

SM2 VOCAB 7-2 (Distance and Triangle Congruence)

Distance formula (for numbers on a number line)

$$\text{distance}_{a \leftrightarrow b} = |a - b|$$

$$\text{distance}_{-2 \leftrightarrow 3} = |a - b| = |(-2) - (3)| = |-5| = 5$$

Theorem is a statement that has been proven to be true.

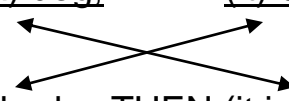
Theorems are usually written in “IF hypothesis, THEN conclusion” format.

If the hypothesis is true then we know the conclusion is true.

We exchange the hypothesis and conclusion to get a converse.

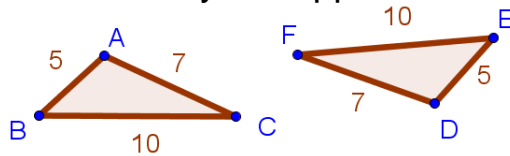
Theorem: (it is a) dog, THEN (it) barks

Converse of
the Theorem: IF (it) barks, THEN (it is a) dog



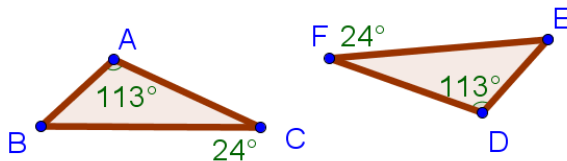
Corresponding Angles of Triangles: an angle in one triangle that has the same position (relative to its sides) as an angle in another triangle (relative to its sides).

$\angle A$ corresponds to $\angle D$ since they are opposite the longest side of their respective triangle.



Corresponding Sides of Triangles: a side in one triangle that has the same position (relative to its angles) as a side in another triangle (relative to its angles).

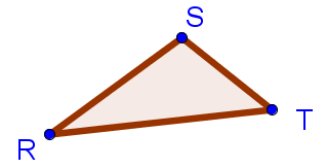
\overline{BC} corresponds to \overline{EF} since they are opposite the largest angle of their respective triangle.



SM2 VOCAB 7-2 (Continued)

Included side: If two angles in a triangle are given, the included side is the side that is between the two angles or side that both of the angles have in common.

\overline{RS} is the included side of $\angle R$ and $\angle S$; \overline{ST} is the included side of $\angle S$ and $\angle T$



Included angle: If two sides of a triangle are given, the included angle is the angle formed by those two sides. $\angle T$ is the included angle of \overline{RT} and \overline{TS} , $\angle R$ is the included angle of \overline{SR} and \overline{RT}

Congruence means same size (by measurement) and same shape.

Angles: two angles are congruent if they have the same measure (degrees)

IF $\angle A \cong \angle B$ then $m\angle A = m\angle B$ (converse is true also)

Segments (sides): two line segments are congruent if they have the same length

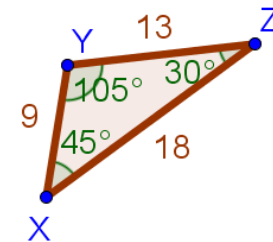
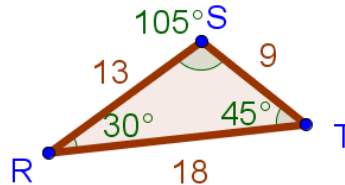
IF $\overline{AB} \cong \overline{CD}$ then $AB = CD$ (converse is true also)

Triangles: are congruent if there are three pairs of congruent sides and three pairs of congruent angles between the two triangles.

IF $\overline{AB} \cong \overline{CD}$ then $AB = CD$ (converse is true also)

$\triangle RST \cong \triangle ZYX$ because...

$$\begin{array}{l} \angle R \cong \angle Z \quad \angle S \cong \angle Y \\ \angle T \cong \angle X \quad \overline{RS} \cong \overline{ZY} \\ \overline{ST} \cong \overline{YX} \quad \overline{TR} \cong \overline{XZ} \end{array}$$



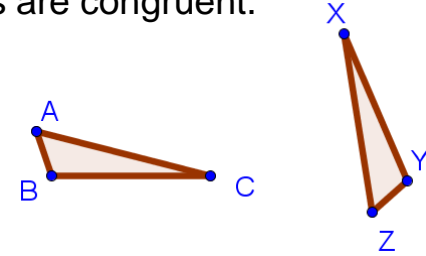
SM2 VOCAB 7-2 (Continued)

Congruence Statement: A math statement that describes a congruence between two geometric shapes (segments, angles, triangles, etc.). The order of the letters shows the correspondence between angles and points.

The vertices of must be put in order so that the vertices in one triangle correspond to the vertices in the other triangle. If Corresponding parts are congruent, then the triangles are congruent.

– For example: $\triangle ABC \cong \triangle ZYX$ because...

- $\angle A \cong \angle Z$ $\angle B \cong \angle Y$
- $\angle C \cong \angle X$ $\overline{AB} \cong \overline{ZY}$
- $\overline{BC} \cong \overline{YX}$ $\overline{CA} \cong \overline{XZ}$



Corresponding Parts of Congruent Triangles are Congruent or “CPCTC”: If triangles are congruent then their corresponding parts and also congruent.

Angle-Angle-Angle (AAA) Condition (is NOT a congruency)

AAA controls shape only, not size

Angle-Side-Side (ASS) Condition (is NOT a congruency)

because an exception can be found (proof by counter-example).

