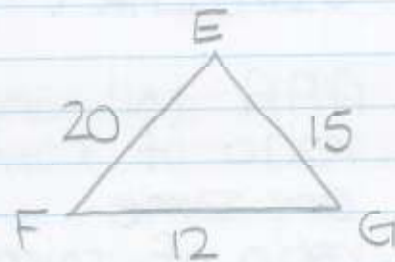
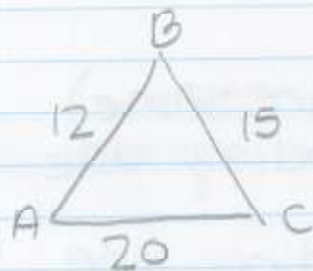


december 11, 2007

Congruent and Similar Triangles

similar (\sim) Congruent (\cong)

1. SSS (side side side)
2. SAS (side angle side)
3. ASA (angle side angle)



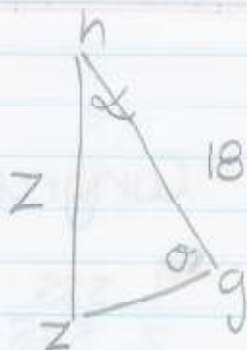
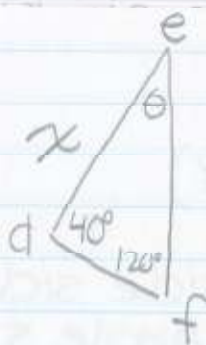
$\therefore \triangle ABC \cong \triangle FGE$ b/c of SSS

$$\overline{AB} = \overline{FG}$$

$$\overline{BC} = \overline{GE}$$

$$\overline{CA} = \overline{FE}$$

Ex : If $\triangle def \cong \triangle ghz$
Find all unknowns

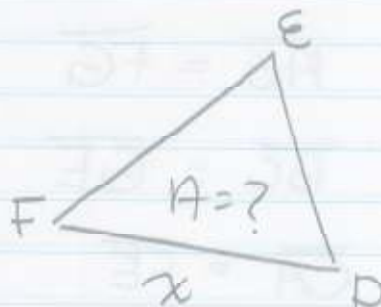
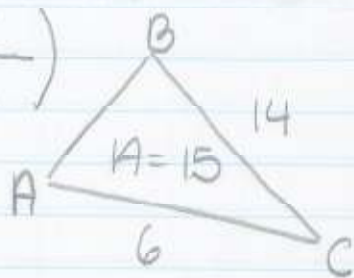


$$\begin{aligned} \theta &= 20 \\ \alpha &= 20 \\ \sigma &= 40 \\ x &= 18 \\ z &= 16 \end{aligned}$$

SIMILAR (\sim)

1. AAA (all angles are same)
2. ratio of corresponding side lengths are same
3. ratio of corresponding side length squared equal ratio of areas.

$$A = \left(\frac{L}{S}\right)^2 = \left(\frac{L}{S}\right)^2$$



$$\frac{14}{12} = \frac{6}{x}$$

$$\frac{12 \cdot 6}{14} = x$$

$$x = \frac{36}{7}$$

$$A = \frac{144 \cdot 15}{196}$$

$$A = \frac{540}{49}$$

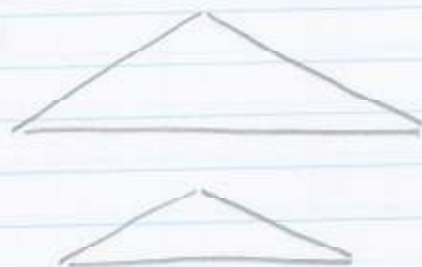
Ex: The area of larger of 2 similar Δ 's is 16 times that of smaller. If 1 side length of smaller is 20 find corresponding side length of larger.

$$\left(\frac{x}{20}\right)^2 = \left(\frac{16A_s}{A_s}\right)$$

$$\left(\frac{x}{20}\right)^2 = 16$$

$$\frac{x}{20} = 4$$

$$x = 80$$

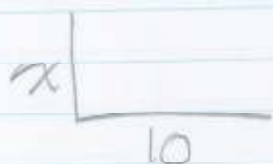


Ex: Your 6ft. tall body casts an 8ft. shadow. How tall is a pole that casts a 10ft. shadow?



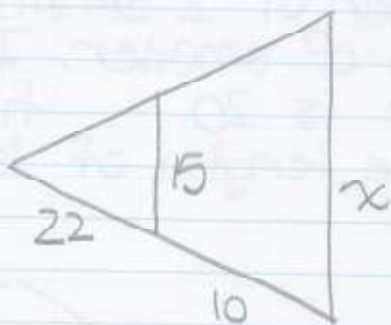
$$\frac{6}{x} = \frac{8}{10}$$

$$x = \frac{6 \cdot 10}{8}$$

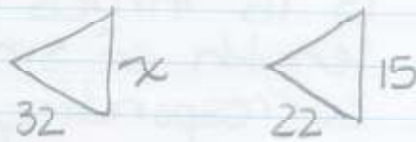


$$x = \frac{15}{2} \text{ ft.}$$

Ex:



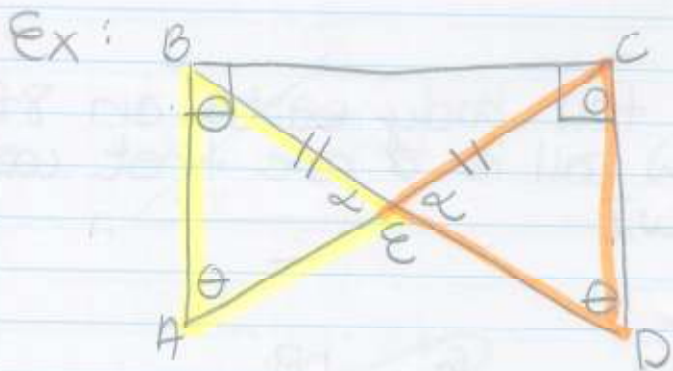
Solve for x



$$\frac{22}{32} = \frac{15}{x}$$

$$x = \frac{15 \cdot 32}{22}$$

$$x = \frac{240}{11}$$



prove $\triangle ABE \cong \triangle DCE$

$\therefore \triangle ABC \cong \triangle DCE$ b/c ASA

$$\angle ABE = \angle DCE$$

$$\overline{BE} = \overline{CE}$$

$$\angle BEA = \angle CED$$