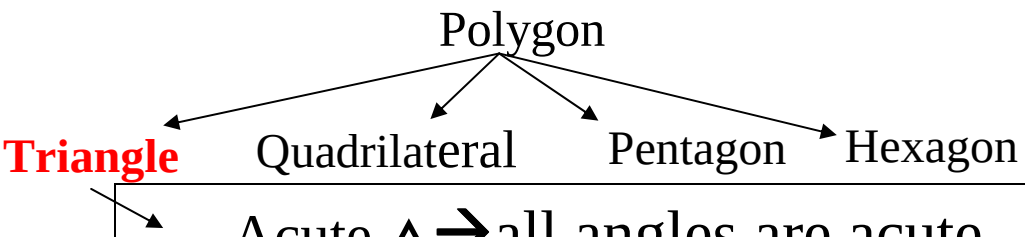
Geometry—Chapter 4

Geometry—Chapter 4-1

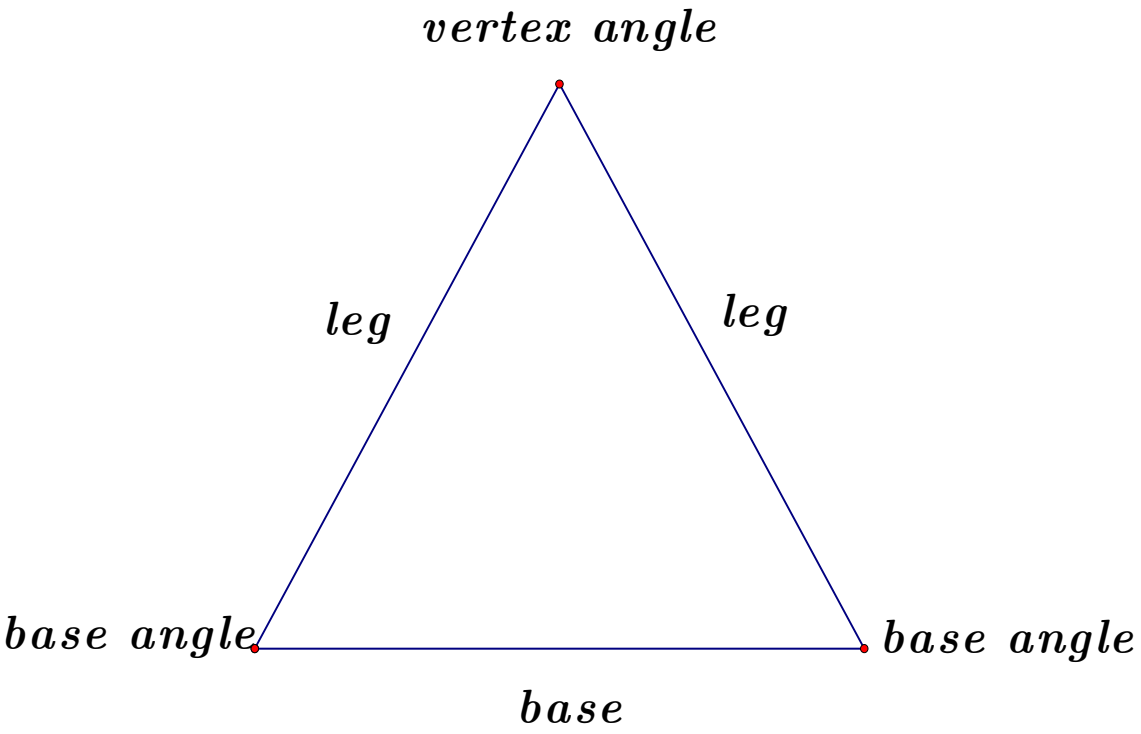
Polygon (many sided figure) → is a closed figure in a plane that is made up of segments, called *sides*, that intersect only at their endpoints, called *vertices*.

Triangle → is a three-sided polygon.



Acute △→all angles are acute
Obtuse △→one angle is obtuse
Right △→one angle is right
Equiangular △→an acute △ in which all ∢s are ≅
Scalene △→no two sides are ≅
Isosceles △→at least two sides are ≅
Equilateral △→all the sides are ≅

Isosceles Triangle

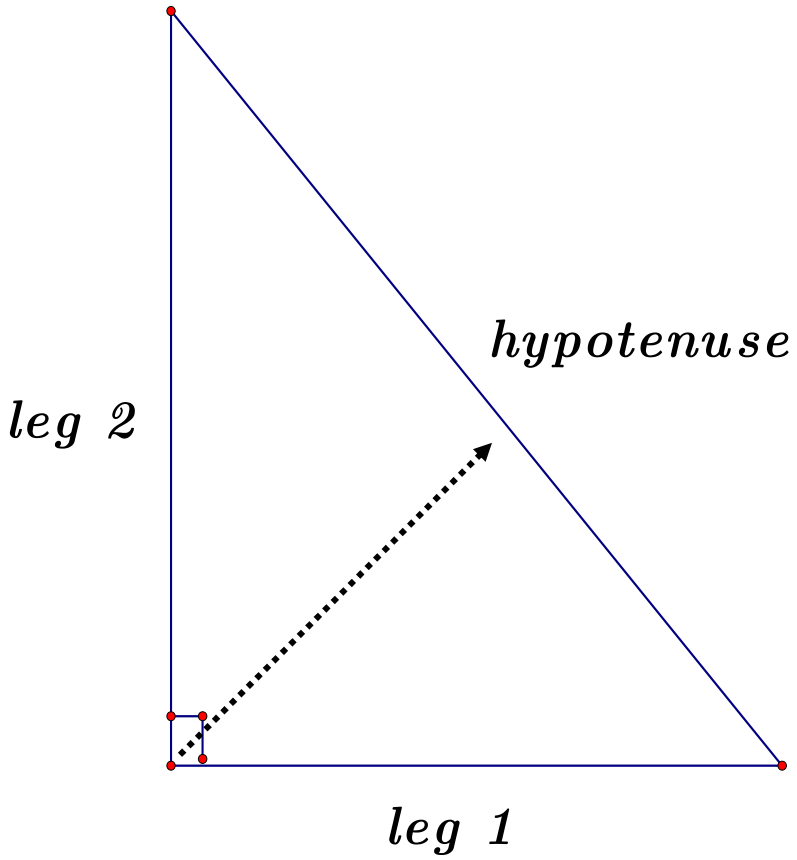


Legs are always congruent----

Base Angles are always congruent---

Side opposite the vertex angle is the Base----

Right Triangle



Legs of a right triangle do not have to be equal in measure.

If legs are congruent then the triangle is also an - _____ triangle……

Vertex angle?? Base???? base angles???

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Geometry—Chapter 4-2

Measuring Angles in Triangles

Proofs are not required for this section but you still need to remember what the Postulates, Definitions, and Theorems state.

Review—Sum of the measures of the angles of a triangle is 180°.

Given two angles of any triangle, you can figure out the measure of the third angel.

Theorem: If 2 ∢s of a △ are ≅ to 2 ∢s of another △, then the 3rd ∢s are ≅.

Exterior Angles (in a triangle)

Angles that are formed by one side of an angle and an extension of the other side of the angle

Interior Angles (in a triangle)

Angles in the interior of the triangle.

Remote Interior Angles (in a triangle)

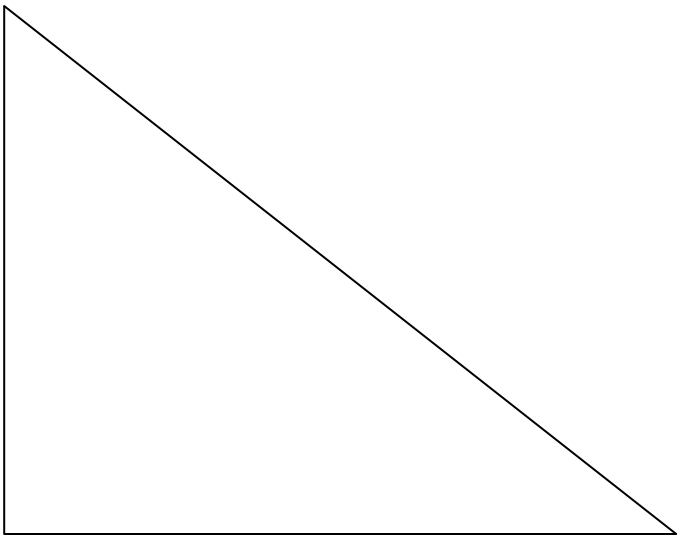
For any ext. ∠, the remote int. ∠s are the int. ∠s not adjacent to the ext ∠.

In other words—the remote angles are the angles not close to the exterior angle.

Two Important Corollaries

(A Corollary is a statement that can be easily proved with a Theorem)

The acute angles of a right triangle are complimentary.



There can be at most one right or obtuse angle in a triangle.

(In other words—there can be only <u>one</u> right or <u>one</u> obtuse angle in any triangle.

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Chapter 4-3 Congruent Triangles

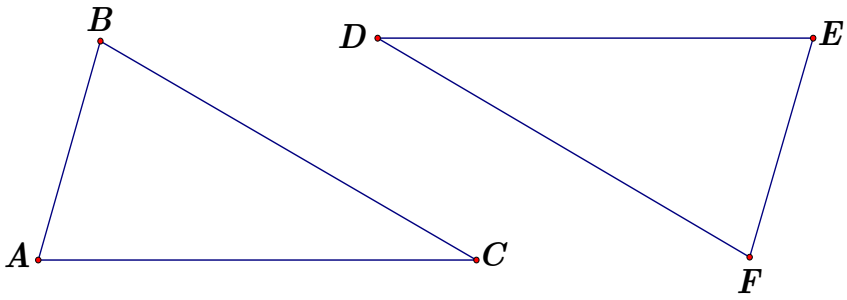
Remember—Def: congruent→same size, same shape

Notation: $\cong$

What about congruent DESKS? What are the *corresponding* parts of congruent desks?
In other words, what are the *matching* parts.

Triangles can be *congruent* if and only if their corresponding (matching) parts are congruent.

Suppose you have 2 congruent triangles…….then there are **6** corresponding (notation: $\leftrightarrow$) parts. WHY????? (every triangle has 6 parts: 3 angles, 3 sides)



You may have to rotate, reflect, or flip to match up the corresponding parts of congruent triangles.,

Corresponding Parts:

$\measuredangle A \leftrightarrow \measuredangle E$ $\quad\quad$ $\overline{AB} \leftrightarrow \overline{EF}$

$\measuredangle B \leftrightarrow \measuredangle F$ $\quad\quad$ $\overline{BC} \leftrightarrow \overline{FD}$

$\measuredangle C \leftrightarrow \measuredangle D$ $\quad\quad$ $\overline{CA} \leftrightarrow \overline{DE}$

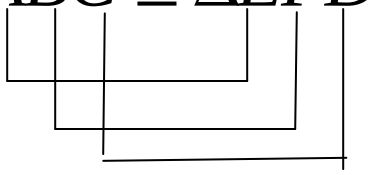
If ***all*** of the corresponding parts are congruent then the triangles are congruent.

$\measuredangle A \cong \measuredangle E$ $\quad\quad$ $\overline{AB} \cong \overline{EF}$

$\measuredangle B \cong \measuredangle F$ $\quad\quad$ $\overline{BC} \cong \overline{FD}$

$\measuredangle C \cong \measuredangle D$ $\quad\quad$ $\overline{CA} \cong \overline{DE}$

Thus: $\Delta ABC \cong \Delta EFD$ Note the corres. parts.



Note how angles and sides are shown to be congruent in the diagrams

IMP: Whenever you state that triangles are congruent, you **must state** them in the order of their **corresponding vertices.**

Always remember:
corresponding parts of congruent triangles are congruent

corres parts of $\cong$ Δs are $\cong$

You will have to use this statement in proofs so remember it.

Thm: Congruence of Δs is reflexive, symmetric, and transitive.

Geometry—Chapter 4-4

Geometry—Chapter 3-5