

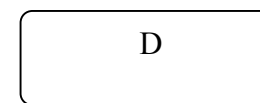
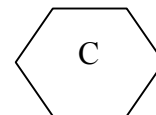
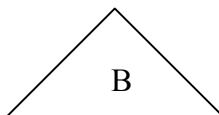
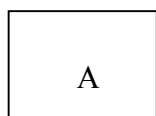
Plane Geometric Figures

Objective A: To find the **Perimeter** of plane geometric figures

Definition:

Polygon: A closed figure determined by three or more **line segments**.
The **line segments** that form the **Polygon** are called **sides**.

Examples:



Regular Polygon: is one in which each side has the same length, and each angle has the same measure.

Note:

The name of a polygon is based on the number of its sides.

Examples:

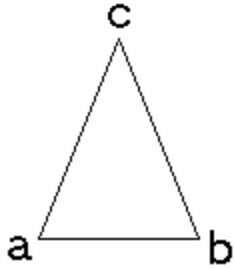
Number of Sides	Name of the Polygon
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
9	Nonagon
10	Decagon

Fact:

Triangles and **Quadrilaterals** are two of the most common types of polygons.

Triangles are distinguished by the **number of equal sides** and also by the **measures of their angles**.

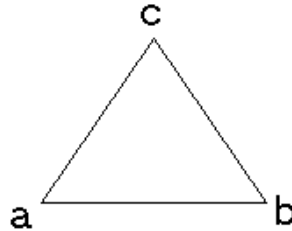
Examples:



An **Isosceles Triangle** has two sides of equal length. The angle opposite the equal sides are of equal measure.

$$AC=BC$$

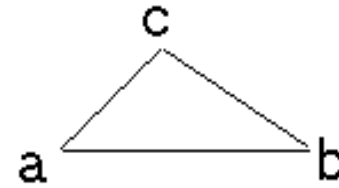
$$\angle A=\angle B$$



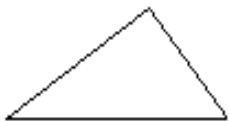
The three sides of an **Equilateral Triangle** are of equal length. The Three angles are of equal measure

$$AB=BC=AC$$

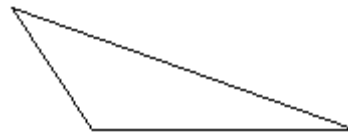
$$\angle A=\angle B=\angle C$$



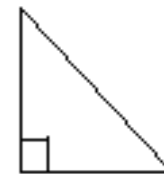
A **Scalene Triangle** has no two sides of equal length. No two angles are of equal measure.



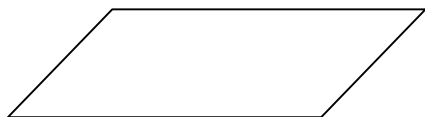
An **Acute Triangle** has three **Acute angles**.



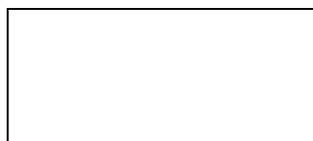
An **Obtuse Triangle** has one **Obtuse Angle**.



A **Right Triangle** has a right angle.

Quadrilateral Examples:**Parallelogram**

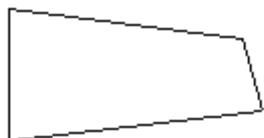
Opposite sides parallel
 Opposite sides equal in length
 Opposite sides equal in measure

Rectangle

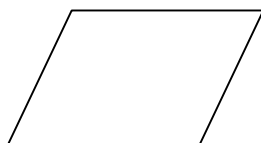
Opposite sides parallel
 Opposite sides equal in length
 All Angles measure 90°
 Diagonals equal in length

Square

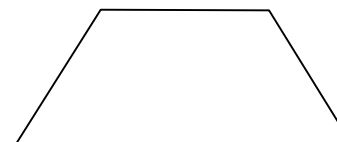
Opposite sides parallel
 All sides equal in length
 All Angles measure 90°
 Diagonals equal in length

Quadrilateral

Four-sided Polygon

Rhombus

Opposite sides parallel
 All sides equal in length
 Opposite angles equal in measure.

Trapazoid

Two-sides parallel

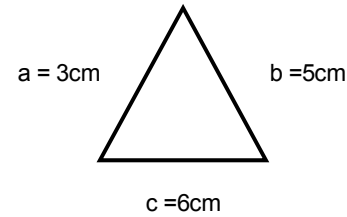
Note:

The **Perimeter** of a plane geometric figure is a **measure of the distance around** the figure.

Perimeter is used in buying fencing for a lawn, or determining how much baseboard is needed for a room.

Perimeter of a Triangle: is the sum of the lengths of the three (3) sides.

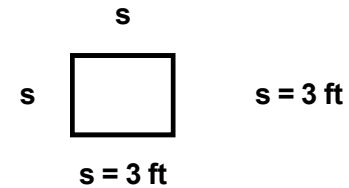
$$\begin{aligned} P &= A + B + C \\ &= 3 \text{ cm} + 5 \text{ cm} + 6 \text{ cm} \\ &= 14 \text{ cm} \end{aligned}$$



The **Perimeter** of this triangle is 14 cm.

Perimeter of a Square: is the sum of the lengths of the four (4) sides.

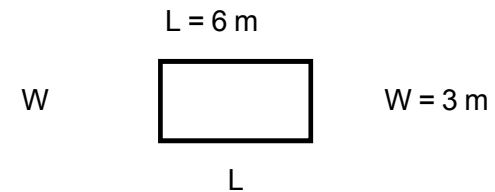
$$\begin{aligned} P &= 4s \\ &= 4(3\text{ft}) \\ &= 12 \text{ Sq. ft.} \end{aligned}$$



The **Perimeter** of this square is 12 Sq. ft.

The **Perimeter** of a quadrilateral is the sum of the lengths of the four (4) sides.

$$\begin{aligned} P &= 2 L + 2 W \\ &= 2(6 \text{ m}) + 2 (3 \text{ M}) \\ &= 12 \text{ m} + 6 \text{ m} \\ &= 18 \text{ m} \end{aligned}$$



The **Perimeter** of this rectangle is 18 meters.

Note:

The distance around a **Circle** is called the **Circumference**.

The **Circumference** of a **Circle** is equal to the **product of Π (PI) and the diameter**.

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

The formula for circumference uses the number Π (PI).

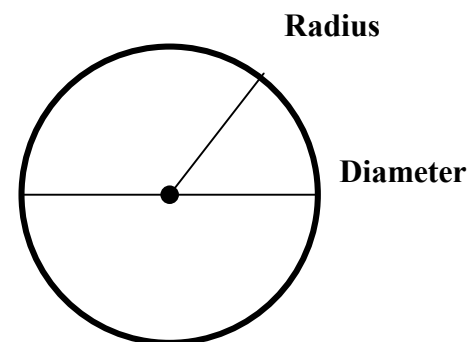
The value of Π (PI) can be approximated by a decimal or a fraction.

$$\Pi \approx 3.14 \quad \text{or} \quad \Pi \approx 22 / 7$$

Example:

$$\begin{aligned} C &= 2\Pi r \quad \text{when } r = 6 \text{ in.} \\ &= 2 * 3.14 * 6 \text{ in.} \\ &= 37.68 \text{ in.} \end{aligned}$$

The circumference of this circle is approximately (\approx) 37.68 inches.

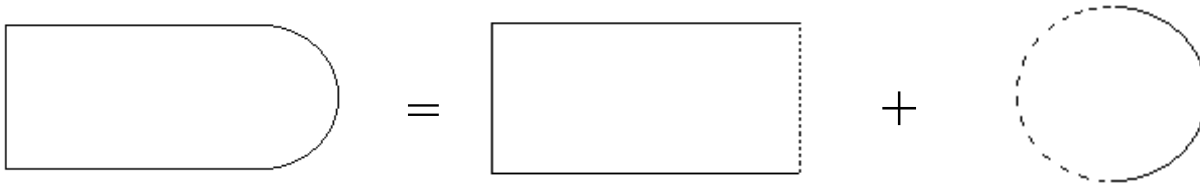


To find the Perimeter of Composite Geometric Figures

Composite Geometric Figures are figures made from two (2) or more geometric figures.

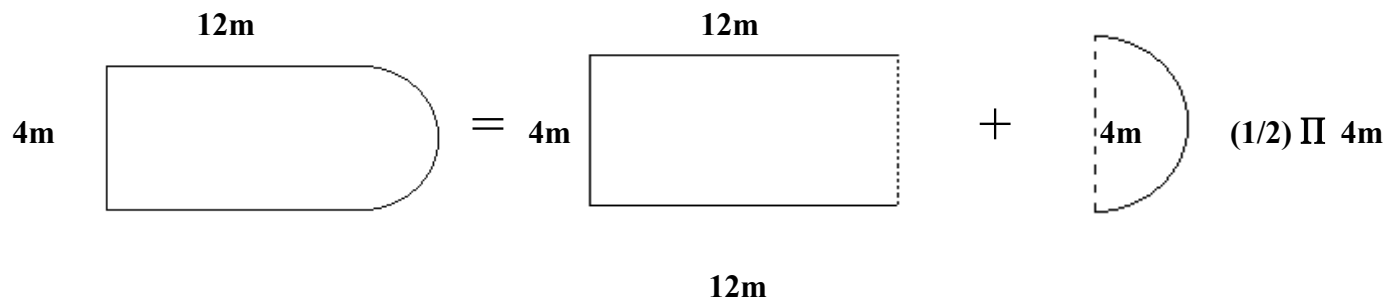
Examples:

The following composite is made from part of a rectangle and part of a circle:



The Perimeter this Composite figure. = 3 sides of a rectangle + (1/2) the circumference of a circle.

$$= 2L + W + (1/2) \Pi d$$



$$\begin{aligned}
 P &= 2L + W + (1/2) \Pi d && \text{when } L = 12m, W = 4m, d = 4m \\
 &= 2(12m) + (4m) + (1/2)(3.14)(4m) \\
 &= 34.28m
 \end{aligned}$$

The **Perimeter** of this Composite figure is approximately 34.28 meters.