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|  | | NAME: | | | |
| | | Gr 9 | | Date: | |
| CAPS Reference | 4-1 Area and Perimeter of 2D shapes | | | | |
| Topic | 4-1-8 Using Area and Perimeter | | | | |

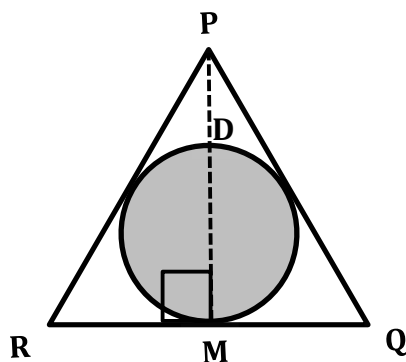


1. Think First! [15 mins]

- 1.1. If you want to use your Maths knowledge and skills in everyday situations successfully, you will need a strategy (plan) for doing this.
- 1.1.1 What do you find most difficult when trying to solve a maths problem?
Make a list of things you could do to help yourself.
- 1.1.2 Compare your list with that of a classmate.
- 1.2 Here is a list of ideas that you could use to help yourself when solving a problem.
- 1.2.1 Draw a star next to the one you think is the most important.
- 1.2.2 Number the list in the order of priority.

| Idea | Priority |
|--|----------|
| If there is no diagram, draw one. | |
| Make sure you give the required answer. | |
| Read the information carefully. | |
| Write down what you are required to find or calculate. | |
| If there is a diagram fill in all the measurements or information you are given. | |
| Write down all the steps you need to take in order to solve the problem. | |
| Start to work through the problem step by step. | |
| Underline or highlight pieces of information in the problem. | |

1.3 Try your strategy on the following problem:



PQR is an equilateral triangle.

M is the mid point of RQ.

PD = 5 cm DM = 20 cm.

Calculate the area of the white part of the triangle correct to 2 decimal places.

Hint: Let MQ = x

Area of white part = Area of Δ - Area of \odot



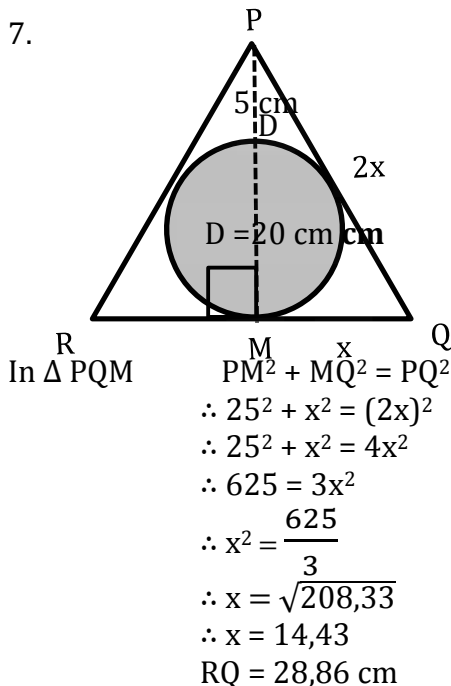
2. Got it? [10 mins]

Here is a suggested order in which to follow the problem-solving ideas. You may have others you want to add to this list.

| Idea | Priority |
|--|----------|
| Read the information carefully. | 1 |
| Underline or highlight pieces of information in the problem. | 2 |
| If there is no diagram, draw one. | 3 |
| If there is a diagram fill in all the measurements or information you are given. | 4 |
| Write down what you are required to find or calculate. | 5 |
| Write down all the steps you need to take in order to solve the problem. | 6 |
| Start to work through the problem step by step. | 7 |
| Make sure you give the required answer. | 8 |

Solving the given problem using these ideas:

- 1. Read the question**
- 2. Underline or highlight the given information.**
4. If $MQ = x$ then $PQ = 2x$
5. Area of white part of Δ
6. First calculate the length of MQ (Use Pythagoras)
Calculate the length of MQ
Then Calculate the area of the Δ
Calculate the area of the \odot .
Subtract the area of the \odot from the area of the Δ .



PQR is an equilateral triangle.

M is the mid point of RQ .

$PD = 25 \text{ cm}$ $DM = 20 \text{ cm}$.

Calculate the area of the white part of the triangle correct to 2 decimal places. Use 3.14 for π .

Hint: Let $MQ = x$

$$\begin{aligned} \text{Area of } \Delta PQR &= \frac{1}{2} (\text{base} \times \perp \text{ ht}) \\ &= (28,86 \times 25) = 360,75 \text{ cm}^2 \end{aligned}$$

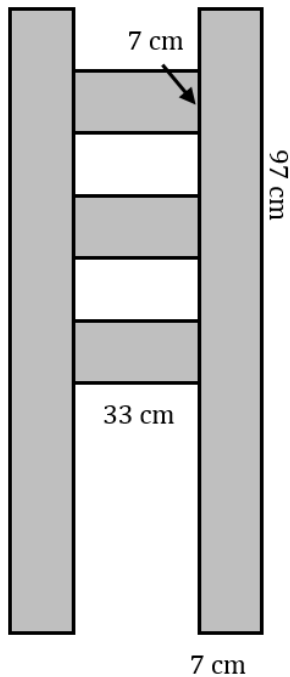
$$\begin{aligned} \text{Area of Circle} &= \pi \times r^2 \\ &= 3,14 \times 10^2 \\ &= 314 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Area of white part} &= \text{Area of } \Delta - \text{Area of } \odot \\ &= 360,75 - 314 = 46,75 \text{ cm}^2 \\ &= 46,8 \text{ cm}^2 \end{aligned}$$

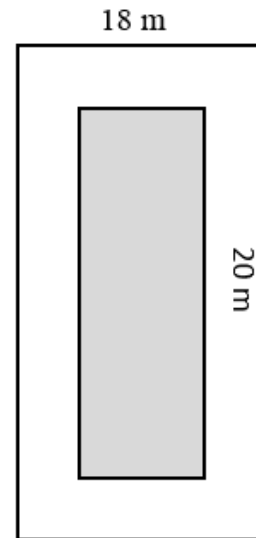


3. Go ahead! [50 mins]

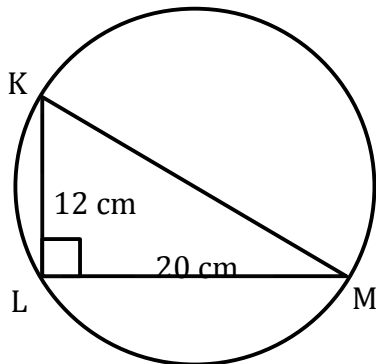
3.1 Calculate the area of the back of this chair.



3.2 Here is a lawn with a path 1 m wide going round it. Calculate the perimeter of both sides of the path and the area of the path.



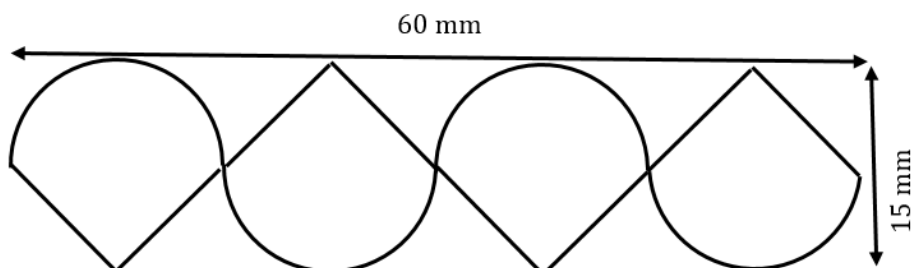
3.3 $\triangle KLM$ is a right angled triangle inside a circle. KM is the diameter of the circle.



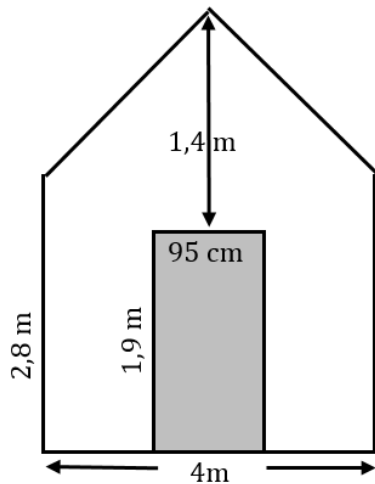
3.3.1 Calculate the area of the circle

3.3.2 Which has the longest perimeter; the circle or the triangle?

3.4 Here is a diagram of a gold brooch Franz is making. The height of the triangle is the same as the radius of the circle. What is the area of the brooch?



3.5 Tom wants to repaint the front of a shed.



- 3.5.1 Calculate the area of the wall which he will paint.
- 3.5.2 How much will it cost if 1 litre of paint covers 3 m² and the paint costs R53.00 per litre. Tom paints the door a different colour.
- 3.5.3 How much paint will be needed for the door if the paint is sold by the litre and he gives the door 2 coats of paint.
- 3.6 Duncan makes a kite with diagonals which measure 48 cm and 36 cm. Marion boasts that she will make a kite that is twice the size. She makes her kite 72cm by 48cm. Is her kite twice the size of Duncan's? Show all your working.
- 3.7 In this problem, give your answers correct to 1 decimal place.
A Builder designs a water feature for a large garden.
It consists of 3 square ponds. A, B and C. The area of pond A is to be 64m².
The areas of the three ponds is in the ratio:
A:B:C = 4:2:1 .
- 3.7.1 What is the length of one side of the pond A?
- 3.7.2 Use the area of pond A to calculate the areas of ponds B and C.
- 3.7.3 Use the areas of the ponds to calculate the length of each side of ponds B and C.
- 3.7.4 Calculate the cost of laying edging stone round the three ponds if the stone costs R47.00 per metre.



4. **Check your work! [15 mins]**