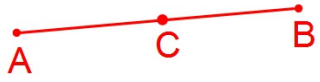
Bellwork

1. What is the definition of midpoint?

   The point that separates the line in half.

   Ex. If C is the midpoint of $\overline{AB}$

   Then $\overline{AC} \cong \overline{BC}$

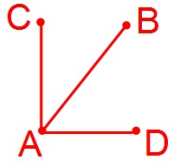


2. What is the definition of an angle bisector?

   A line that separates an angle in half.

   EX. If $\overline{AB}$ is the angle bisector of $\angle CAD$

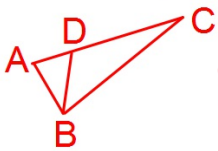
   Then $\angle CAB \cong \angle DAB$



3. Does having an angle bisected make the sides that for the angle congruent?

   Absolutely not!

   EX.



$\overline{BD}$ bisects $\angle ABC$, but $\overline{AB}$ is not congruent to $\overline{BC}$

Similar Figures

Definitions:

Similar Figures - are figures with the same shape, but are smaller or larger in size.

Scale Factor - the ratio of the side lengths of two similar figures.

Similarity Statements

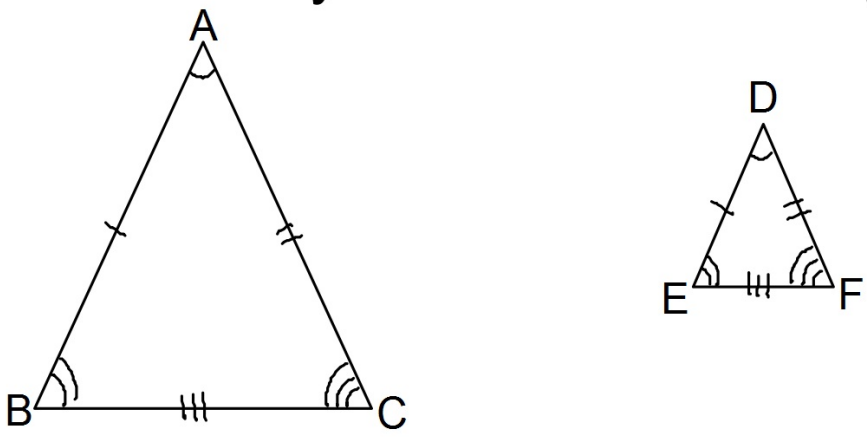
Requirements:

1. Show that all the angles are congruent.
2. Show that the ratio of corresponding sides is = in all sets of corresponding sides.

Algebraically:

1. Write congruence statements for each of 3 pairs of congruent angle pairs.
2. Set up 4 ratios...1st, 2nd, and 3rd will show the corresponding sides, and the 4th will show the equivalence of the ratios reduced.

Similarity Statements Visually



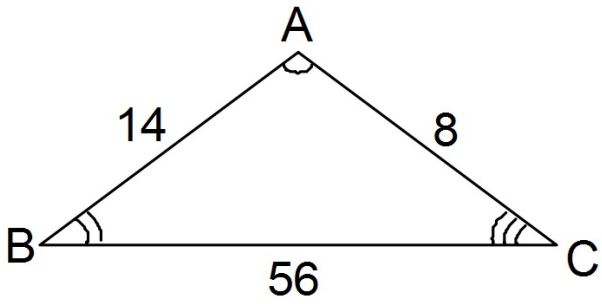
List ALL angle pairs that are congruent, and show that the ratio of ALL side pairs are equal.

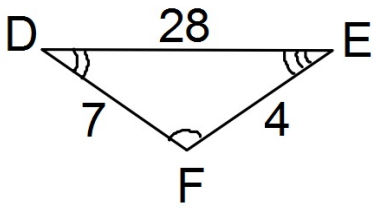
Show that $\triangle ABC \cong \triangle DEF$

$\angle A \cong \angle D$
$\angle B \cong \angle E$
$\angle C \cong \angle F$

$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$ = A simplified fraction!

Example





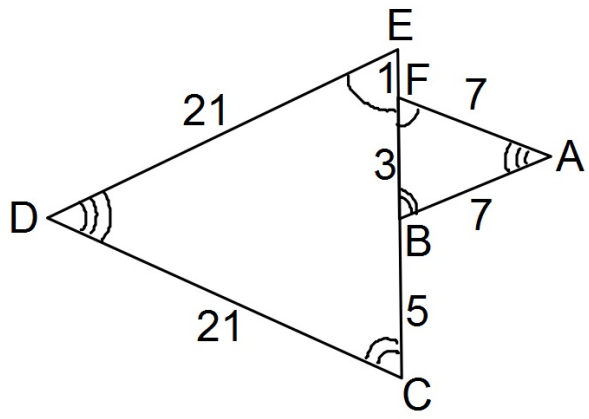
1. Show that $\triangle ABC \sim \triangle FDE$.

$$\frac{AB}{DF} = \frac{BC}{DE} = \frac{AC}{EF} = \frac{2}{1}$$

$$\frac{14}{7} = \frac{56}{28} = \frac{8}{4} = \frac{2}{1}$$

$$\angle A \cong \angle F$$
$$\angle B \cong \angle D$$
$$\angle C \cong \angle E$$

Example



2. Show that $\triangle CDE \sim \triangle BAF$.

$\angle C \cong \angle B$
$\angle D \cong \angle A$
$\angle E \cong \angle F$

$$\frac{CD}{BA} = \frac{DE}{AF} = \frac{CE}{BF} = \frac{3}{1}$$

$$\frac{21}{7} = \frac{21}{7} = \frac{9}{3} = \frac{3}{1}$$