

CA Lesson 3 Notes

******Pythagorean Theorem***: If a triangle is a right triangle, then the square of the hypotenuse is equal to the sum of the squares of the legs.

******Triangle Inequality***: The sum of the lengths of any two sides of a triangle is greater than the length of the third side.

Putting those two statements together we get the ***Pythagorean Inequalities***:

If a triangle is an obtuse triangle, then the square of the longest side is greater than the sum of the squares of the other two sides.

If a triangle is an acute triangle, then the square of the longest side is less than the sum of the squares of the other two sides.

******Similar polygons***

Polygon: a closed plane figure whose sides are line segments which intersect only at their endpoints

Concave polygon: a polygon in which at least one interior angle is greater than 180 degrees (It “caves in”.)

Convex polygon: a polygon in which no interior angle is greater than 180 degrees (It “pokes out”.)

Similar polygons: polygons with the same shape but not necessarily the same size. The corresponding angles are congruent, and the lengths of corresponding sides are proportional.

******Similar triangles:*** triangles with corresponding angles congruent

Triangles are similar if:

AAA \approx : all three angles of one triangle are congruent to the corresponding angles of the other triangle.

AA \approx : two angles of one triangle are congruent to the two corresponding angles of the other triangle.

SSS \approx : corresponding sides of the triangles are proportional

Side-splitter theorem: If a triangle is cut by a segment parallel to one side, then the parts of the sides intersected by the line segment are proportional.

Altitude to the Hypotenuse theorem: If an altitude is drawn to the hypotenuse of a right triangle, then