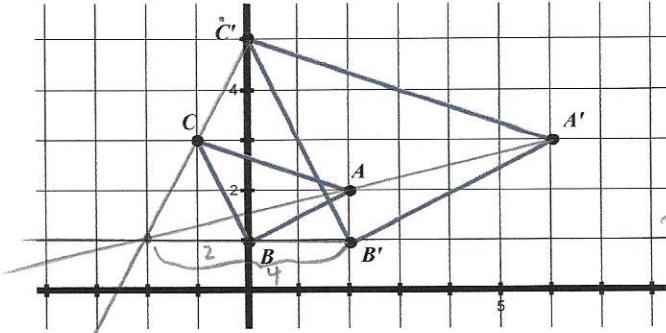


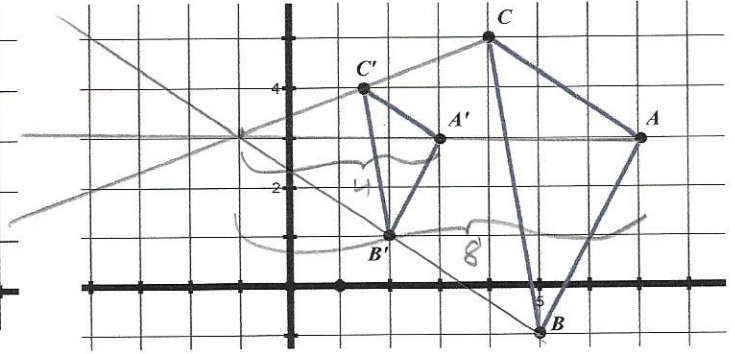
### Unit 4 Review

1. Find the center of dilation and the scale factor.

a) Center ( -2, 1 ) Scale Factor =  $\frac{4}{2} = 2$



b) Center ( -1, 3 ) Scale Factor =  $\frac{4}{8} = \frac{1}{2}$



2. Given that  $\triangle AFG \sim \triangle DRH$ , complete the following.

$$\angle H \cong \angle \underline{G}$$

$$\frac{DR}{AF} = \frac{DH}{\underline{AG}}$$

$$\angle D \cong \angle \underline{A}$$

$$\frac{\underline{FG}}{RH} = \frac{AG}{DH}$$

3. Pentagon ABCDE is similar to Pentagon RYMNT. Complete the following.

$$\angle C \cong \angle \underline{M}$$

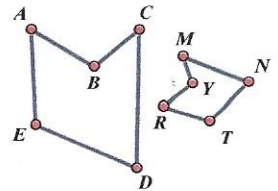
$$\frac{AB}{RY} = \frac{ED}{\underline{TN}}$$

$$\frac{MN}{RT} = \frac{CD}{\underline{AE}}$$

$$\angle T \cong \angle \underline{E}$$

$$\frac{NT}{DE} = \frac{RT}{\underline{AE}}$$

$$\frac{AB}{BC} = \frac{RY}{\underline{YM}}$$



4. Solve for x.

a)

$$\frac{3}{5} = \frac{x}{15}$$

$$x = \underline{9}$$

$$5x = 45$$

b)

$$\frac{1}{x} = \frac{6}{x+15}$$

$$x = \underline{3}$$

$$6x = x + 15$$

$$5x = 15$$

c)

$$\frac{20-x}{x} = \frac{6}{4}$$

$$x = \underline{8}$$

$$6x = 4(20-x)$$

$$6x = 80 - 4x$$

$$10x = 80$$

d)

$$\frac{4}{12} = \frac{x+2}{2x+13}$$

$$x = \underline{7}$$

$$4(2x+13) = 12(x+2)$$

$$8x + 52 = 12x + 24$$

$$28 = 4x$$

5. Solve for the missing information, given that the two triangles in each question are SIMILAR.

a)

$\frac{8}{10} = \frac{20}{y}$   
 $8y = 200$   
 $y = 25$

$\frac{8}{10} = \frac{x}{20}$   
 $10x = 220$   
 $x = 22$

x = 22    y = 25

b)

$\frac{8.9}{13.35} = \frac{6}{x}$   
 $x = 9$

$\frac{8.9}{13.35} = \frac{y}{5.25}$   
 $y = 3.5$

x = 9    y = 3.5

c)

$\frac{4.5}{3} = \frac{7.5}{x}$   
 $x = 5$

$\frac{4.5}{3} = \frac{11.4}{y}$   
 $y = 7.6$

x = 5    y = 7.6

d)

$\frac{10}{12} = \frac{6}{x}$   
 $x = 7.2$

$\frac{10}{12} = \frac{y}{10.8}$   
 $y = 9$

x = 7.2    y = 9

e)

$\frac{8}{4} = \frac{12}{x}$   
 $x = 18$

$\frac{8}{4} = \frac{10}{y}$   
 $y = 5$

x = 18    y = 5

f)

$\frac{6}{x+6} = \frac{15}{20}$   
 $15(x+6) = 120$   
 $15x + 90 = 120$   
 $15x = 30$   
 $x = 2$

$\frac{6}{2} = \frac{18}{y}$   
 $y = 6$

x = 2    y = 6

For Problems 6-8, determine if the triangles are similar. If they are similar, state the property that proves similarity and write a similarity statement.

6.

$\frac{7}{3} \neq \frac{9}{4} \neq \frac{10}{5}$  ← not equal

Similar: yes or no  
 If similar  
 Property \_\_\_\_\_  
 $\triangle BCD \sim \triangle$  \_\_\_\_\_

7.

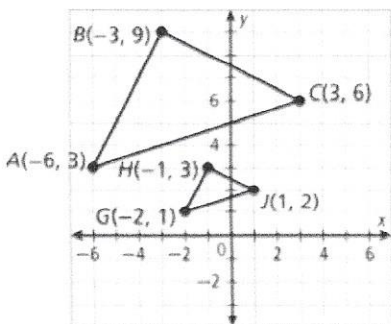
$\frac{5}{4} \neq \frac{15}{12} \neq \frac{12}{12}$

Similar: yes or no  
 If similar  
 Property SAS ~  
 $\triangle ABC \sim \triangle DEC$

8.

Similar: yes or no  
 If similar  
 Property AA ~  
 $\triangle ABR \sim \triangle LGW$

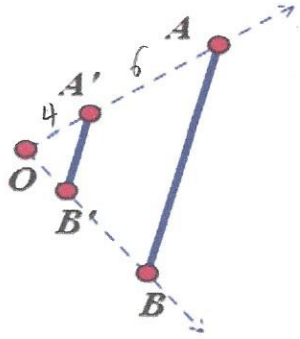
9. Give the coordinate notation for the transformation that maps  $\triangle ABC$  to  $\triangle GHJ$ .



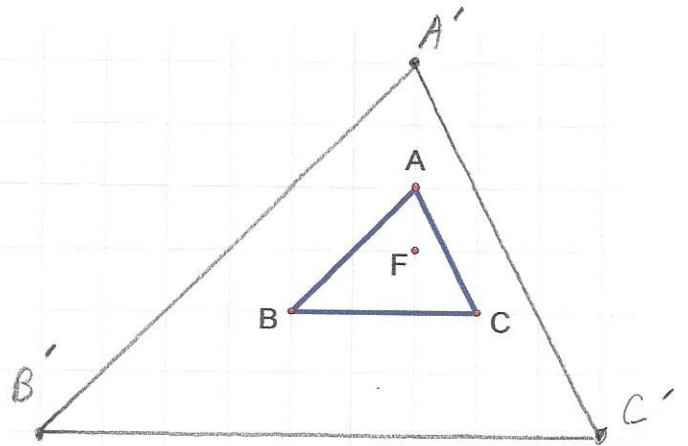
Dilation, scale factor  $\frac{1}{3}$   
 $(x, y) \rightarrow (\frac{1}{3}x, \frac{1}{3}y)$

10. Give the scale factor for the figure if  $OA' = 4$  and  $AA' = 6$ :

$$k = \frac{4}{10} = \frac{2}{5}$$



11. Dilate  $\triangle ABC$  using center  $F$  and a scale factor of 3. (Label the image appropriately).



12. Find the geometric mean of:

a) 3 & 27  $\frac{3}{x} = \frac{x}{27}$   
 $x^2 = 81$   
 $x = 9$

b) 5 & 15  $\frac{5}{x} = \frac{x}{15}$   
 $x^2 = 75$   
 $x = \sqrt{75} = 8.7$

c) 7 & 13  $\frac{7}{x} = \frac{x}{13}$   
 $x^2 = 91$   
 $x = \sqrt{91} = 9.5$

13. Solve for x, y and z.

$$\frac{x}{24} = \frac{6}{x}$$

$$x^2 = 144$$

$$x = 12$$

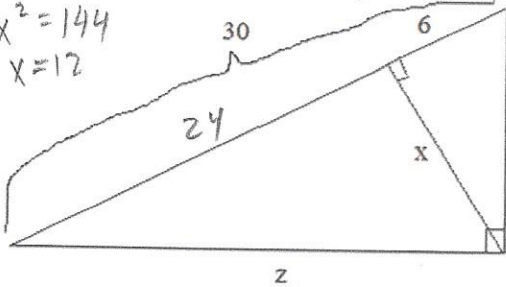
$$\frac{y}{6} = \frac{30}{y} \rightarrow y^2 = 180$$

$$y = \sqrt{180} = 13.4$$

$$\frac{z}{24} = \frac{30}{z}$$

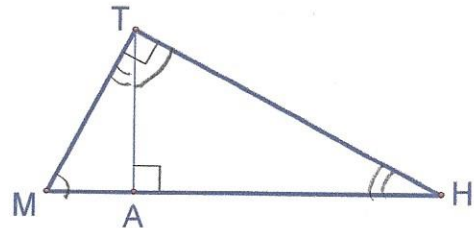
$$z^2 = 720$$

$$z = \sqrt{720} = 26.8$$



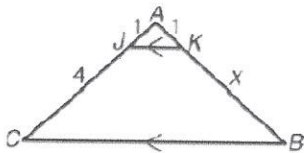
14. Complete the similarity statement.

$$\triangle TMH \sim \triangle AMT \sim \triangle ATH$$



15. Solve for x:

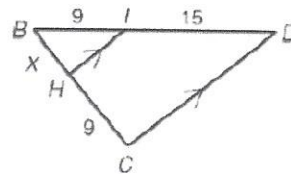
a)



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

$$x = 4$$

b)

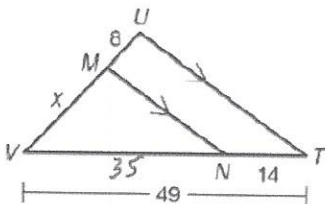


$$\frac{x}{9} = \frac{9}{15}$$

$$15x = 81$$

$$x = \frac{81}{15} = \frac{27}{5} = 5.4$$

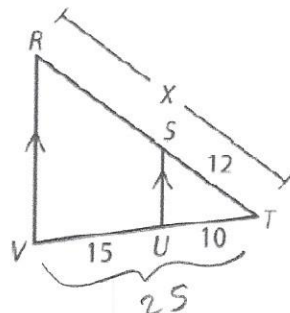
c)



$$\frac{x}{35} = \frac{8}{14} \rightarrow 14x = 280$$

$$x = 20$$

d)

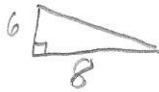
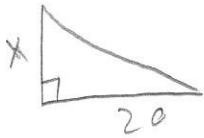


$$\frac{x}{25} = \frac{12}{10}$$

$$10x = 300$$

$$x = 30$$

15. The sun casts a 20 foot long shadow on a tree. If the shadow of a 6 foot tall person is 8 feet long, approximately how tall is the tree?



$$\frac{x}{6} = \frac{20}{8}$$

$$8x = 120$$

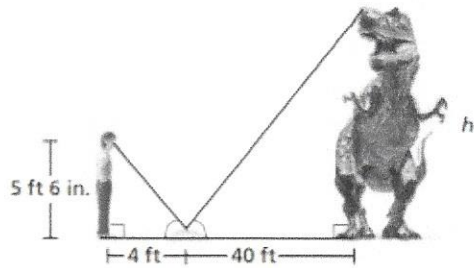
$$x = 15 \text{ ft}$$

16. To find the height  $h$  of a dinosaur in a museum, Amir placed a mirror on the ground 40 feet from its base. Then he stepped back 4 feet so that he could see the top of the dinosaur in the mirror. Amir's eyes were approximately 5 feet 6 inches above the ground. What is the height of the dinosaur?

$$\frac{5,5}{h} = \frac{4}{40}$$

$$4h = 220$$

$$h = 55 \text{ ft}$$



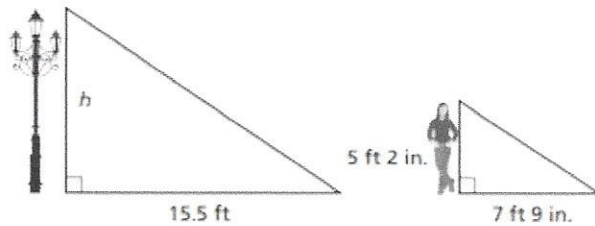
17. Jenny is 5 feet 2 inches tall. To find the height  $h$  of a light pole, she measured her shadow and the pole's shadow. What is the height of the pole?

$$\frac{h}{5\frac{1}{6}} = \frac{15,5}{7\frac{3}{4}}$$

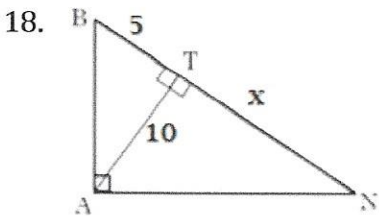
$$7\frac{3}{4}h = 15,5(5\frac{1}{6})$$

$$7,75h = 80,1$$

$$h = 10\frac{1}{3} \text{ ft.}$$



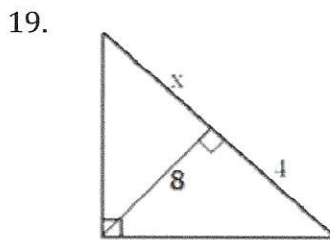
Find x.



$$\frac{10}{x} = \frac{5}{10}$$

$$5x = 100$$

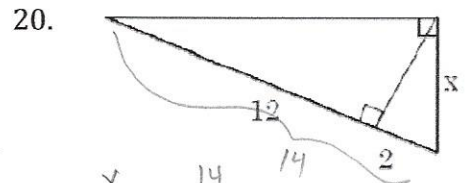
$$x = 20$$



$$\frac{8}{x} = \frac{4}{8}$$

$$4x = 64$$

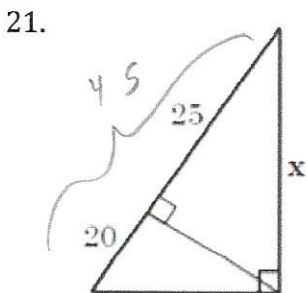
$$x = 16$$



$$\frac{x}{2} = \frac{14}{x}$$

$$x^2 = 28$$

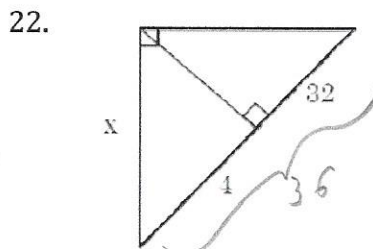
$$x = \sqrt{28} = 5,3$$



$$\frac{x}{25} = \frac{45}{x}$$

$$x^2 = 1125$$

$$x = 33,5$$



$$\frac{x}{4} = \frac{36}{x}$$

$$x^2 = 144$$

$$x = 12$$