

**When are two figures similar?**

- Same shape, different size
- Corresponding angles are congruent (equal measures)
- Corresponding sides are proportional

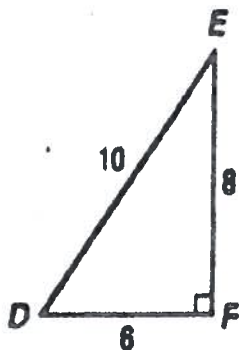
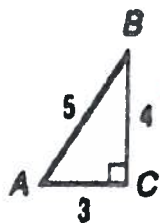
Symbols:  $\sim$  "is similar to"  $\cong$  "is congruent to"

**Example:**

$\triangle ABC \sim \triangle DEF$

"Triangle ABC is similar to Triangle DEF"

Similarity Statement



**ANGLES:**

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

**SIDES:**

$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$  OR  $\frac{5}{10} = \frac{4}{8} = \frac{3}{6}$

Proportionality Statement

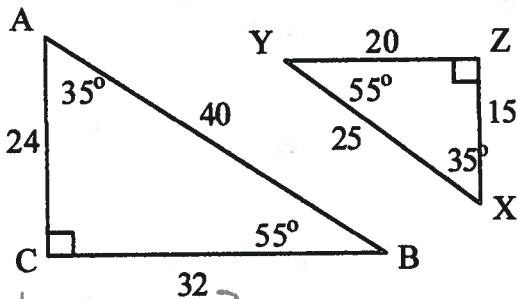
Each of the ratios of corresponding sides can be simplified to  $\frac{1}{2}$ .

Scale Factor:  $\frac{1}{2}$  or 1 to 2.

The ratio in simplest form is the scale factor of the similar figures.

**Practice:**

- Decide whether the two triangles are similar. If so, write the similarity statement following the order of the corresponding angles and the proportionality statement for corresponding sides.



- Are the angles congruent?  $\angle A \cong \angle X$ ,  $\angle Y \cong \angle B$ ,  $\angle C \cong \angle Z$  all the same!
- Are corresponding sides proportional?

$\frac{AB}{XY} = \frac{BC}{YZ} = \frac{AC}{XZ}$   $\frac{40}{20} = \frac{24}{15} = \frac{32}{25}$

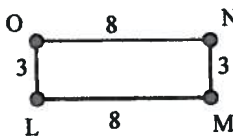
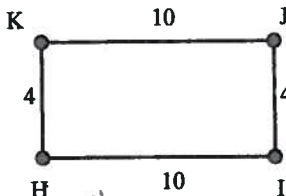
$\frac{8}{5} = \frac{8}{5} = \frac{8}{5}$

What shapes?

Similarity Statement:  $\triangle ABC \sim \triangle XYZ$  Proportionality statement:

$\frac{AB}{XY} = \frac{BC}{YZ} = \frac{AC}{XZ}$

- Is rectangle LMNO similar to rectangle HIJK? Why or why not?



$\frac{LM}{HI} = \frac{MN}{JK} = \frac{NO}{HJ} = \frac{LO}{IK}$

$\frac{8}{10} = \frac{3}{4} = \frac{8}{10} = \frac{3}{4}$

Not Proportional!

Similarity

$\square HIJK \sim \square LMNO$

angles = all are 90 degrees