# Warm-up

Solve

① $\frac{8}{x} = \frac{12}{9}$

$72 = 12x$

$\frac{72}{12} = \frac{12x}{12}$

$6 = x$

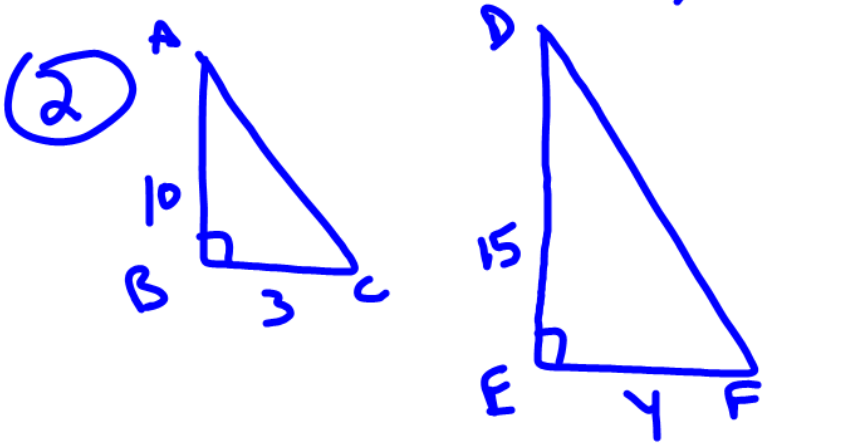
Proportionate or not?

③ $\frac{8}{11} \overset{?}{=} \frac{3}{7}$

$33 \overset{?}{=} 56$

Nope!

Given $\triangle ABC \sim \triangle DEF$, find y.

② 

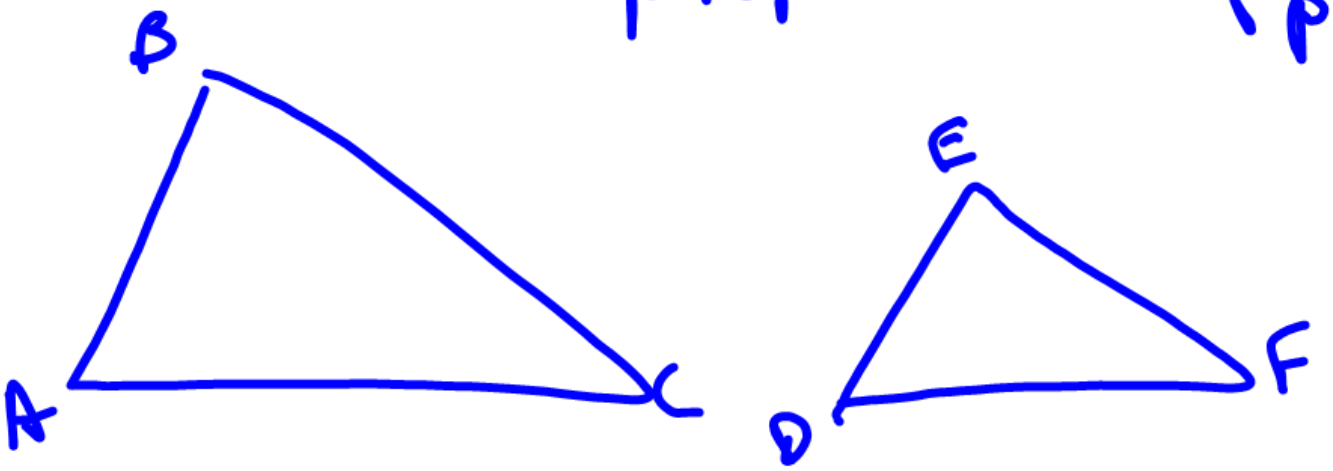

$\frac{3}{y} = \frac{10}{15}$ { $\frac{10}{3} = \frac{15}{y}$

$45 = 10y$

$4.5 = y$

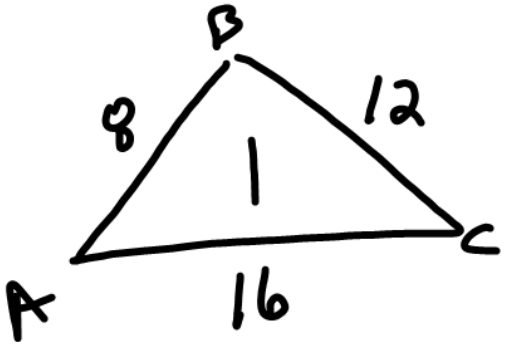
# 6.5 Prove Similar by SSS & SAS

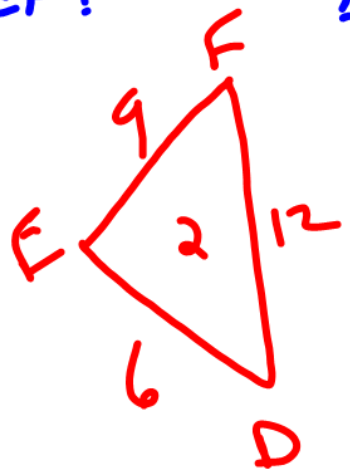
**SSS Similarity** - 2 Δ's are similar if all corresponding sides are proportionate (check cross-products)



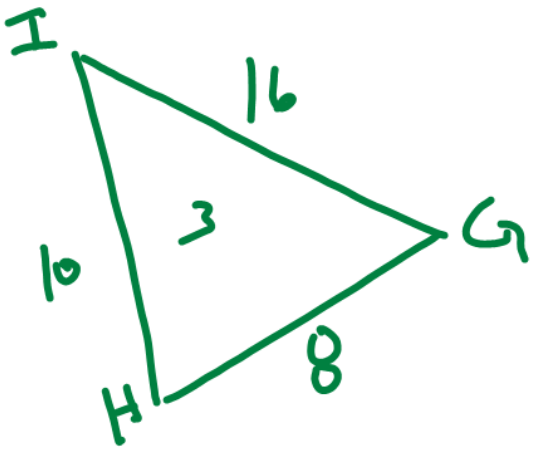

For $\Delta ABC \sim \Delta DEF$, $\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

# Is $\Delta ABC \sim \Delta DEF$?




# $\Delta DEF \sim \Delta GHI$




$\frac{\Delta 1}{\Delta 2}$ $\frac{8}{6}$ (DE) $= \frac{12}{9}$ (EF) $= \frac{16}{12}$ (DF)

small side AB, middle side BC, big side AC

Check cross-products

$\frac{8}{6} = \frac{12}{9}$

$72 = 72$

Yes!

$\frac{12}{9} = \frac{16}{12}$

$144 = 144$

Yes!

Are Similar!!!

$\frac{\Delta 2}{\Delta 3}$ $\frac{6}{8} = \frac{9}{10} = \frac{12}{16}$

$\frac{6}{8} = \frac{9}{10}$

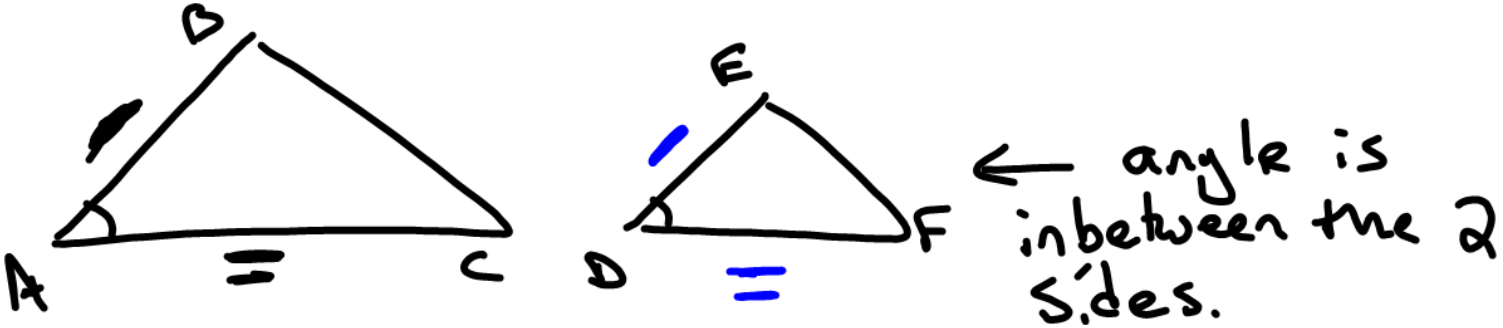
$60 \neq 72$

No :(

$144 \neq 120$

Not Similar

# SAS Similarity - 2 Δs are similar if one ∠ is congruent & 2 sides proportionate



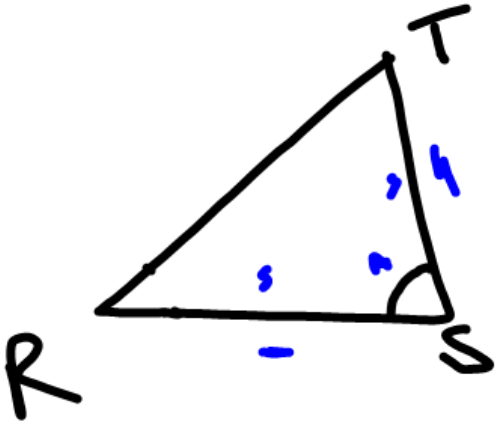

← angle is inbetween the 2 sides.

$\angle A \cong \angle D$

$\overline{AB} \sim \overline{DE}$

$\overline{AC} \sim \overline{DF}$

To show similar, what is needed? Write the similarity statement.





$\angle S \cong \angle V$

$\overline{RS} \sim \overline{UV}$

$\overline{TS} \sim \overline{VW}$

$\Delta SRT \sim \Delta VUW$