

Bell Ringer

Thursday 2/7

Write equations of the functions that fit the criteria given.

1. A quadratic equation that has been shifted left 3 units, shifted down 2 units, and compressed by a factor of $\frac{1}{2}$.

$$y = \frac{1}{2}(x + 3)^2 - 2$$

2. An absolute value function that has been reflected over the x-axis, shifted right 2 units, and stretched by a factor of 3.

$$y = -3|x - 2|$$

3. A square root equation that has been stretched by a factor of 4, shifted left 1 unit and shifted up 2 units.

$$y = 4\sqrt{x + 1} + 2$$

Correct 10.7 Similarity Transformations ws

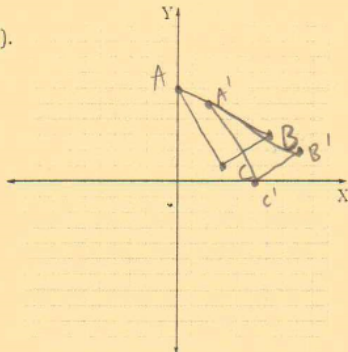
Lesson 10.7 Similarity Transformations

Name _____ Date: _____

Key

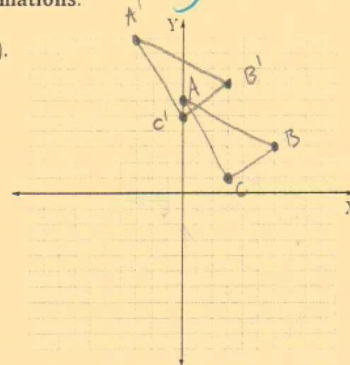
For the following 1-8 sketch the composition of transformations.

1).



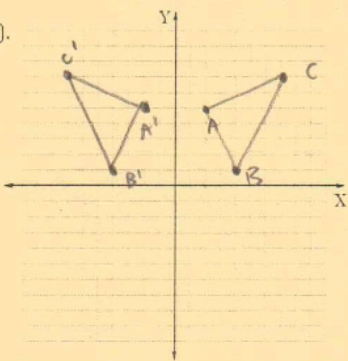
Given: $\triangle ABC$ where $A(0,6)$, $B(6,3)$, $C(3,1)$
Transformation: right 2, down 1

2).



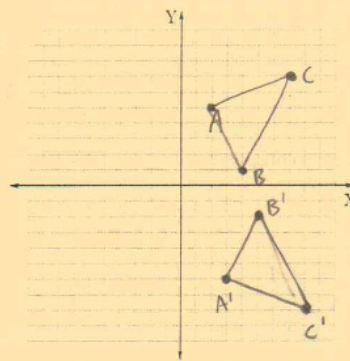
Given: $\triangle ABC$ where $A(0,6)$, $B(6,3)$, $C(3,1)$
Transformation: left 3, up 4

3).



Given: $\triangle ABC$ where $A(2,5)$, $B(4,1)$, $C(7,7)$
Transformation: reflect over y -axis = $R_{y\text{-axis}}$

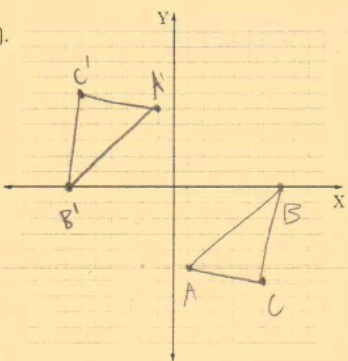
4).



Given: $\triangle ABC$ where $A(2,5)$, $B(4,1)$, $C(7,7)$
Transformation: $R_{x\text{-axis}}$, right 1, down 1

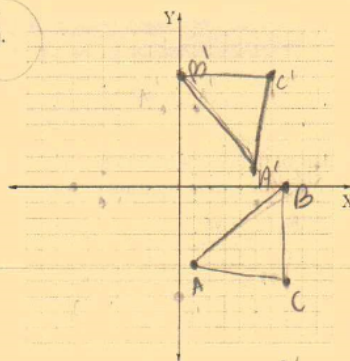
$(-y, x)$

5).



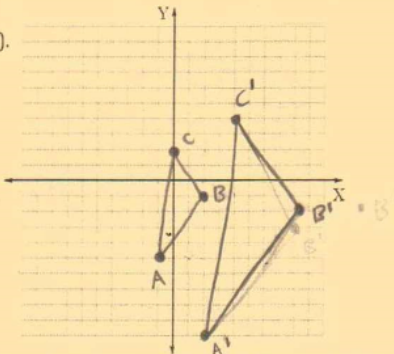
Given: $\triangle ABC$ where $A(1,-5)$, $B(7,0)$, $C(6,-6)$
Transformation: rotation of 180° about origin = $r_{(180^\circ, 0)}$

6).



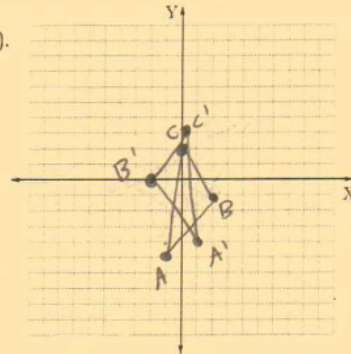
Given: $\triangle ABC$ where $A(1,-5)$, $B(7,0)$, $C(6,-6)$
Transformation: $r_{(90^\circ, 0)}$

7)



Given: $\triangle ABC$ where $A(-1,-5)$, $B(2,-1)$, $C(0,2)$
Transformation: right 2, $D_2(\triangle ABC)$

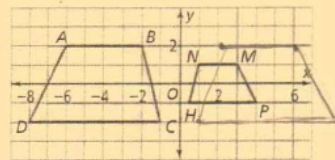
8).



Given: $\triangle ABC$ where $A(-1,-5)$, $B(2,-1)$, $C(0,2)$
Transformation: up 1, $R_{y\text{-axis}}$

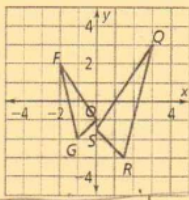
9). What is the composition of transformations/rigid motions that maps trapezoid ABCD to trapezoid MNHP?

reflect across the y-axis $\frac{1}{2}$
dilate by a scale of $\frac{1}{2}$

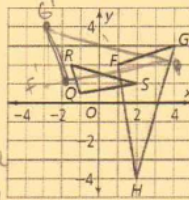


10).

Describe the composition of transformations that maps $\triangle FGH$ to $\triangle QRS$



$R'(-1.5, -3)$ $G(-1, -2)$
 $S'(0, -1.5)$ $H(0, 1)$
 $Q'(-3, 3)$ $F(-2, 2)$
reflected across the y axis, dilated by a scale of $\frac{2}{3}$



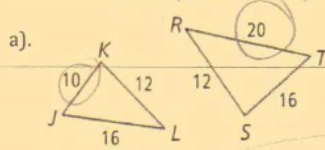
Rotated 90°
dilated by $\frac{1}{2}$
 $\frac{-1}{-2} = \frac{1}{2}$
 $\frac{2}{4} = \frac{1}{2}$

Compositions of rigid motions and dilations map pre-images to similar images. For this reason, they are called similarity transformations. Similarity transformations give you another way to think about similarity.

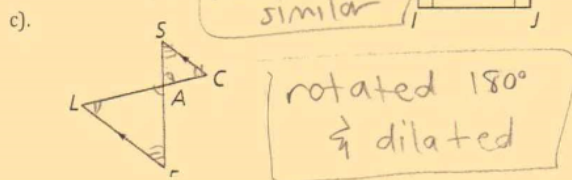
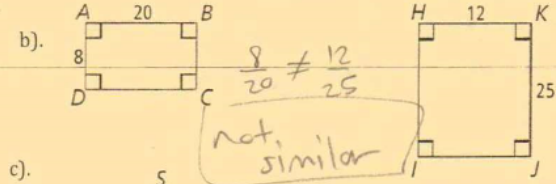
Take note Key Concept Similar Figures

Two figures are **similar** if and only if there is a similarity transformation that maps one figure onto the other.

11). For each pair of figures, determine if there is a similarity transformation that maps one figure onto the other. If so, identify the similarity transformation.



not similar



10.1 Proportions and Ratios ws due tomorrow Questions??

Name: _____ Hr: _____

10.1 Applications using Proportions and Ratios

1. $\frac{15}{y} = \frac{40}{12}$

2. $\frac{y}{42.3} = \frac{144}{56.4}$

3. $\frac{126}{k+3} = \frac{14}{3}$

4. A 9ft tall stop sign casts a 12ft shadow. A building near this stop sign casts a 63ft shadow.
 a) How tall is the building? b) If the distance from the top of the building to the end of the shadow is 87ft, what is the distance from the top of the stop sign to the end of its shadow?

5. Find the length of the lake.

Handwritten work for problem 5:

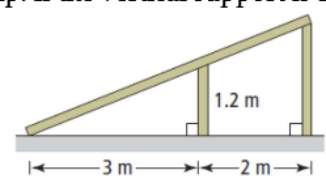
$$\frac{x}{3.6} = \frac{.9}{2.4}$$

$$\frac{2.4x}{2.4} = \frac{3.24}{2.4}$$

$$x = 1.35$$

Other handwritten numbers: 4.5, 3.6, 3.0, 2.4, .9

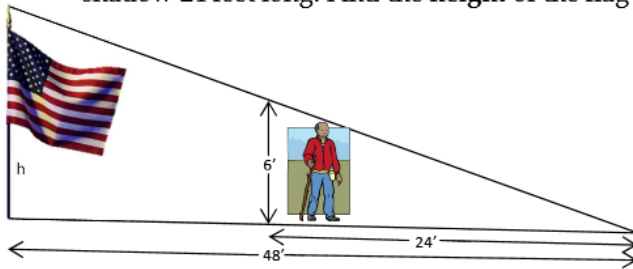
6. A Tower casts a shadow of 64 feet. A 6-foot pole near the tower casts a shadow 8 feet long. How tall is the tower?
7. A ladder that is 30ft tall leans 25ft up against the side of a building. Up against the same building, how far up would a 20ft ladder go?
8. Sam built a ramp to a loading dock. The ramp has a vertical support 2 meters from the base of the loading dock and 3 meters from the base of the ramp. If the vertical support is 1.2 meters in height, what is the height of the loading dock?



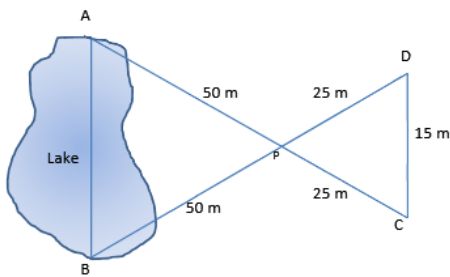
9. Cameron is 5 ft tall and casts a 12 ft shadow. At the same time of day, a nearby building casts a 78 ft shadow. How tall is the building? (Draw a picture)

10. Emily is moving and needs to pack two mirrors. The largest mirror fits in a box that is 18 inches wide by 20 inches long. Her smaller mirror is similar in proportion to the larger mirror. Emily determines that the width of the smaller box needs to be a minimum of 9 inches. What should the minimum length of the box be to hold the smaller mirror?

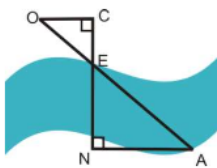
11. A flagpole casts a shadow 48 feet long at the same time that a 6 foot tall person casts a shadow 24 feet long. Find the **height** of the flag pole.



12. Find the length of the **lake** (in meters).



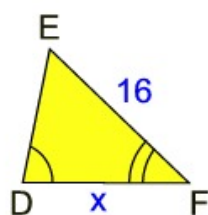
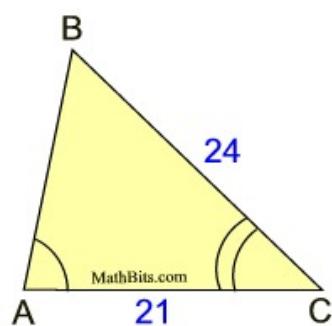
In order to estimate the width of a river, the following technique can be used. Use the diagram on the left for questions 9-13. Place three markers, O, C and E on the upper bank of the river. E is on the edge of the river and $\overline{OC} \perp \overline{CE}$. Go across the river and place a marker, N so that it is collinear with C and E. Then, walk along the lower bank of the river and place marker A, so that $\overline{CN} \perp \overline{NA}$. $OC=50\text{feet}$, $CE=30\text{feet}$, $NA=80\text{feet}$.



13. Is $\overline{OC} \parallel \overline{NA}$? How do you know?
14. What is the width of the river (EN)?
15. Can we find (EA)? If so, find it. If not, explain.

Quiz 10A and 10B tomorrow!
REVIEW

Find the value of x



$$\frac{24}{21} = \frac{16}{x}$$

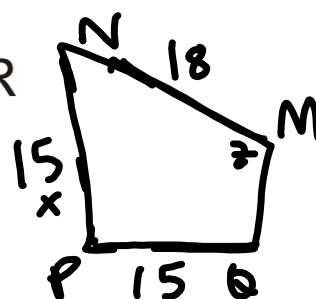
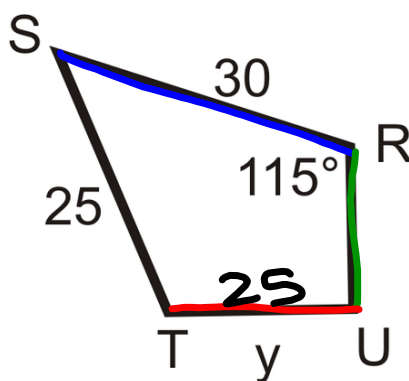
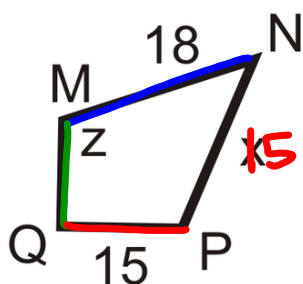
$$\frac{336}{24} = \boxed{x=14}$$

The polygons are similar. Find the values of x and y

$$\frac{x}{25} = \frac{18}{30}$$

$$x = 15$$

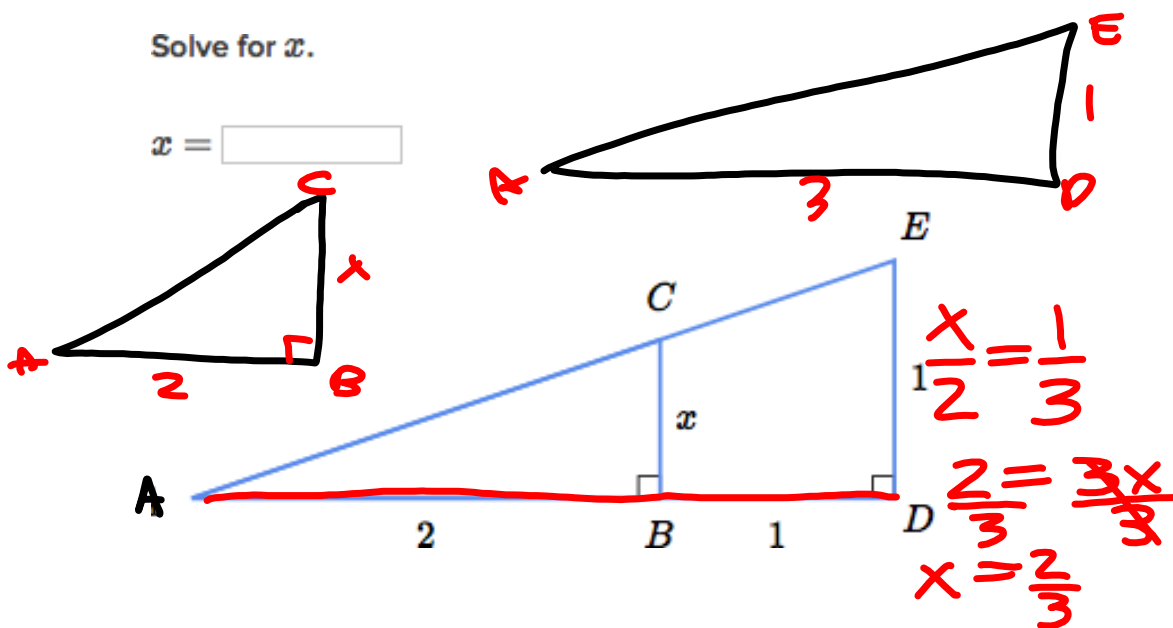
$$\frac{18}{15} = \frac{30}{y}$$



1.666 25

Solve for x .

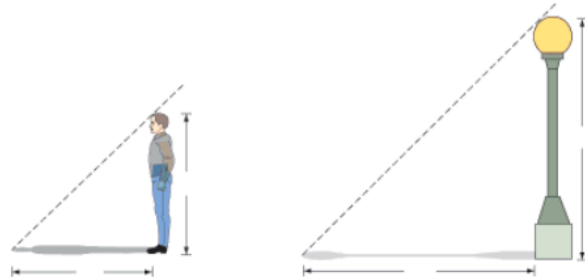
$x =$



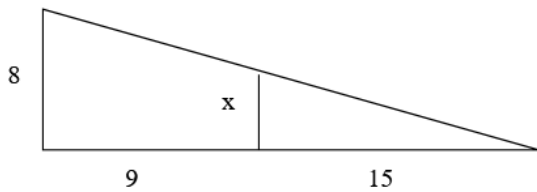
Name _____ Hr _____

Unit 10 Similarity Review: Transformations, Dilations, and Rotations

1. A person 63 inches tall casts a 72 inch shadow. At the same time of day, a lamppost casts a 216 inch shadow. What is the height of the lamppost?



2. These triangles are similar. Solve for x



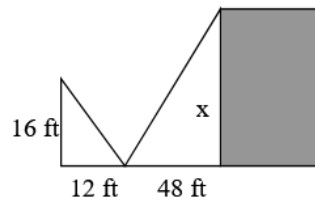
Solve the following proportions

3. $\frac{3}{x-4} = \frac{7}{x+4}$

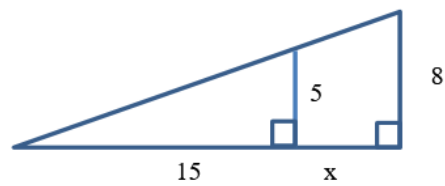
4. $\frac{6x}{24} = \frac{27}{9}$

5. $\frac{20}{10} = \frac{18}{x}$

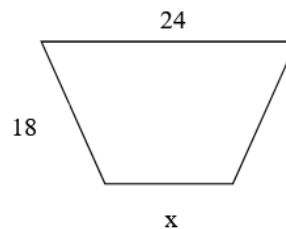
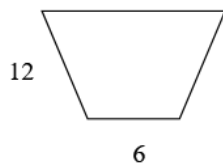
6. Use the triangles to find the height of the building



7. Find x in the figure below.

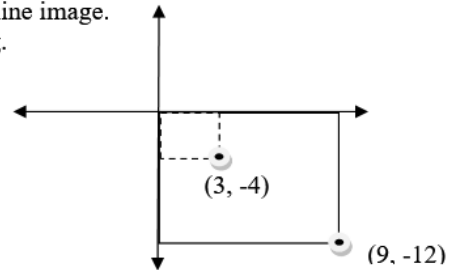


8. The following quadrilaterals are similar find x.



9. A building casts a shadow of 116 feet. A 20 foot flag pole near the building casts a shadow of 40 feet. How tall is the building?

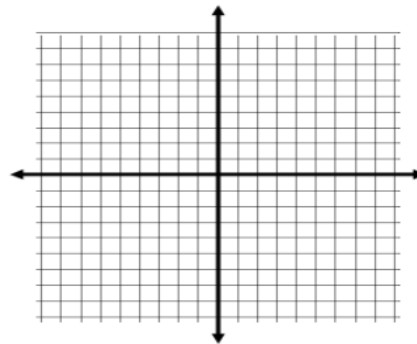
10. The dashed-line pre-image has been transformed to form the solid-line image. What is the scale factor of the dilation? Explain your reasoning.



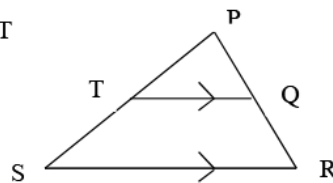
11. Find the scale factor of dilation given $B(6, 10)$, $B'(9, 15)$.

12. Find the image of $Q(4, 9)$ after it is transformed by the dilation $k = 3$

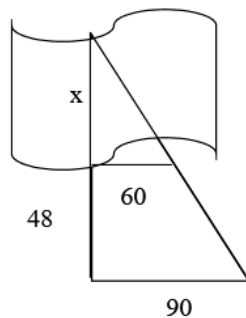
13. The Quadrilateral LAMB has vertices $(-2, 1)$, $(3, 1)$, $(-3, -2)$, $(2, -2)$. Draw a dilation with a scale factor of 2.5 and a center at $(0, 0)$



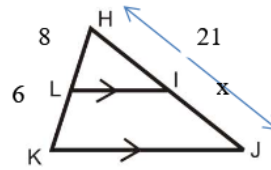
14. If PQ is 22, QR is 25, and ST is 30, Find PT



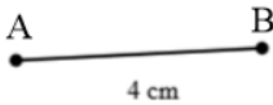
15. Find the width of the river.



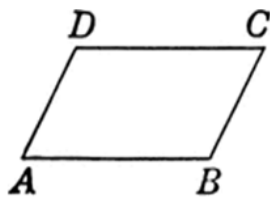
16. Given the following figure, find the value of x .



17. Given the segment below AB draw the dilation AB' with the center of dilation A and the scale factor of 1.5 . Then state the length of AB' .



18. For the given shape, draw a dilation centered at D with a scale factor of $\frac{1}{2}$.

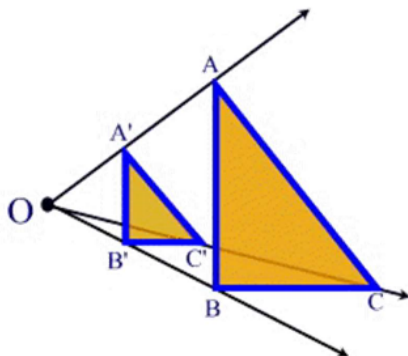


19. In the parallelogram $ABCD$ from above, what are the dimensions, in centimeters, of the original figure and what are the dimensions of the dilated figure?

Original Figure: _____

Dilated Figure: _____

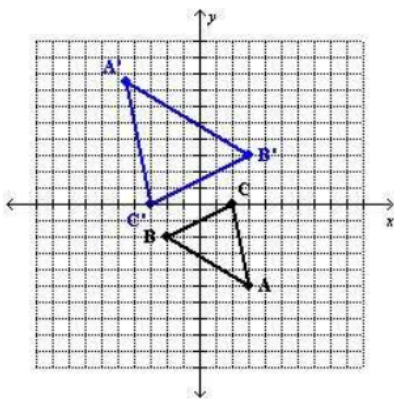
20. $\Delta A'B'C'$ is a dilation of ΔABC . If O is the center of dilation, what is the scale factor? $AB = 24$ and $A'B' = 15$.



21. Dilate $\triangle ABC$ with the given Center D and a scale factor of $\frac{1}{2}$.



22. For the graph, describe the composition of transformations that map $\triangle ABC$ onto $\triangle A'B'C'$.



23. $\triangle BAT$ has vertices $B(2,2)$, $A(5,1)$ and $T(1,-3)$. Sketch the image and list the new vertices of B' , A' , and T' after it has been reflected across the y-axis and dilated by a scale factor of 2. Give the new coordinates.

$B'(\quad , \quad)$, $A'(\quad , \quad)$ and $T'(\quad , \quad)$

