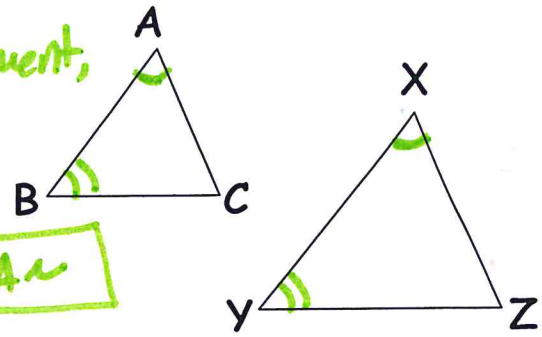
7-3 Proving Triangles Similar

Postulate 7-1 Angle-Angle Similarity (AA ~) Postulate

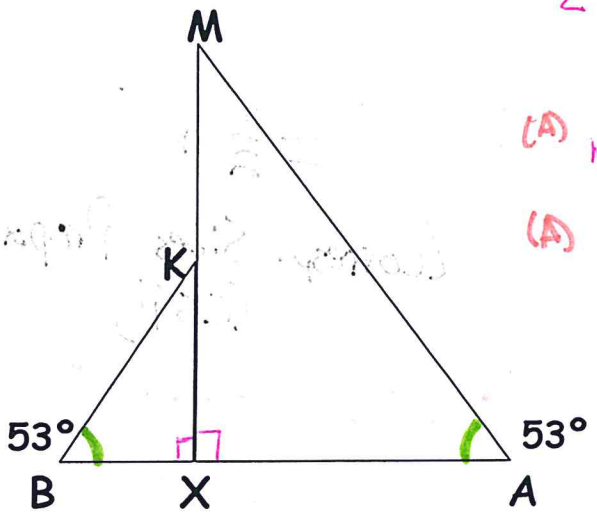
If 2 corresponding angles are congruent, then the Δ's are similar.

If $\angle A \cong \angle X$ and $\angle B \cong \angle Y$, then $\triangle ABC \sim \triangle XYZ$ by AA~



Example 1 – Using the AA ~ Postulate

$\overline{MX} \perp \overline{AB}$. Explain why the triangles are similar. Write a similarity statement.



$\angle KXB$ and $\angle MXA$ are 90° (Def. of Perpendicular)

(A) $m\angle KXB = m\angle MXA$ (both 90°)

(A) $m\angle B = m\angle A = 53°$ (Given)

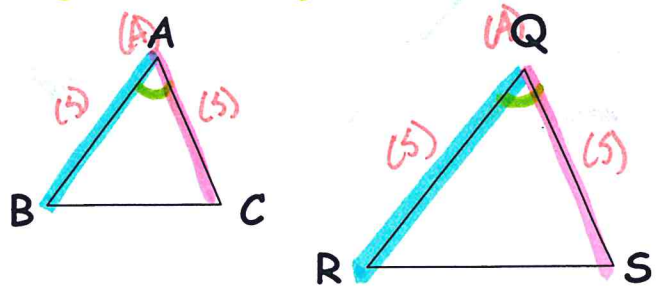
$\triangle KBX \sim \triangle MAX$ by AA~

Theorem 7-1 Side-Angle-Side (SAS ~) Theorem

If 1 set of corresponding ∠'s are congruent AND the two corresponding sides including the angle are proportional, then the Δ's are similar.

If $\angle A \cong \angle Q$

$\frac{AB}{QR} = \frac{AC}{QS}$, then $\triangle ABC \sim \triangle QRS$ by SAS~

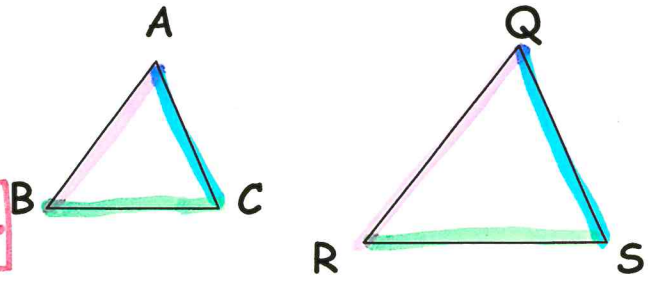


Theorem 7-2 Side-Side-Side Similarity (SSS ~) Theorem

If the corresponding sides of 2 triangles are proportional, then the Δ's are similar.

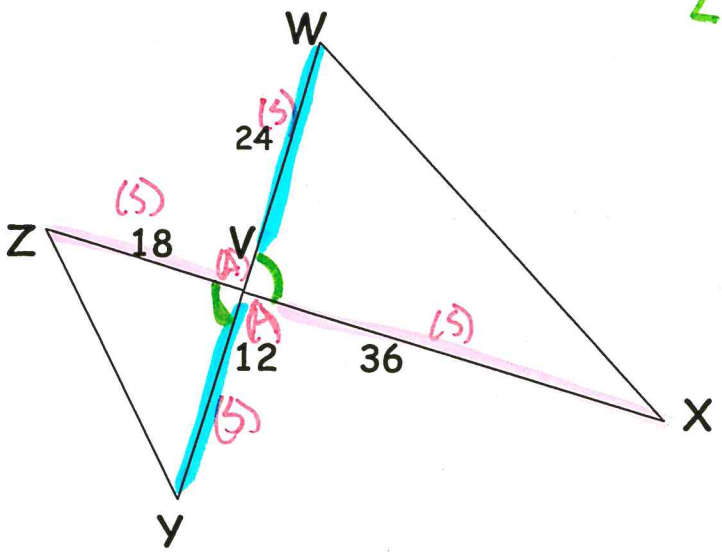
If $\frac{BA}{RQ} = \frac{AC}{QS} = \frac{BC}{RS}$,

then $\triangle ABC \sim \triangle QRS$ by SSS~



Example 2 – Using Similarity Theorems

Explain why the triangles must be similar. Write a similarity statement.

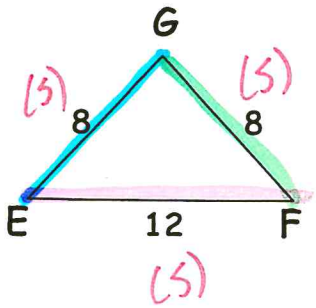


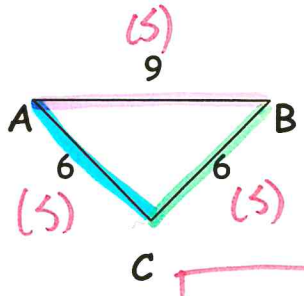
$\angle ZVY \cong \angle XVW$ (Vert. $\angle$s $\cong$)

$\frac{12}{24} = \frac{18}{36} = \frac{1}{2}$ ✓ (Corresp. Sides Proportional) (CSP)

$\triangle YVZ \sim \triangle WVX$ by SAS~

✓**Quick Check** – Explain why the triangles must be similar. Write a similarity statement.





$\frac{8}{6} = \frac{8}{6} = \frac{12}{9} = \frac{4}{3}$ ✓ (CSP)

$\triangle EFG \sim \triangle ABC$ by SSS~