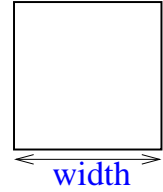


Area & Perimeter

i. Calculate the area and perimeter of a square with the following dimensions:

- Width = 20cm



Solution: First, we'll calculate the perimeter of the square. We remember, for a square, the perimeter is given by:

$$\text{Perimeter} = 4 \times \text{width}$$

So, in our case:

$$\text{Perimeter} = 4 \times 20 = 80 \text{ cm}$$

Secondly, we now want to calculate the area. We have that the area of a square is given by:

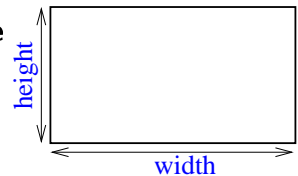
$$\text{Area} = \text{width} \times \text{width} = \text{width}^2$$

So, in our case:

$$\text{Area} = 20 \times 20 = 400 \text{ cm}^2$$

ii. Calculate the area and perimeter of a rectangle with the following dimensions:

- Width = 15cm, height = 8cm



Solution: First, we'll calculate the perimeter of the rectangle. We remember, for a rectangle, the perimeter is given by:

$$\text{Perimeter} = (2 \times \text{width}) + (2 \times \text{height})$$

So, in our case:

$$\text{Perimeter} = (2 \times 15) + (2 \times 8) = 30 + 16 = 46 \text{ cm}$$

Secondly, we want to calculate the area. We have that the area of a rectangle is given by:

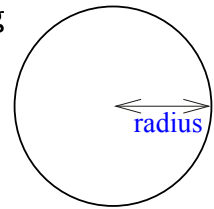
$$\text{Area} = \text{width} \times \text{height}$$

So, in our case:

$$\text{Area} = 15 \times 8 = 120 \text{ cm}^2$$

iii. Calculate the circumference and area of a circle with the following dimensions. Leave your answers in terms of π .

- Radius = 14cm
- Diameter = 9m



Solution:

- Radius = 14cm

We remember the equations for the circumference and area of a circle:

$$\text{Circumference} = 2 \times \pi \times \text{radius}$$

$$\text{Area} = \pi \times \text{radius}^2$$

So, in our case:

$$\text{Circumference} = 2 \times \pi \times 14 = 28\pi \text{ cm}$$

$$\text{Area} = \pi \times 14^2 = 196\pi \text{ cm}^2$$

- Diameter = 9m

We have the equations above for the circumference and area of a circle but they are in terms of a radius. We must convert them first. We remember:

$$\text{diameter} = 2 \times \text{radius}$$

So, we have the equivalent equations in terms of a diameter:

$$\text{Circumference} = \pi \times \text{diameter}$$

$$\text{Area} = \pi \times \left(\frac{\text{diameter}}{2} \right)^2$$

So, in our case:

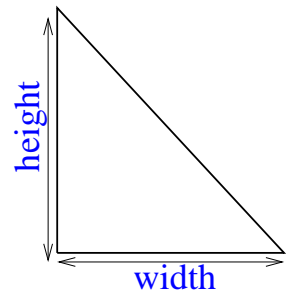
$$\text{Circumference} = \pi \times 9 = 9\pi \text{ m}$$

$$\text{Area} = \pi \times \left(\frac{9}{2} \right)^2 = 20.25\pi \text{ m}^2$$

NOTE: If we have a semi-circle, then the area and circumference can be computed as above, but you must remember to half the result.

iv. Calculate the area of the right angle triangle with the following dimensions:

- Height = 12cm, Width=7cm



Solution: We remember, for a rectangle, the area is given by:

$$\text{Area} = \text{width} \times \text{height}$$

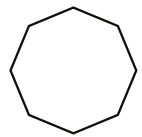
So, in the case of a right-angle triangle, which is a rectangle cut in half diagonally, the area is given by:

$$\text{Area} = \frac{\text{width} \times \text{height}}{2}$$

Hence, for our right angle triangle, we find that:

$$\text{Area} = \frac{7 \times 12}{2} = \frac{84}{2} = 42 \text{ cm}^2$$

v. Calculate the perimeter of a regular octagon with vertices of 5cm



Solution: We remember, for any regular polygon, the perimeter is given by

$$\text{Perimeter} = \text{Length of Vertices} \times \text{Number of Vertices}$$

So, for an octagon, with 8 sides of 5cm each, we obtain:

$$\text{Perimeter} = 5 \times 8 = 40 \text{ cm}$$