

Similar Triangles – Part 2

6.4

- Similar triangles have all three corresponding angles congruent
- Similar triangles have all three pairs of corresponding sides scaled by the same factor.

For triangles ABC and KLM to be similar, the following has to be true:

∠ = Angle
 ≅ = Congruent

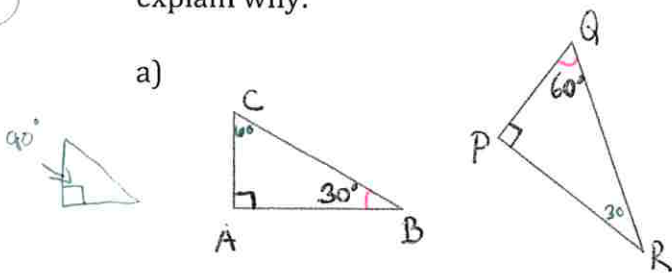
$\angle A \cong \angle K$ and $\angle B \cong \angle L$ and $\angle C \cong \angle M$

AND

$\frac{KL}{AB} = \frac{LM}{BC} = \frac{KM}{AC} = SF$

Similar
 $\Delta ABC \sim \Delta KLM$
 * Same order *

Example 1: Determine whether the given triangles are similar. If they are similar, explain why.

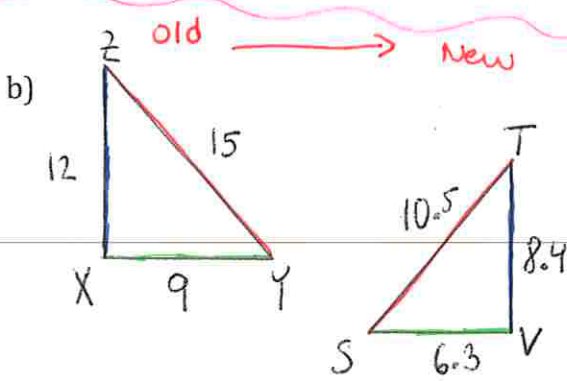


$\angle C = 180^\circ - 30^\circ - 90^\circ$
 $\angle C = 60^\circ$

$\angle R = 180^\circ - 60^\circ - 90^\circ$
 $\angle R = 30^\circ$

$\angle A \cong \angle P$
 $\angle C \cong \angle Q$
 $\angle B \cong \angle R$

$\Delta ABC \sim \Delta PQR$
 Corresponding angles are Congruent.



$\frac{\text{New}}{\text{Old}} = \frac{TS}{ZY} = \frac{SV}{YX} = \frac{TV}{ZX}$

$= \frac{10.5}{15} = \frac{6.3}{9} = \frac{8.4}{12}$

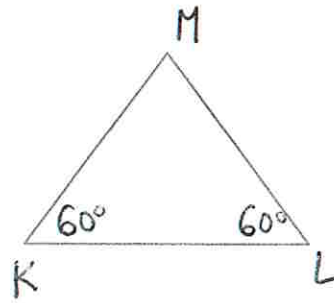
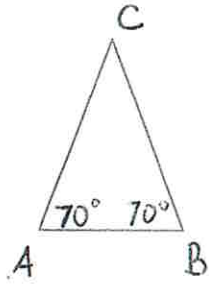
$= 0.7 = 0.7 = 0.7$

$SF = 0.7$

$\therefore \Delta XYZ \sim \Delta TVS$

\therefore The triangles are similar because their corresponding sides are scaled by the same SF.

c)

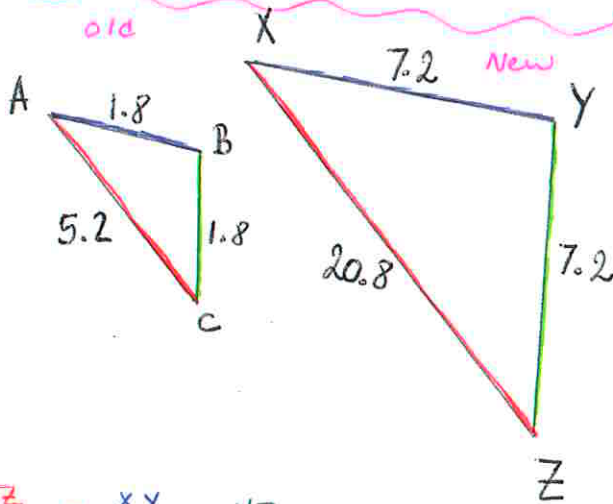


$$\begin{aligned}\angle C &= 180^\circ - 70^\circ - 70^\circ \\ \angle C &= 40^\circ\end{aligned}$$

$$\begin{aligned}\angle M &= 180^\circ - 60^\circ - 60^\circ \\ \angle M &= 60^\circ\end{aligned}$$

$\triangle ABC \not\sim \triangle KLM$ because their corresponding angles are not congruent.

d)



$$\begin{aligned}\frac{\text{New}}{\text{Old}} &= \frac{XZ}{AC} = \frac{XY}{AB} = \frac{YZ}{BC} \\ &= \frac{20.8}{5.2} = \frac{7.2}{1.8} = \frac{7.2}{1.8} \\ &= 4 = 4 = 4\end{aligned}$$

$\therefore \triangle XYZ \sim \triangle ABC$ because their corresponding sides are the same factor