

Year 9 Term 2 Homework

Student Name: _____	Grade: _____
Date: _____	Score: _____

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3 Year 9 Term 2 Week 3 Homework

3.1 Measurement

3.1.1 Length, mass, capacity and time

Exercise 3.1.1

1. The capacity of a tank 60 cm long and 40 cm wide is 120 litres. What is the height of the water level when it is half full?

2. David went to sleep at 10:35 p.m. and woke up at 6:48 a.m. in the morning. How long did he sleep for?

3. A box has an internal volume of 528 cm^3 . Packing material with a volume of 185 cm^3 is placed all around a metal cube in the box without leaving any space. What is the length of each side of the metal cube?

4. During the Healthy Lifestyle week, John jogged a distance of 15 km at 20 km/h. Then he rested $\frac{1}{5}$ of a hour before he jogged another distance of 10 km at 15 km/h. How much time did he take to complete the jogging?

5. A rectangular water container was filled with 4500 cm^3 of water to a level of 8 cm. Fifteen similar marbles were put into the tank and the water level rose by 2 cm. Find the volume of each marble.

3.1.2 Accuracy and precision

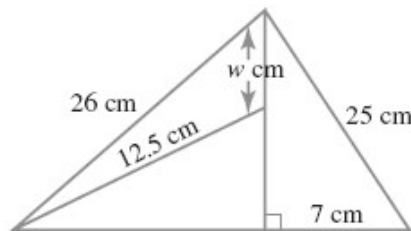
Exercise 3.1.2 State the limits between which each measurement lies.

1. 180.5 cm _____
2. 39.9 kg _____
3. 0.15 kHz _____
4. 10.08 L _____
5. 12.5 m _____

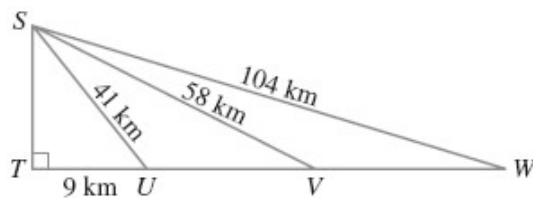
3.1.3 Pythagoras' theorem

Exercise 3.1.3 Find the pronumeral of each figure shown below:

1. Find the value of w .



2. Find the length of VW .



3.1.4 Perimeter

To find the perimeter of general figures:

- find the lengths of any unknown sides
- add the lengths of all sides that form part of the boundary.

Exercise 3.1.4 Consolidation

1. *A regular dodecagon has a perimeter of 210 cm. Find its side length.*

2. *An isosceles triangle has a base length of 12.6 cm and a perimeter of 45.8 cm. What length are the equal sides?*

3. *A parallelogram has a perimeter of 86 cm and the longer parallel sides each has a length of 32 cm. How long are the shorter sides?*

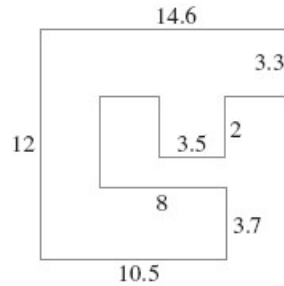
4. *Find the side length of a square whose perimeter is equal to that of an equilateral triangle with sides of 16 cm.*

5. *Find the width of a rectangle whose length is 12.8 cm and perimeter is the same as that of a regular hexagon of side length 8 cm.*

6. *Find the perimeter of a rhombus whose sides are the same length as those of a regular heptagon whose perimeter is 56 cm.*

Exercise 3.1.5 Calculate the total perimeter of each figure. All angles are right angles and all measurements are in cm.

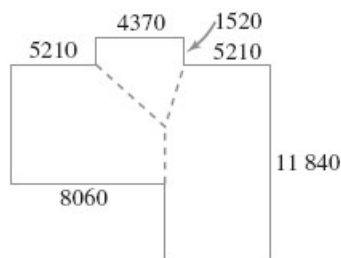
1. *perimeter* = _____



2. *perimeter* = _____



Exercise 3.1.6 Find the cost to replace the guttering around the roof of this house at \$48.25 per metre. All measurements are in millimetres.

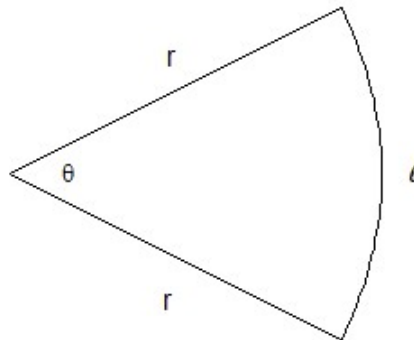


3.1.5 Circumference and the length of arc

Circumference is the perimeter of a closed curve. The circumference of a circle with diameter **d** unit or radius **r** units is given by:

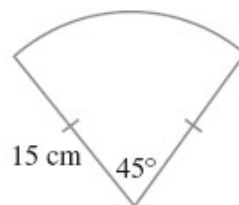
$$C = \pi d \quad \text{or} \quad C = 2\pi r$$

The length of an arc with subtends an angle θ at the centre of a sector is given by:



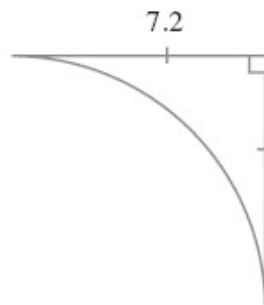
$$l = 2\pi r \times \frac{\theta}{360}$$

Example 3.1.1 Find the total perimeter of each figure, correct to 1 decimal place.



Solution: $l = 2\pi r \times \frac{\theta}{360} = 2 \times 3.14 \times 15 \times \frac{45}{360} = 11.8 \text{ cm.}$

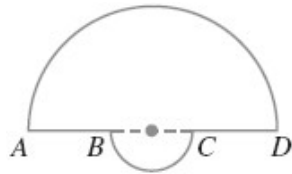
$$P = 11.8 + 2 \times 15 = 41.8 \text{ cm.}$$



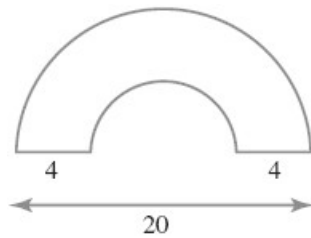
Solution: $P = \frac{1}{4} \times (2\pi r) + 7.2 \times 2$
 $= \frac{1}{4} \times (2 \times 3.14 \times 7.2) + 14.4 = 37 \text{ cm}$

Exercise 3.1.7 Find the total perimeter of each figure, correct to 1 decimal place.

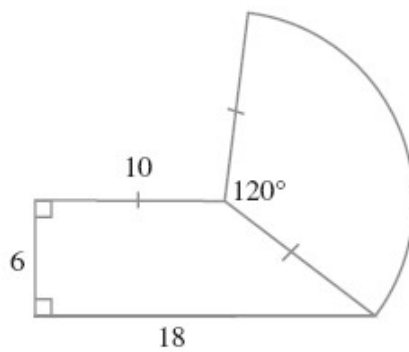
1. If $AB = BC = CD$ and $AD = 18$ cm, find the total perimeter.



2. All the measurements are in cm, find the total perimeter.



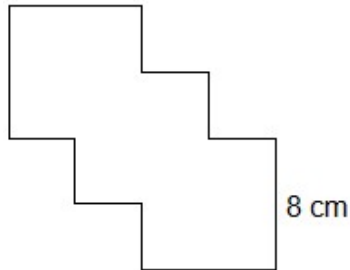
3. All the measurements are in cm, find the total perimeter, correct to 1 decimal place.



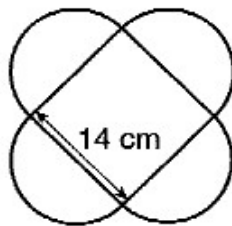
3.2 Miscellaneous Exercises

Exercise 3.2.1

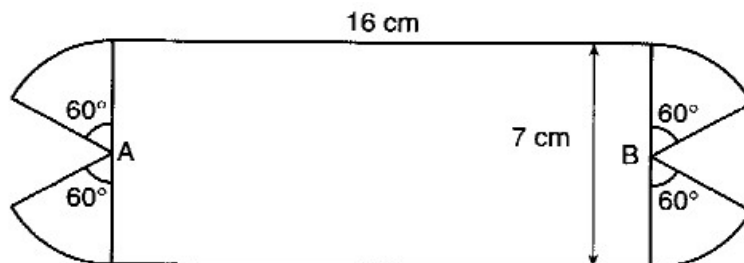
- The figure is formed by placing the corner of each square at the centre of another identical square. Find the total perimeter.



- The figure is made up of a square and four semi-circles. Find its total perimeter.



- The figure shown below is made up of a rectangle and 4 parts of a circle. A and B are the centres of a circle. Find the total perimeter, correct to 2 decimal places.

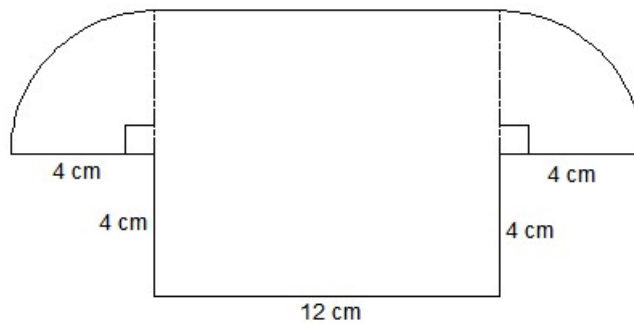


Exercise 3.2.2 Convert the following to the units indicated:

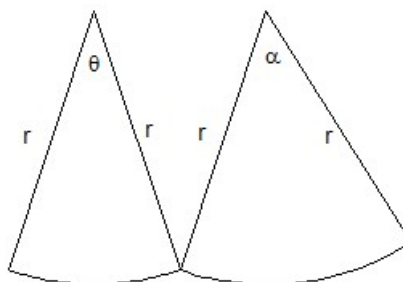
1. 1459 m to _____ km
2. 12.8 L to _____ ml
3. 210 min to _____ h
4. 38 min to _____ sec
5. 280 ml to _____ kL
6. 12050 kg to _____ t
7. 102 mm to _____ m
8. 25 ha to _____ m²
9. 208 cm³ to _____ L

Exercise 3.2.3 Find the perimeter of the each figure, correct to 1 decimal place:

1. $P =$ _____



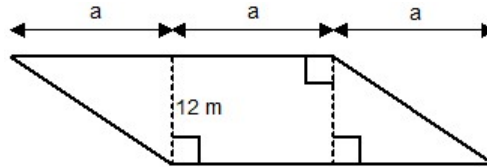
2. If $r = 10$ cm, $\theta = 30^\circ$ and $\alpha = 35^\circ$, find $P =$ _____



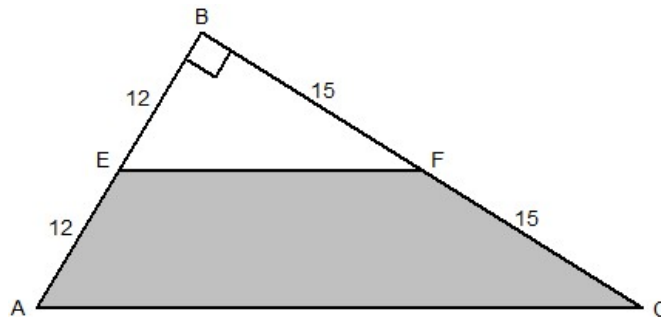
3.3 Math challenge

Exercise 3.3.1

1. The dimensions of the figure are as show, with all lengths in metres. The area of the figures is 312 m^2 . Find the value of a .



2. $\triangle ABC$ is a right-angled triangle. Find the shaded area of the triangle. All the measurements are in cm.



3. A 50 m by 20 m swimming pool has a 2 m wide path around it (the outer border of the path is always 2 m from the nearest part of the pool). Find the area of the path, in square metres in terms of π .
