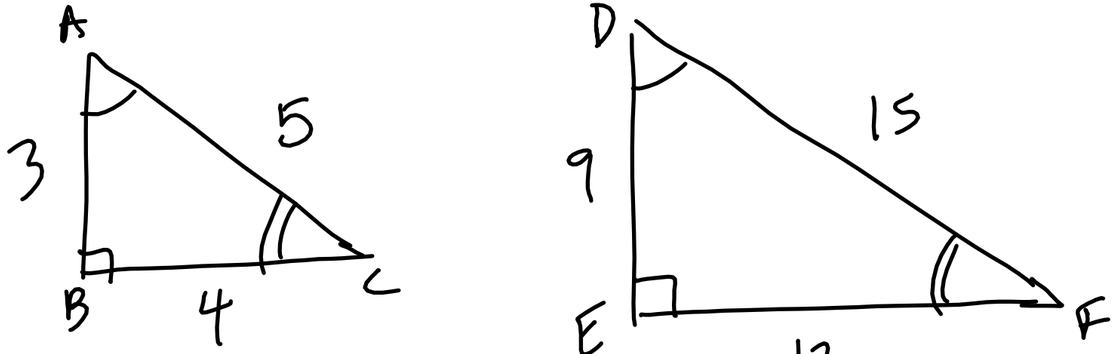
Similar Polygons

- shapes are considered to be similar if their corresponding angles are congruent & their corresponding sides are proportional
  - Express similarity using "~"
  - Extended proportion → proportion involving each set of corresponding sides
  - Scale factor → ratio of corresponding sides (must be equal for all sides for shape to be similar)

EX → Are these polygons similar?



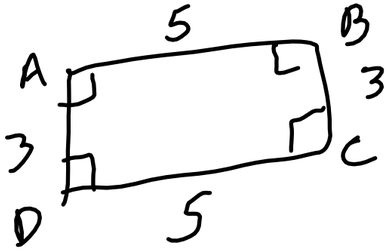
$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$ → extended prop.

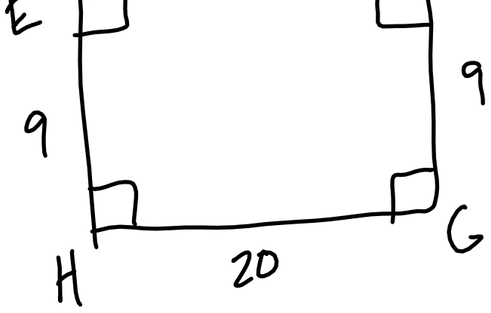
$\frac{3}{9} = \frac{4}{12} = \frac{5}{15} \Rightarrow \frac{1}{3} = \frac{1}{3} = \frac{1}{3}$ ✓ → scale factor

SIMILAR ⇒ $\triangle ABC \sim \triangle DEF$

similarity statement

EX → Are these polygons similar?





$\frac{5}{20} = \frac{3}{9} = \frac{5}{20} = \frac{3}{9} \Rightarrow \frac{1}{4} = \frac{1}{3} = \frac{1}{4} = \frac{1}{3}$

⇓

NOT SIMILAR

- scale drawings → drawings that use lengths proportional to actual length

↳ use <u>scale</u> ⇒ relation b/w length in drawing to actual length

<u>EX</u> ⇒ Scale on a blueprint indicates 2.5 cm for 20 ft. How long would a wall be if it were 10.1 cm on the drawing?

$$\frac{2.5\text{ cm}}{20\text{ ft}} = \frac{10.1\text{ cm}}{x\text{ ft}}$$

$$2.5x = 20 \cdot 10.1$$

$$\frac{2.5x}{2.5} = \frac{202}{2.5}$$

$$x = 80.8\text{ ft}$$

EX→ The sides of a TV are in a 3:4 ratio. A wall has an area 10 ft. by 10 ft. to place the TV. What are the largest possible measurements of the TV?

width: $\frac{10}{3} = 3\frac{1}{3}$

length: $\frac{10}{4} = 2\frac{1}{2}$ ← use smaller factor

$2.5 \cdot 3 = 7.5$ ft

$2.5 \cdot 4 = 10$ ft

HW: p. 444 → 10-30 even