Geometry Info Sheet #7

Polygons and Quadrilaterals; Perimeter and Area

Definitions

A **polygon** is a two-dimensional closed plane figure made up of at least three straight line segments (no curves) such that each segment intersects exactly two other segments. The line segments are called the **sides** of the polygon, and the common endpoints of the segments are the **vertices** of the polygon.

A **convex polygon** is one in which no part of any line segment that can connect any two points on the polygon is outside the polygon. In other words, all interior angles are less than 180 degrees.

A **concave polygon** is one that does not fit the definition of a convex polygon. In other words, it has one or more interior reflex angles (greater than 180 degrees). A concave polygon will have at least one "dent" in it (an inward-facing vertex).

Triangle: A three-sided polygon

Quadrilateral: A four-sided polygon

Parallelogram: A quadrilateral with two pairs of parallel sides

Rhombus: A parallelogram with four congruent sides

Rectangle: A quadrilateral with four right angles

Square: A rectangle with four congruent sides

Perimeter: The continuous line forming the boundary of a closed plane figure; in terms of measurement, it is the cumulative distance around the figure; for a polygon, the perimeter is the sum of the lengths of the line segments forming its sides

Area: The space inside the boundary of any closed plane figure; in terms of measurement, it is the number of non-overlapping square units of a given size that will exactly cover the interior of the figure

Formulas

The **area** A of a **triangle** with base b and height h is given by: $A = \frac{1}{2}bh$

The **area** A of a **parallelogram** with base b and height h is given by: $A = bh$