Perimeter, Circumference, and Area

Unit 1 Lesson 8

Perimeter, Circumference, and Area

Students will be able to:

find the perimeter, circumference and area of basic shapes and solve problems involving perimeter, circumference and area.

Key Vocabulary

- Perimeter
- Circumference
- Area
- Triangle, Rectangle, Square

Perimeter, Circumference, and Area

The **perimeter** of a shape is the length of the boundary of that. The boundary can be of any shape.

- The perimeter of a square is 4 times the length of the square.

- The perimeter of a rectangle is 2 times the sum of the length and width.

- The perimeter of other basic shapes like triangle, parallelogram etc. is the sum of the lengths of all sides.

Perimeter, Circumference, and Area

Problem 1:

What is the perimeter of:
a) a rectangle whose length is 14cm and width is 11cm.
b) a square whose length is 4cm

a) Perimeter of a rectangle = 2 × (length + width)

   Perimeter = 2 × (14cm + 11cm) = 2 × (25cm) **= 50cm**

b) Perimeter of a square = 4 × (length)

   Perimeter = 4 × (4cm) **= 16cm**
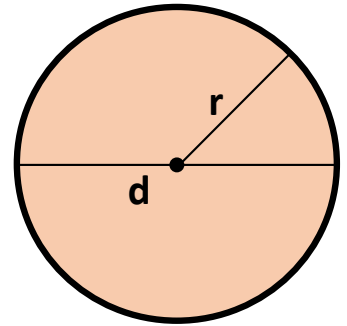
Perimeter, Circumference, and Area

The **circumference** of a shape is the perimeter of a curved shape like a circle or an ellipse.

For a circle with radius **r** and diameter **d**, the circumference is given by:

$$C = \pi d = 2\,\pi r$$

Where,   d = 2r

The circumference is the length of the boundary of a circular shape.

Perimeter, Circumference, and Area
Problem 2:

What is the circumference of:
a) a circle whose radius 2cm.
b) a circle whose diameter is 12cm.

a) Circumference of a circle = $2\pi r$

Circumference = $2\pi r$ **=** $2\pi \times (2cm)$ **= 4π cm**
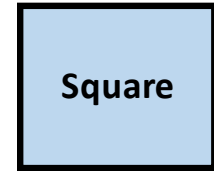
b) Circumference of a circle = πd

Circumference = πd **=** $\pi \times (12cm)$ **= 12π cm**

Perimeter, Circumference, and Area

The **area** of a shape is space occupied by that space within its boundary.

- The **area** of a **square** is the square of its length.

$$\text{Area} = (\text{length})^2$$

- The **area** of a rectangle is the product of its length and width.

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

Square

length

Rectangle width

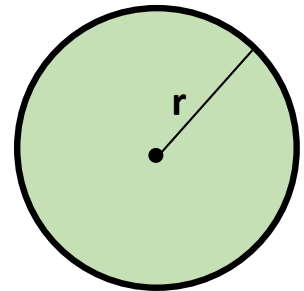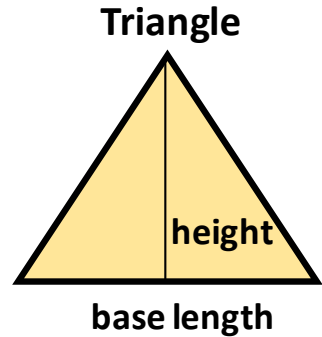length

Perimeter, Circumference, and Area

- The **area** of a **triangle** is half of the product of its base length and its height.

$$\text{Area} = \frac{1}{2} \times \text{base length} \times \text{height}$$

- The **area** of a circle is given by:

$$\text{Area} = \mathbf{\pi r^2}$$

Where r = radius of the circle

Triangle

height

base length

Circle

r

Perimeter, Circumference, and Area
Problem 3:

What is the area of:
a) a circle whose radius 5cm.
b) a rectangle whose length is 12cm and width is 14cm.

a) Area a circle = πr^2

$$\text{Area} = \pi r^2 = \pi(5\text{cm})^2 = \mathbf{25\pi \ cm^2}$$

b) Area of a rectangle = length $\times$ width

$$\text{Area} = \text{length} \times \text{width} = 12\text{cm} \times 14\text{cm} = \mathbf{168 \ cm^2}$$