


Unit 7 - Geometric Relations: Definitions / Terminology

Classify triangles using side lengths – scalene, isosceles, equilateral

Classify triangles using angle measures – acute, obtuse, right

Ray: 

Line: 

Line Segment: 

Polygon: A closed figure made up of line segments.

Regular Polygon: A polygon where all the sides and angles are equal.

Similar: Same shape but not necessarily the same size

Congruent: Exactly the same in all respects – same shape, same size

Concave Polygon: A polygon with at least one angle greater than 180°

Convex Polygon: A polygon with all angles less than 180°

Kite: Quadrilateral with two pairs of adjacent sides equal

Rhombus: A parallelogram with all sides equal length

Vertex: The point where two or more sides meet.

Adjacent: Adjoining or next to

Obtuse Angle: An angle between 90° and 180°

Acute Angle: An angle less than 90°

Supplementary: Two angles adding to 180° -- forming a Straight Line or Straight Angle (S.A.)

Complementary: Two angles adding to 90°

Opposite Angle Theorem (OAT): If two lines intersect, the angles opposite each other are equal.

Isosceles Triangle Theorem (ITT): If two sides of a **triangle** are congruent, then the angles opposite those sides are congruent.

Interior Angle: Angle formed on the inside of a polygon by two sides meeting at a vertex.

Exterior Angle: Angle formed on the outside of a geometric shape by extending one of the sides past a vertex (the interior angle and exterior angle at any vertex are supplementary)

Exterior Angle Theorem: The exterior angle at each vertex of a triangle is equal to the sum of the interior angles at the other two vertices. (EAT)

Polygon Exterior Angle Theorem (PEAST): Exterior angles of any polygon add to 360° .

Angle Sum Triangle Theorem (ASTT): Sum of Interior angles of a triangle add to 180° .

Angle Sum Quadrilateral Theorem (ASQT): Sum of interior angles of a quadrilateral add to 360° .

Angle Sum Polygon Theorem (ASPT): Sum of interior angles of a polygon add to $180(n - 2)$ degrees.

Transversal: A line intersecting two parallel lines

Transversal Parallel Line Theorem (TPT)

- Alternate angles are equal (Z pattern) (AA)
- Corresponding angles are equal (F pattern) (CA)
- Co - Interior angles add to 180 degrees (C Pattern) (CIA)

Midpoint: A point that divides a line segment into two equal parts

Right Bisector: A line perpendicular to a line segment passing through its midpoint

Median: The line segment joining the vertex of a triangle to the midpoint of the opposite side.

- A median of a triangle bisects its area.
- A line segment joining the midpoints of two sides of a triangle is called a mid-segment
- A mid-segment of a triangle is parallel to the third side and half as long.
- The height of a triangle with a mid-segment as its base is half the height of the original triangle.
- Joining the midpoints of the sides of any quadrilateral produces a parallelogram
- The diagonals of a parallelogram bisect each other.
- The diagonals of a square are equal length and they bisect each other at right angles.
- The diagonals of a rectangle bisect each other.
- The diagonals of a kite meet at right angles.
- The diagonals of a rhombus bisect each other at right angles.

Definitions not on test:

A **centroid of a triangle** is the point where the three medians of the **triangle** meet. The **centroid** is also called the center of gravity of the **triangle**.

The **circumcenter** is the center of a triangle's circumcircle. It can be found as the intersection of the perpendicular bisectors.

The **Incenter of a triangle** is the point where all three angle bisectors always intersect.

The **orthocenter** is the point where all three altitudes of the **triangle** intersect. An altitude is a line which passes through a vertex of the **triangle** and is perpendicular to the opposite side. There are therefore three altitudes in a **triangle**.