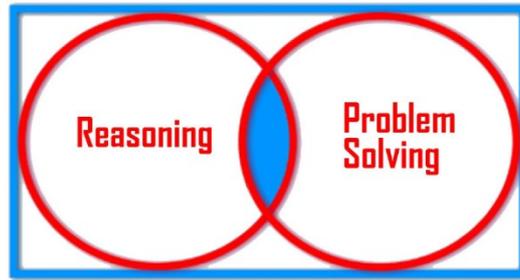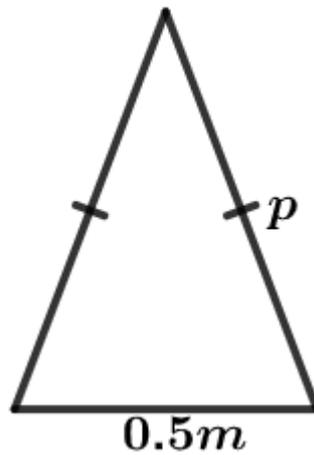# GCSE Foundation (5 – 1)



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## Mathematical Reasoning Questions

## (Area and Perimeter) – Set 1

**The marks shown are for guidance purposes only
[Total marks: 22 Marks]**

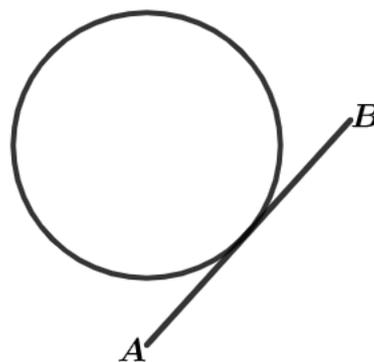| | |
|---|---|
| **1** | An isosceles triangle of base length 0.5 m is shown below |



0.5m

The perimeter of the triangle is 200 cm. How long is the side $p$?
Choose one answer
   a) 1.5 m
   b) 15 cm
   c) 99.75 cm
   d) 0.75 m
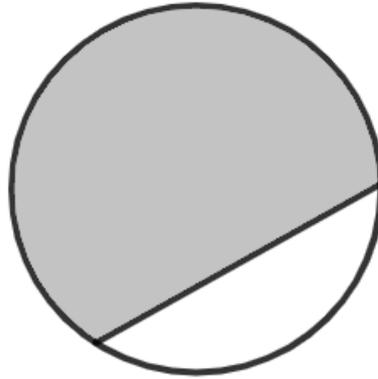
**[2Marks]**

| | |
|---|---|
| **2** | Choose the word which best describes the line AB as shown in the diagram below |



   a) Chord
   b) Tangent
   c) Circumference
   d) Arc

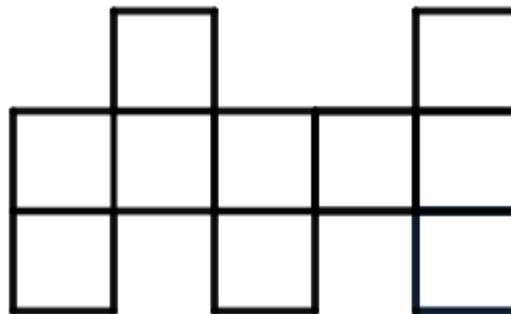**[1Mark]**

| 3 | Choose the word which best describes the shaded area in the diagram below |
|---|---|
| | a) Chord |
| | b) Sector |
| | c) Segment |
| | d) Annulus |
| | **[1Mark]** |
| 4 | 10 congruent squares are used to make the shape below |
| | The shape has an area of 90 cm$^2$ |
| | What is the perimeter of the shape? Choose one answer |
| | a) 90 cm |
| | b) 60 cm |
| | c) 66 cm |
| | d) 120 cm |
| | **[3Marks]** |

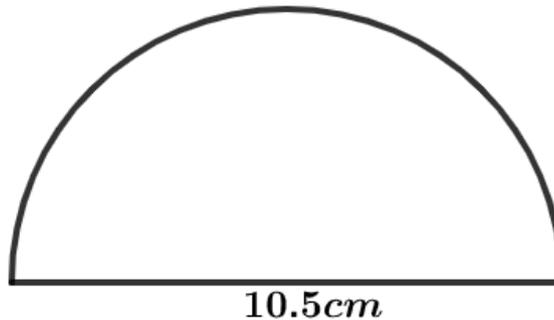| 5 | Five identical equilateral triangles are drawn inside a rectangle as shown below |
|---|---|
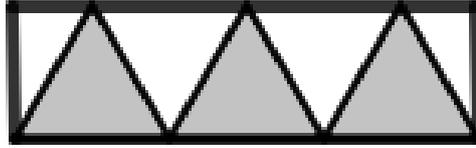


Find the ratio of the shaded area to the unshaded area in the rectangle?   Make your choice

   a) $3:2$

   b) $1:1$

   c) $5:3$

   d) $2:3$

**[2Marks]**
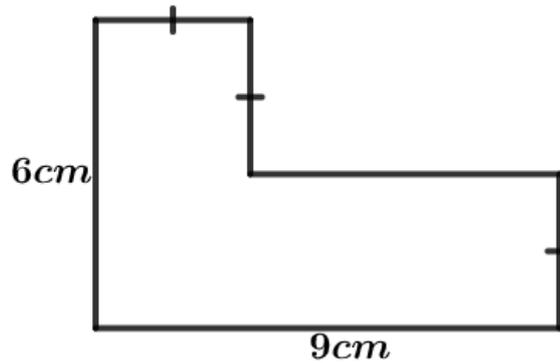
| 6 | A semi-circle of diameter 10.5 cm is given below |
|---|---|



$10.5cm$

Which value is closest to the area of the semi-circle?
Choose one answer

   a) $87$ cm$^2$

   b) $16$ cm$^2$

   c) $43$ cm$^2$

   d) $173$ cm$^2$

**[2Marks]**

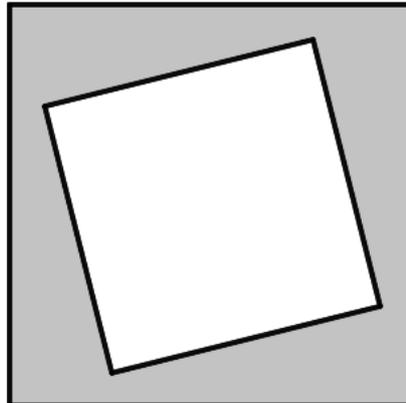| 7 | A composite shape is shown below. |
|---|---|
| |  |
| | 6cm <br> 9cm |
| | By drawing an extra line, two trapezia can be created from the above shape. Use this method to calculate the area of the shape. |
| | **[3Marks]** |
| 8 | A smaller square lie inside a larger square. <br> The perimeter of the larger square is 48 cm. <br> The perimeter of the smaller square is 25% less than the perimeter of the larger square. |
| |  |
| | What is the size of the shaded area? Choose one answer <br>    a) 28 cm$^2$ <br>    b) 63 cm$^2$ <br>    c) 135 cm$^2$ <br>    d) 140 cm$^2$ |
| | **[3Marks]** |

**9** A semi-circle is drawn to one end of a rectangle to form the shape shown below.
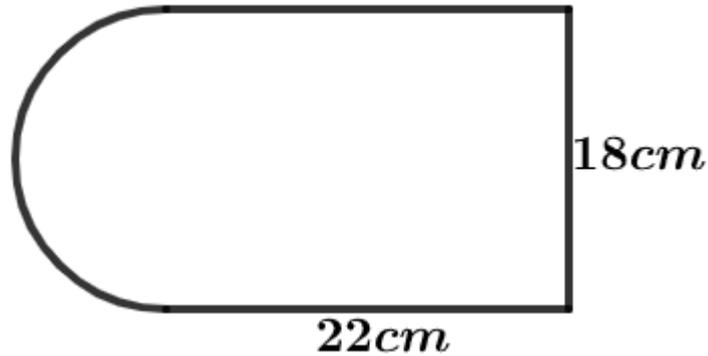


Calculate the area of the shape in terms of pi

**<u>Freddie's Answer:</u>**
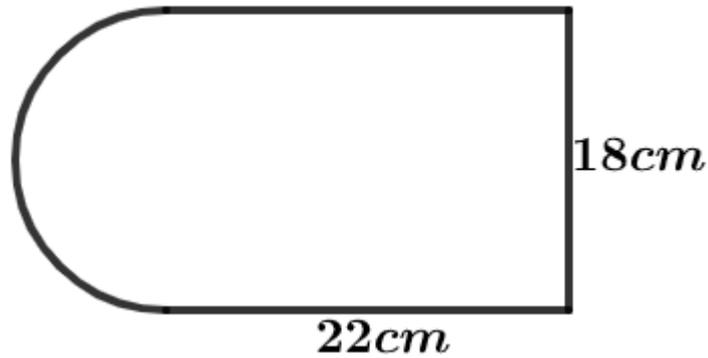Area of the rectangular part: $22 \times 18 = 396$
Area of the semi-circular part: $18^2 \times \pi = 324\pi$
Total area $= 396 + 324\pi = 720\pi$
Freddie has made two mistakes. Identify the mistakes and give the correct answer.

**[4Marks]**

**10** A semi-circle is drawn to one end of a rectangle to form the shape shown below.



Calculate the perimeter of the shape to 2 significant figures

**Marie's Answer**

Perimeter of the rectangular part: $22 + 18 + 22 = 62$ cm
Perimeter of the semi-circular part: $18 \times \pi \div 2 = 9\pi$
Total perimeter of the shape: $62 + 9\pi = 90.3$ cm(2sf)
Identify and rectify the one mistake Marie made?

**[1Mark]**