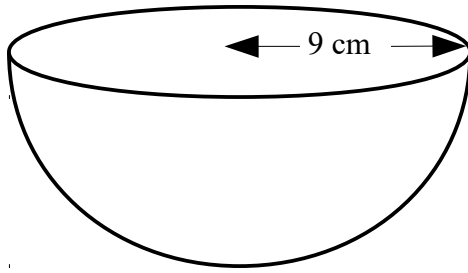
Small Pack .....

Big Pack .....

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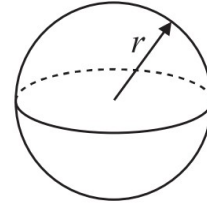
**(Total for Question 5 is 3 marks)**

6 The diagram shows a solid hemisphere with a radius of 9 cm.



$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

$$\text{Surface area of sphere} = 4\pi r^2$$



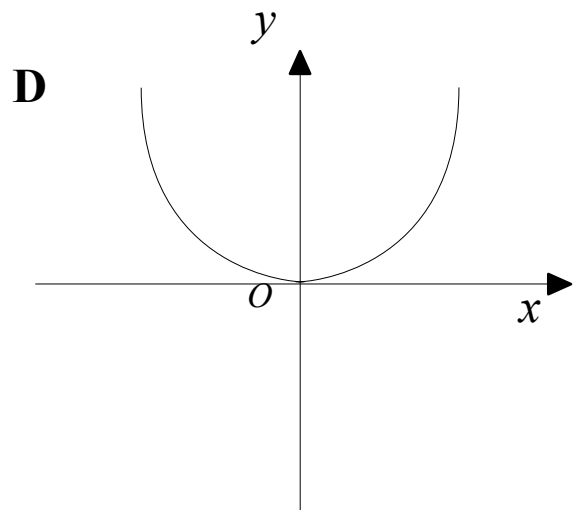
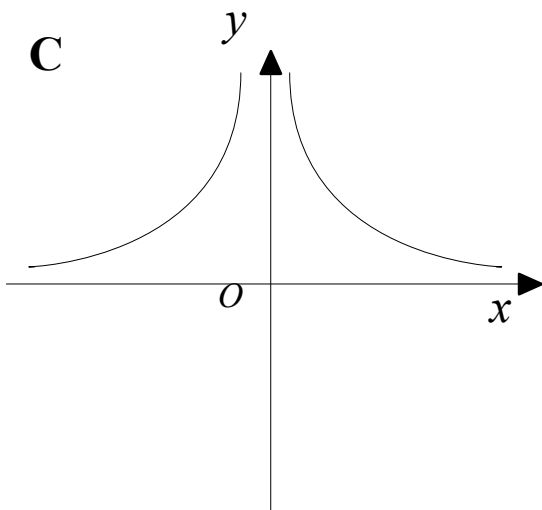
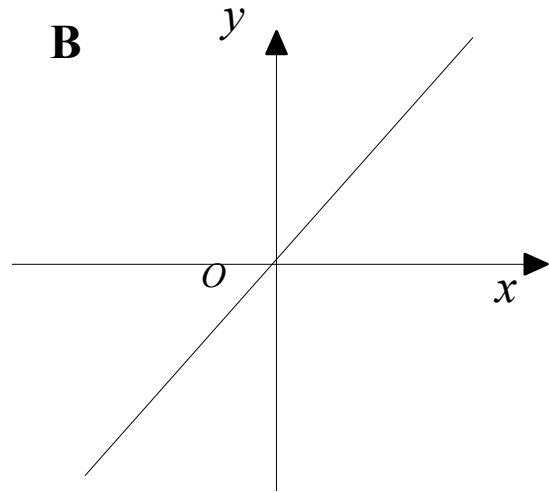
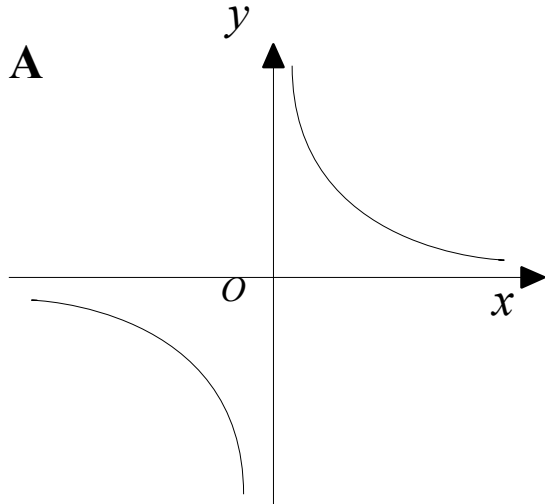
Work out the total surface area of the hemisphere.  
Give your answer in terms of  $\pi$ .

..... cm<sup>2</sup>

**(Total for Question 6 is 3 marks)**

7

Here are four graphs.



Match each graph with a statement in the table below.

Proportionality relationship	Graph letter
$y$ is directly proportional to $x$	
$y$ is inversely proportional to $x$	
$y$ is directly proportional to $x^2$	
$y$ is inversely proportional to $x^2$	

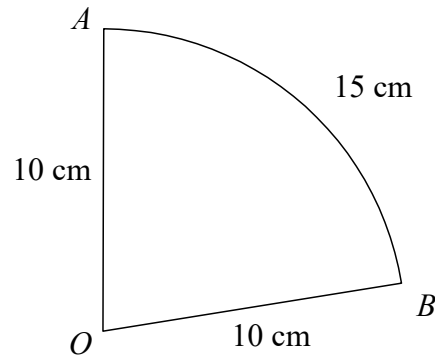
(Total for Question 7 is 2 marks)

8 Write down the exact value of  $\tan(30)$

.....  
(Total for Question 8 is 1 mark)

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9 AOB is a sector of a circle, centre  $O$  and radius 10 cm.  
The length of arc AB is 15 cm.



Find the area of the sector.

.....  $\text{cm}^2$   
(Total for Question 9 is 4 marks)

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