

PERIMETER AND CIRCUMFERENCE

A handout from The Learning Center at Trident Technical College.

A formula is an equation that represents a general relationship between two or more quantities or measurements. Below are some formulas related to simple geometric figures such as rectangles, circles, squares, and triangles.

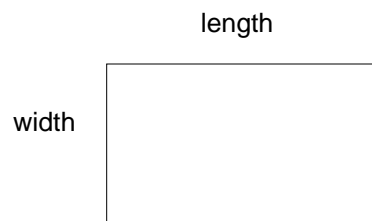
Perimeter

Perimeter of a geometric figure is the total distance around a figure. Perimeters are measured in units of length such as inches, feet, yards, miles, centimeters and meters.

Rectangle

$$\text{Perimeter} = 2 \text{ length} + 2 \text{ width}$$

The perimeter of the rectangle is shown by the sum of two times the length and two times width.



Example 1: Find the perimeter of a rectangle with a length of 15 feet and a width of 6 feet.

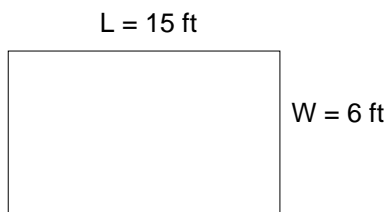
Solution:

$$\text{Perimeter} = 2 \text{ length} + 2 \text{ width}$$

$$P = 2(15 \text{ ft}) + 2(6 \text{ ft})$$

$$P = 30 \text{ ft} + 12 \text{ ft}$$

$$P = 42 \text{ ft}$$

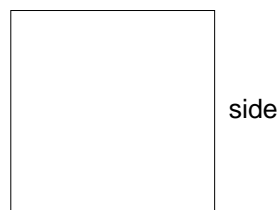


Therefore, the perimeter is 42 ft.

Square

$$\text{Perimeter} = \text{side} + \text{side} + \text{side} + \text{side} = 4s$$

The perimeter of a square is four times the length of one side.



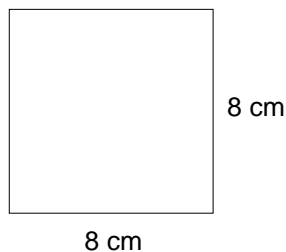
Example 2: Find the perimeter of a square with sides of 8 cm.

Solution:

$$\text{Perimeter} = 4s$$

$$P = 4 (8 \text{ cm})$$

$$P = 32 \text{ cm}$$

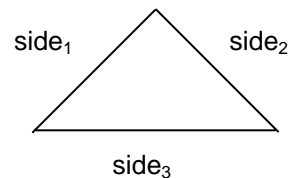


Therefore, the perimeter is 32 cm.

Triangle

$$\text{Perimeter} = \text{side}_1 + \text{side}_2 + \text{side}_3$$

The perimeter of a triangle is the sum of three sides.



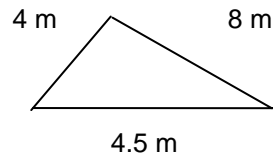
Example 3: Find the perimeter of a triangle with sides as labeled in figure.

Solution:

$$\text{Perimeter} = \text{side}_1 + \text{side}_2 + \text{side}_3$$

$$P = 4 \text{ m} + 8 \text{ m} + 4.5 \text{ m}$$

$$P = 16.5 \text{ m}$$



Therefore, the perimeter is 16.5 m.

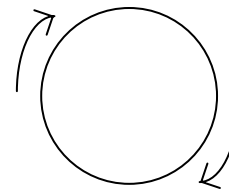
Circle

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

or

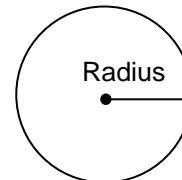
$$\text{Circumference} = \pi \text{ diameter}$$

The distance around the circle is called the circumference.



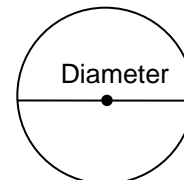
The distance from the center to a point on the circle is called its radius.

$$C = 2\pi r$$



The distance from one point on a circle to another point on the circle measured through its center is called its diameter. The diameter is twice the radius.

$$C = \pi d$$



Pi (π) is the symbol used for the constant 3.1415926535. . . We use $\pi = 3.14$ but this is only an approximation. The value of π can be approximated by a fraction $\frac{22}{7}$ or a decimal 3.14.

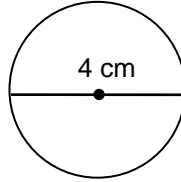
Example 4: Find the circumference of a circle with a diameter of 4 centimeters.

Solution:

Circumference = π diameter

$$C = 3.14 (4 \text{ cm})$$

$$C = 12.56 \text{ cm}$$



Therefore, the circumference is 12.56 cm.

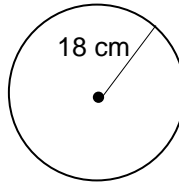
Example 5: Find the circumference of a circle with a radius of 18 cm.

Solution:

Circumference = 2π radius

$$C = 2(3.14)(18 \text{ cm})$$

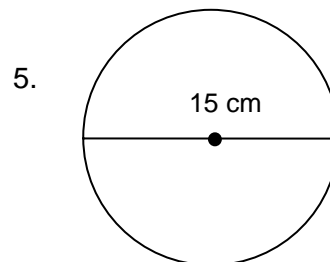
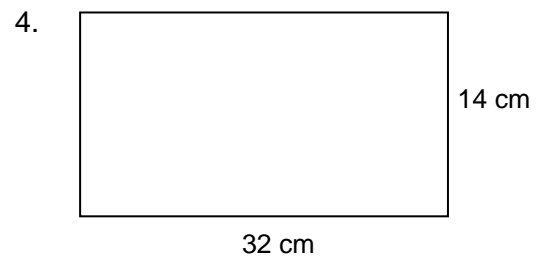
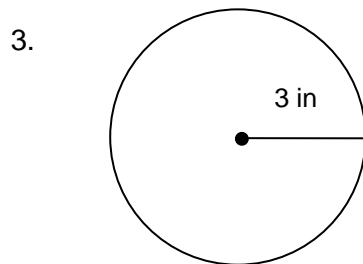
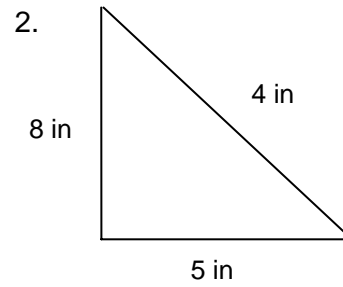
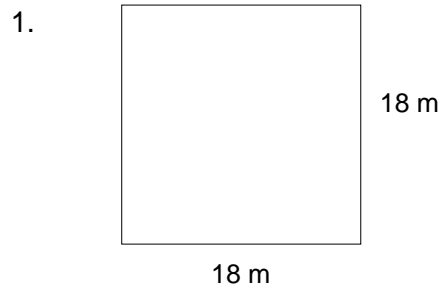
$$C = 113.04 \text{ cm}$$



Therefore, the circumference is 113.04 cm.

PRACTICE:

Find the perimeter or circumference of the given figures.

**Answers:**

(1) 72 m (2) 17 in (3) 18.84 in (4) 92 cm (5) 47.1 cm