

Similar Triangles

Similar means that corresponding angles are congruent and that corresponding sides are proportional

Similarity statement $\triangle ABC \sim \triangle EFG$

corresponding angles are... \cong

$$\angle A \cong \angle E$$

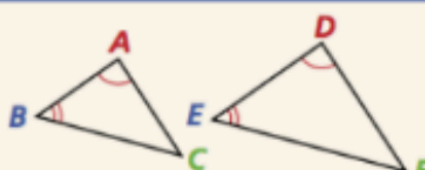
$$\angle B \cong \angle F$$

$$\angle C \cong \angle G$$

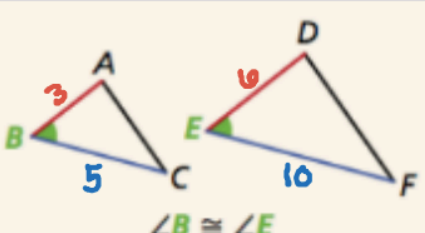
corresponding proportional parts are.....

$$\frac{AB}{EF} = \frac{BC}{FG} = \frac{AC}{EG}$$

Angle-Angle Similarity (AA)

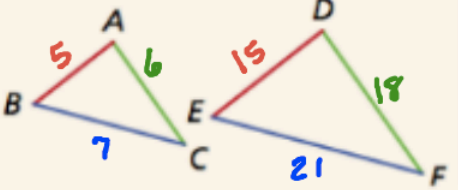
POSTULATE	HYPOTHESIS	CONCLUSION
If two angles of one triangle are congruent to two angles of another triangle, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

Side-Angle-Side Similarity (SAS)

THEOREM	HYPOTHESIS	CONCLUSION
If two sides of one triangle are proportional to two sides of another triangle and their included angles are congruent, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

$$\frac{3}{6} = \frac{5}{10} \checkmark$$

Side-Side-Side Similarity (SSS)

THEOREM	HYPOTHESIS	CONCLUSION
If the three sides of one triangle are proportional to the three corresponding sides of another triangle, then the triangles are similar.		$\triangle \overline{ABC} \sim \triangle \overline{DEF}$

$$\frac{5}{15} = \frac{7}{21} = \frac{6}{18}$$

Example 1

Finding Lengths in Similar Triangles

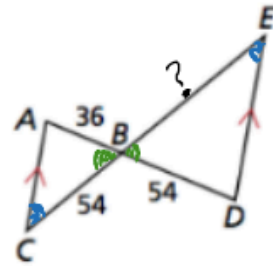
Explain why $\triangle ABC \sim \triangle DBE$ and then find BE .

$$\overline{AC} \parallel \overline{DE} \rightarrow \text{Given}$$

$$\angle C \cong \angle E \rightarrow \text{Alt int } \angle \cong \text{ theorem}$$

$$\angle ABC \cong \angle DBE \rightarrow \text{Vert. } \angle \text{'s}$$

$$\triangle ABC \sim \triangle DBE \rightarrow \text{AA sim theorem.}$$



$$\frac{36}{54} = \frac{54}{?}$$