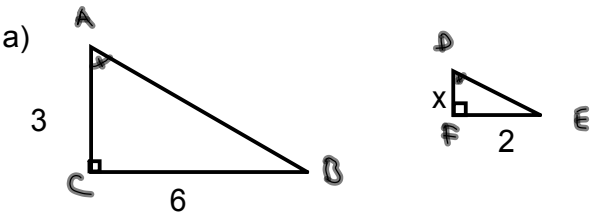
Solving for Missing Measures in Similar Triangles

Goal:

- to know how to find missing measures when two triangles are similar

Find the value of x:

a)



$\triangle ABC \sim \triangle DEF$ by AA

(similar)

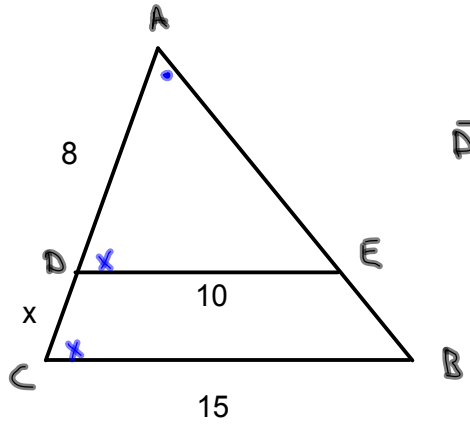
$\frac{3}{6} = \frac{x}{2}$

$3 \cdot 2 = 6x$

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

$1 = x$

b)



$\overline{DE} \parallel \overline{CB}$

$\triangle ADE \sim \triangle ABC$ by AA

$\angle A \cong \angle A$

$\angle ADE \cong \angle ACB$ (corresponding angles formed by transversal and parallel lines)

$\frac{8}{10} = \frac{8+x}{15}$ ← must write the entire side (not just x)

$8 \cdot 15 = 10(8+x)$

$120 = 80 + 10x$

$-80 \quad -80$

$\frac{40}{10} = \frac{10x}{10}$

$4 = x$

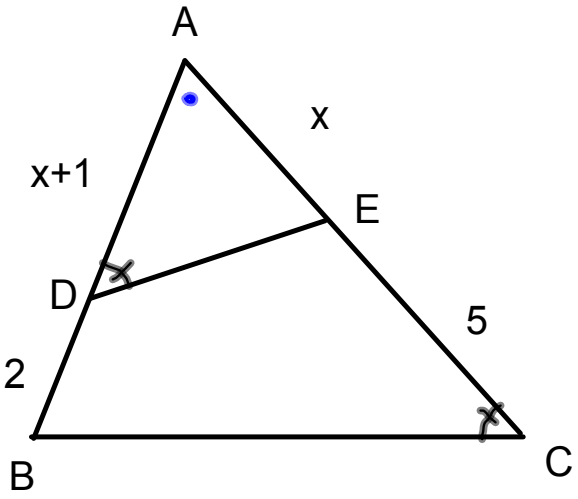
$\frac{8 \cdot 15}{10} = 8 + x$

$12 = 8 + x$

$-8 \quad -8$

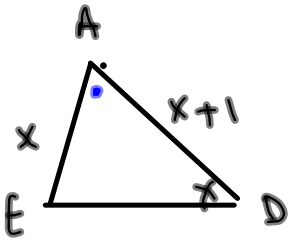
$4 = x$

c)



Danger in setting up proportion correctly

$\Delta ADE \sim \Delta ACB$ by AA



$$\frac{x+1}{x+5} = \frac{x}{(x+1)+2}$$

$$\frac{x+1}{x+5} = \frac{x}{x+3}$$

$$(x+1)(x+3) = x(x+5)$$

$$x^2+3x+1x+3 = x^2+5x$$

$$x^2+4x+3 = x^2+5x$$

$$-x^2 \qquad -x^2$$

$$4x+3 = 5x$$

$$-4x \qquad -4y$$

$$3 = x$$

Homework: p. 173 # 3-9