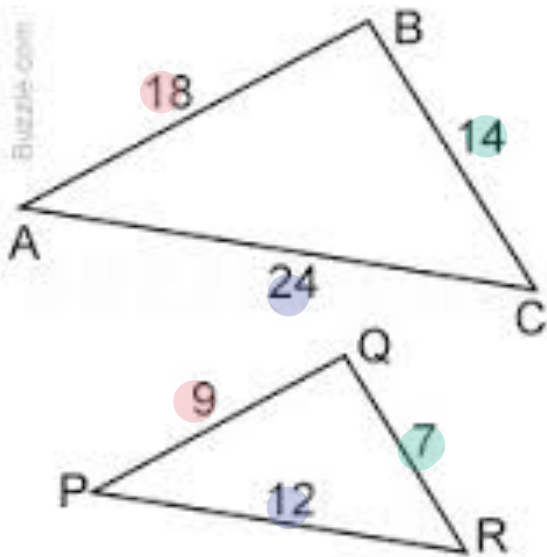


6.4

Prove Triangles Similar by SSS and SAS

Side-Side-Side (SSS) Similarity Postulate

- If the Corresponding sides of two triangles are proportional, then the triangles are Similar.



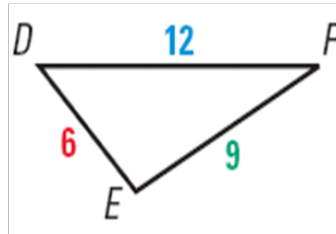
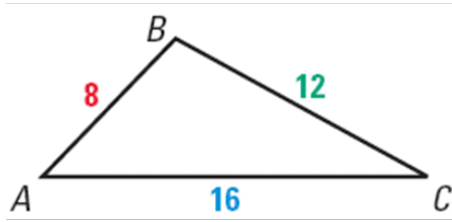
$$\frac{18}{9} = \frac{2}{1}$$

$$\frac{14}{7} = \frac{2}{1}$$

$$\frac{24}{12} = \frac{2}{1}$$

Proportional sides
- all equal ratios

EX: Is either $\triangle DEF$ or $\triangle GHJ$ similar to $\triangle ABC$?



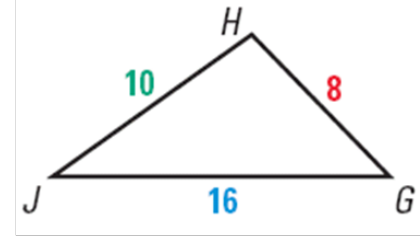
$$\frac{8}{6} = \frac{4}{3}$$

$$\frac{12}{9} = \frac{4}{3}$$

$$\frac{16}{12} = \frac{4}{3}$$

Yes - all equal ratios

$\triangle ABC \sim \triangle DEF$



$$\frac{8}{8} = 1$$

$$\frac{12}{10} = \frac{6}{5}$$

$$\frac{16}{16} = 1$$

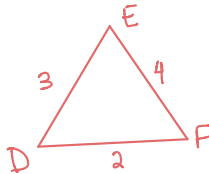
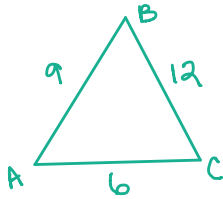
No - unequal ratios

EX:

1. Verify that $\triangle ABC \sim \triangle DEF$ for the given information.

$$\triangle ABC : AC = 6, AB = 9, BC = 12;$$

$$\triangle DEF : DF = 2, DE = 3, EF = 4$$



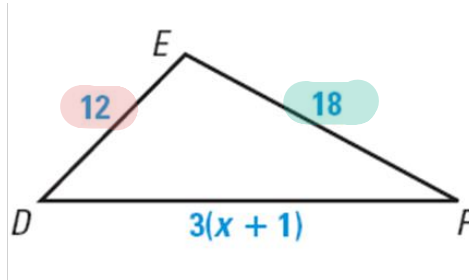
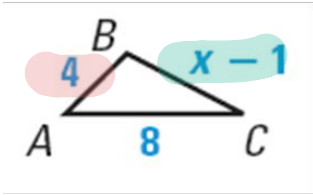
$$\left. \begin{aligned} \frac{9}{3} &= \frac{3}{1} \\ \frac{12}{4} &= \frac{3}{1} \\ \frac{6}{2} &= \frac{3}{1} \end{aligned} \right\}$$

All equal ratios
- triangles are
similar



Find the value of x that makes $\triangle ABC \sim \triangle DEF$.

EX:



$$\frac{x-1}{18} = \frac{4}{12}$$

$$\frac{(x-1)}{18} \times \frac{4}{12}$$

* Cross Multiply
and Distribute

$$12(x-1) = 72$$

$$\begin{array}{r} 12x - 12 = 72 \\ +12 \quad +12 \end{array}$$

$$\frac{12x}{12} = \frac{84}{12}$$

$$\boxed{x = 7}$$