
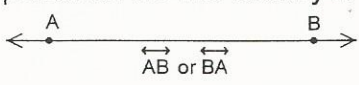

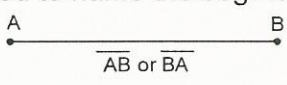
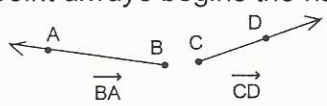
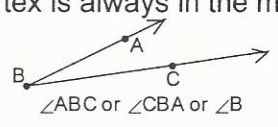
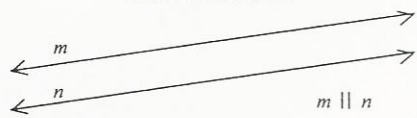
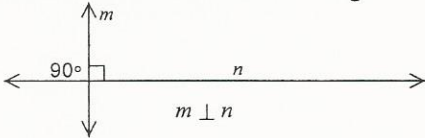
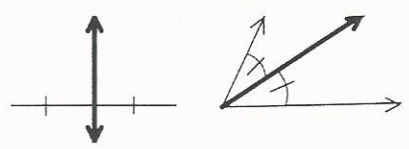


GEOMETRY BASICS

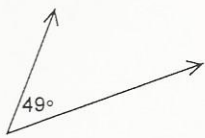
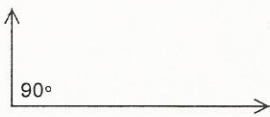
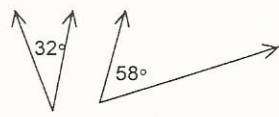
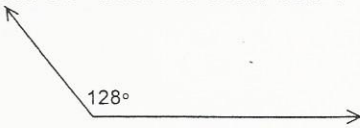
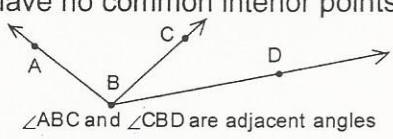
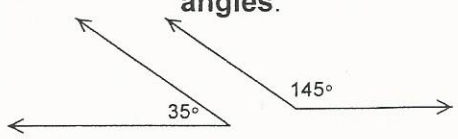
BASIC TERMS

<p>A point has a position or location but no size. It is represented by a dot and named with a capital letter.</p> 	<p>A line is a set of points that forms a straight path extending infinitely in opposite directions. Any two points on the line identify it.</p> 	<p>A plane has infinite length and width but no thickness, for example a wall or whiteboard.</p> 
<p>A segment is the portion of a line bounded by <i>endpoints</i>. They are used to name the segment.</p> 	<p>Beginning at an endpoint, a ray is part of a line and continues indefinitely in one direction. The endpoint <i>always</i> begins the name.</p> 	<p>Two rays beginning at the same endpoint (vertex) form an angle. If three letters are used to name it, the vertex is always in the middle.</p> 

LINES

<p>Parallel lines are two or more lines in the same plane which do not intersect.</p> 	<p>Perpendicular lines are two lines that intersect at a 90° angle.</p> 	<p>A bisector cuts another line or an angle exactly in half.</p> 
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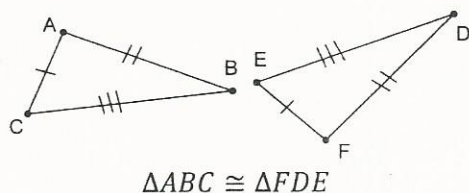
ANGLES

<p>Acute angles measure 90° or less.</p> 	<p>A right angle measures 90°.</p> 	<p>The sum of the measures of two complementary angles is 90°.</p> 
<p>An obtuse angle measures more than 90° but less than 180°.</p> 	<p>Adjacent angles have a common vertex, share a common side but have no common interior points.</p>  <p>$\angle ABC$ and $\angle CBD$ are adjacent angles</p>	<p>Two angles with measures adding to 180° are supplementary angles.</p> 

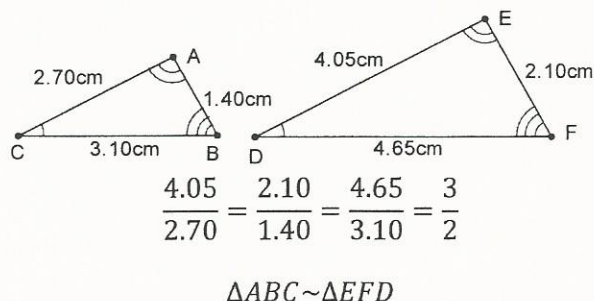
GEOMETRY BASICS (cont.)

CONGRUENCE AND SIMILARITY

Congruent geometric figures have the same shape and size. Congruent segments have the same length. Congruent angles have the same measure. Two polygons are congruent if one can be rotated and/or flipped to sit exactly on top of the other. In a statement, the symbol \cong indicates congruence. On a diagram if two segments or two angles are marked the same then they are congruent.

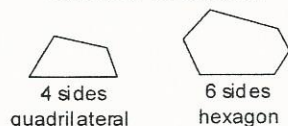


Similar polygons are geometric figures with the same shape but not necessarily the same size. The corresponding angles are congruent and the lengths of their corresponding sides have the same ratio. In a statement, the symbol \sim indicates similarity.

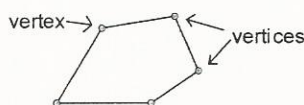


POLYGONS

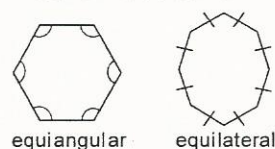
A **polygon** is a closed figure in a plane formed by line segments called sides and named by the number of sides.



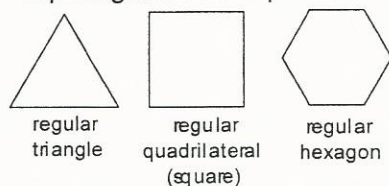
In a polygon, a **vertex** is the point where two sides meet forming an angle. The plural of vertex is **vertices**.



All sides of an **equilateral** polygon have the same length. All angles of an **equiangular** polygon have the same measure.



A **regular polygon** is both equiangular and equilateral.



The formula $180^\circ(n - 2)$ equals the **sum of a polygon's inside angle measures**. n is the number of sides.

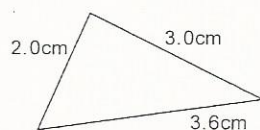
Name	Sides	Sum of the angle measures
Triangle	3	$180^\circ(3-2)=180^\circ$
Pentagon	5	$180^\circ(5-2)=540^\circ$
Heptagon	7	$180^\circ(7-2)=900^\circ$

Sides	Name
3	Triangle
4	Quadrilateral
5	Pentagon
6	Hexagon
7	Heptagon
8	Octagon
10	Decagon
n	n -gon

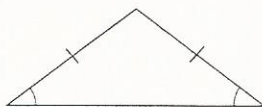
GEOMETRY BASICS (cont.)

TRIANGLES

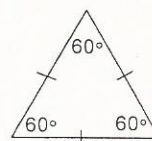
A **scalene triangle** has sides of different lengths.



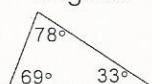
An **isosceles triangle** has two sides of the same length. The angles opposite those two sides have equal measures.



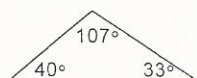
An **equilateral triangle** has all sides of the same length. It is also equiangular.



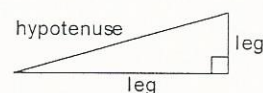
An **acute triangle** has all acute angles.



An **obtuse triangle** has one obtuse angle.



A **right triangle** has one right angle.



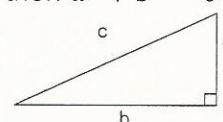
The **altitude** (height) of a triangle extends from a vertex to the opposite side or a line containing the opposite side. Every triangle has three altitudes.



The **median** is a line segment from a vertex to the midpoint of the opposite side. Every triangle has three medians.

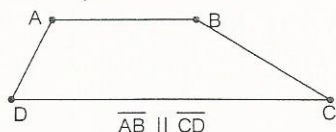


The **Pythagorean Theorem** says in a right triangle, where a and b are the lengths of the two legs, and c is the length of the hypotenuse, then $a^2 + b^2 = c^2$.

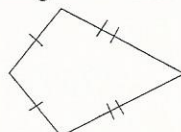


QUADRILATERALS

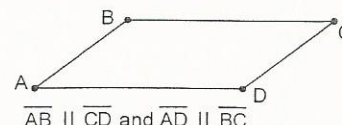
A **trapezoid** has exactly one pair of parallel sides.



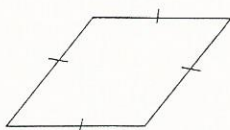
A **kite** has two pairs of consecutive congruent sides.



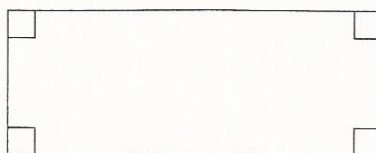
In a **parallelogram**, the opposite sides are parallel.



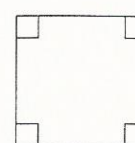
A **rhombus** is a parallelogram with congruent sides.



A **rectangle** is a parallelogram with congruent angles.



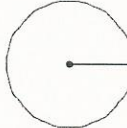
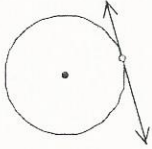
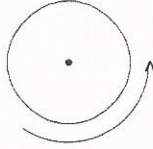




In a **square**, all sides and all angles are congruent. It is both a rectangle and a rhombus.



GEOMETRY BASICS (cont.)

CIRCLES

<p>A chord is a line segment whose endpoints are on a circle.</p> 	<p>The diameter (d) is the largest chord. It goes through the center of the circle.</p> 	<p>The radius (r) is a line segment from the center of the circle to any point on the circle.</p> 
<p>A tangent line intersects a circle at exactly one point.</p> 	<p>The constant, π (pi) is the ratio of the circumference divided by the diameter.</p> $\pi = \frac{C}{d}$	<p>The distance around the outside of a circle is the circumference (C).</p> 
<p>A central angle has its vertex at the center of a circle.</p> 	<p>An arc is a subset of the points forming a circle. More than half the circle is a <i>major arc</i>, less than half a <i>minor arc</i> and exactly half a <i>semicircle</i>.</p> 	<p>Arc length is the fraction of the circle times the circumference. If the central angle is known, the fraction is the central angle measure divided by 360°.</p> <p>Arc Length = Fraction of circle $\times C$</p>