

Similarities – Similar Triangles

Homework Section 7.3b

Name _____

#1) Write down the definition of similar polygons.

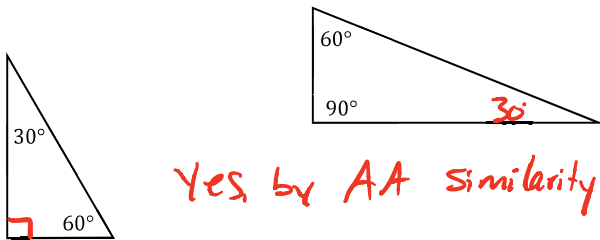
Two polygons are similar if corresponding angles are congruent and corresponding sides are proportional.

#2) Write down the definition of congruent polygons.

Two polygons are congruent if corresponding angles and corresponding sides are congruent.

Determine whether each pair of triangles is similar using the given information. If similar, explain.

#3)



YES, by AA similarity

#4)

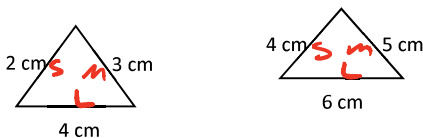


$$\frac{18}{12} = \frac{12}{8} = \frac{10.5}{7}$$

$$1.5 = 1.5 = 1.5$$

YES by SSS similarity

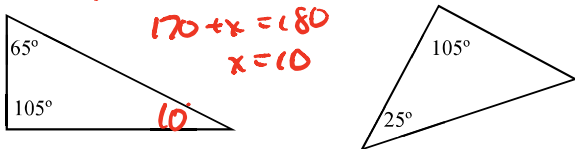
#5)



$$\frac{2}{4} \neq \frac{3}{5} \neq \frac{4}{6}$$

NO, corresponding sides are not proportional

#6)



$$65 + 105 + x = 180$$

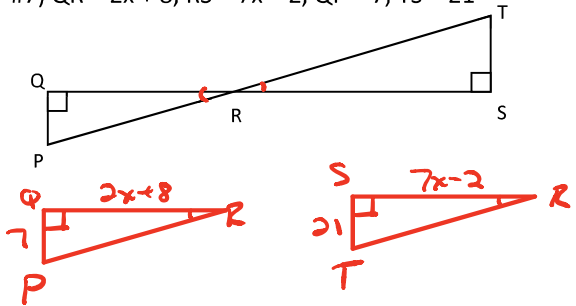
$$170 + x = 180$$

$$x = 10$$

NO, corresponding angles are not congruent

Find the value of x.

#7) $QR = 2x + 8$, $RS = 7x - 2$, $QP = 7$, $TS = 21$



$$\frac{7}{21} = \frac{2x+8}{7x-2}$$

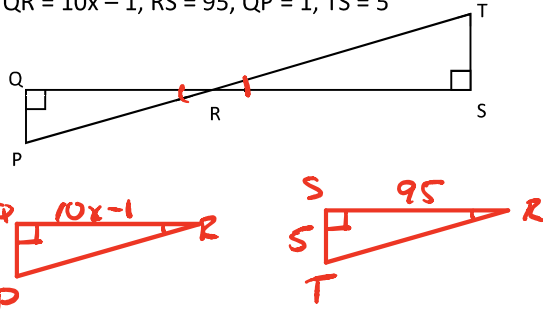
$$\cancel{7}(\cancel{7x-2}) \frac{1}{3} = \frac{2x+8}{\cancel{7x-2}} \cdot \cancel{3}(\cancel{7x-2})$$

$$7x-2 = 6x+24$$

$$x-2 = 24$$

$$x = 26$$

#8) $QR = 10x - 1$, $RS = 95$, $QP = 1$, $TS = 5$



$$\cancel{95} \cdot \frac{10x-1}{\cancel{95}} = \frac{1}{5} \cdot \cancel{95} \cdot 5$$

$$10x-1 = 19$$

$$10x = 20$$

$$x = 2$$

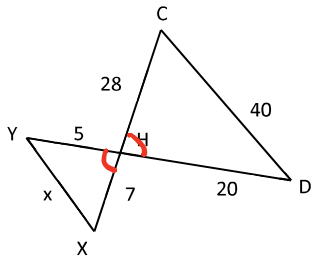
Similarities – Similar Triangles

Homework Section 7.3b

Name _____

Determine if each pair of triangles is similar. If similar, state the reason and find the missing measures.

#9)



$$\frac{5}{20} \stackrel{?}{=} \frac{7}{28}$$

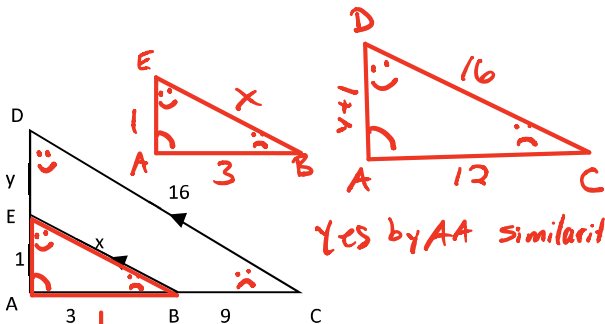
$$\frac{1}{4} = \frac{1}{4} \checkmark$$

YES by SAS similarity

$$\frac{10}{40} \cdot \frac{1}{4} = \frac{x}{40} \cdot 40$$

$$10 = x$$

#10)



YES by AA similarity

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

$$\frac{1}{4} = \frac{x}{16}$$

$$4 = x$$

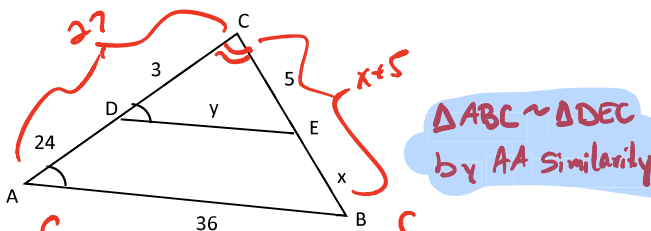
$$4(y+1) \cdot \frac{1}{4} = \frac{1}{16} \cdot 4(y+1)$$

$$y+1 = 4$$

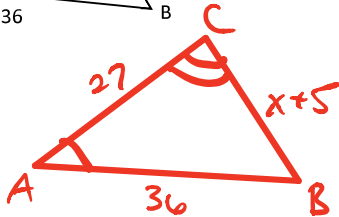
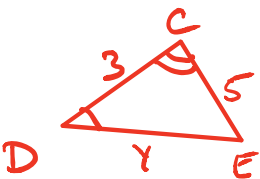
$$y = 3$$

Identify the similar triangles in each figure. Explain why they are similar and find the missing measures of x and y.

#11)



$\triangle ABC \sim \triangle DEC$
by AA similarity



$$\frac{3}{27} = \frac{5}{x+5}$$

$$\frac{3}{27} = \frac{y}{36}$$

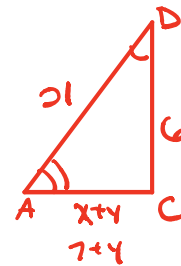
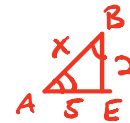
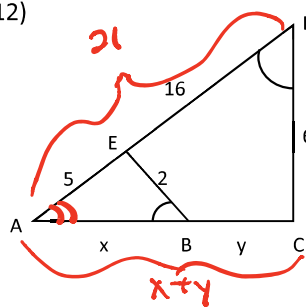
$$36 \cdot \frac{1}{9} = \frac{y}{36} \cdot 36$$

$$x+5 = 45$$

$$x = 40$$

$$4 = y$$

#12)



$\triangle ABE \sim \triangle ADC$ by AA similarity

$$\frac{2}{6} = \frac{x}{21}$$

$$3(7+y) \cdot \frac{1}{3} = \frac{5}{21} \cdot 3(7+y)$$

$$\frac{1}{3} = \frac{x}{21}$$

$$7+y = 5 \cdot 3$$

$$7 = x$$

$$7+y = 15$$

$$y = 8$$

Draw a picture, make a proportion and answer the question.

#13) A Ford Mustang is 15 feet long. Jimmy wants to make a model of the car using a 2 feet to 7 inch scale. How long is the model? Round to one decimal place.



$$\frac{2 \text{ ft}}{7 \text{ in}} = \frac{15 \text{ ft}}{x \text{ in}}$$

$$2 \cdot x = 15 \cdot 7$$

$$2x = 105$$

$$x = 52.5''$$

The model is about 52.5" long.

#3) Yes by AA similarity #4) Yes, SSS similarity.

#5) No, (corresponding sides are not proportional)

#6) No, (corresponding angles are not congruent)

#7) $x = 26$

#8) $x = 2$

#9) Yes, SAS similarity. $x = 10$

#10) Yes, AA similarity. (4, 3)

#11) $\triangle ABC$ is similar to $\triangle DEC$, by AA Similarity, (40, 8)

#12) $\triangle ABE$ is similar to $\triangle ADC$, by AA Similarity, (7, 8)

#13) 52.5"