

Grab a Bell Ringer

Monday 2/11Let $f(x) = 5x - 2$, $g(x) = x + 5$, and $h(x) = 3x^2 + 2x$ Compute the following:

1. $(g \circ f)(x)$

$$(x+5)(5x-2)$$

$$\begin{array}{r} 5x^2 - 2x + 25x - 10 \\ 5x^2 + 23x - 10 \end{array}$$

2. $(h - f)(x)$

$$3x^2 + 2x - (5x - 2)$$

$$3x^2 + 2x - 5x + 2$$

$$3x^2 - 3x + 2$$

3. $(f + g)(x)$

$$\begin{array}{r} 5x - 2 \\ + \quad x + 5 \\ \hline \end{array}$$

$$6x + 3$$

4. $(f \circ g)(x)$

$$f(g(x))$$

$$5(x+5) - 2$$

$$5x + 25 - 2$$

$$5x + 23$$

Correct Ch 10 Review

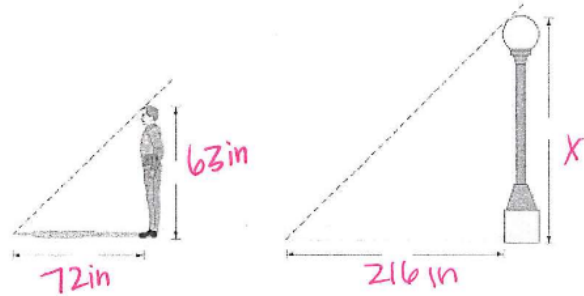
Name Key Hr _____

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?

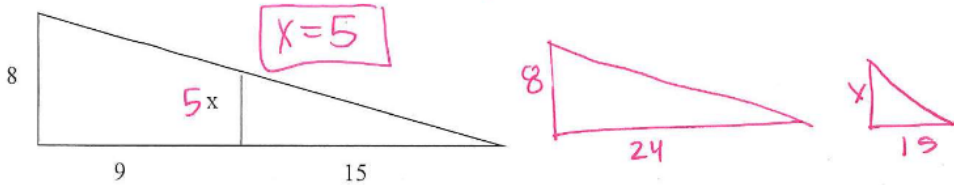
$$\frac{63}{72} = \frac{x}{216}$$

109 in



2. These triangles are similar. Solve for x

$$\frac{8}{24} = \frac{x}{15}$$



Solve the following proportions

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

$$7(x-4) = 3(x+4)$$

$$7x - 28 = 3x + 12$$

$$4x = 40$$

x = 10

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

$$54x = 648$$

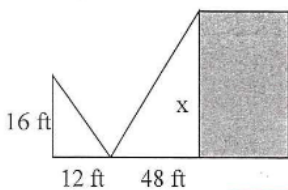
x = 12

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

$$20x = 180$$

x = 9

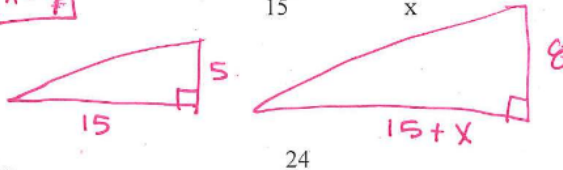
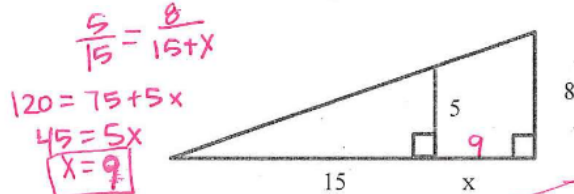
6. Use the triangles to find the height of the building



$$\frac{16}{12} = \frac{x}{48}$$

x = 64 ft

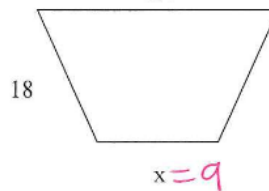
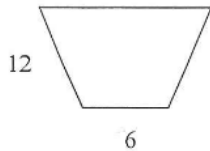
7. Find x in the figure below.



8. The following quadrilaterals are similar find x.

$$\frac{12}{6} = \frac{18}{x}$$

x = 9



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?

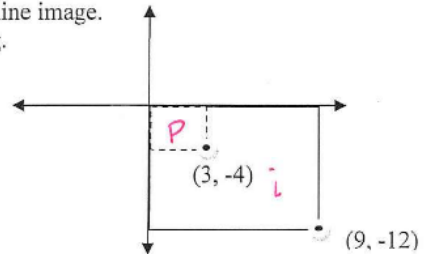


10. The dashed-line pre-image has been transformed to form the solid-line image. What is the scale factor of the dilation? Explain your reasoning.

$$K = \frac{i}{p} = \frac{9}{3} = 3$$

$$\text{or } \frac{-12}{-4} = 3$$

$$K = 3$$



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

$$K = \frac{i}{p} = \frac{9}{6} \text{ or } \frac{15}{10} = \frac{3}{2}$$

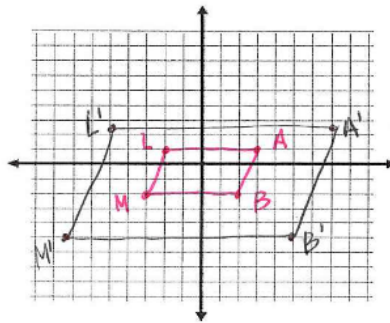
$$K = \frac{3}{2} \text{ or } 1.5$$

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

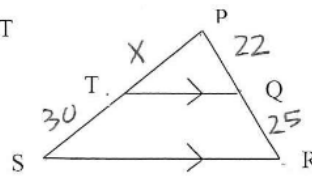
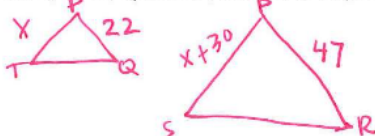
$$4 \times 3 = 12 \quad 9 \times 3 = 27 \quad Q'(12, 27)$$

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)

- L'(-5, 2.5)
- A'(7.5, 2.5)
- M'(-7.5, -5)
- B'(5, -5)



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



$$\frac{X}{22} = \frac{X+30}{47}$$

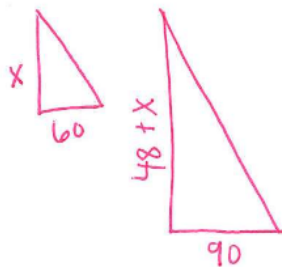
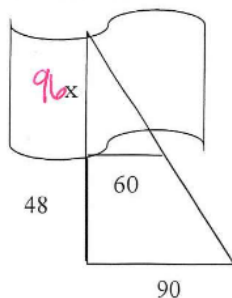
$$47X = 22(X+30)$$

$$47X = 22X + 660$$

$$25X = 660$$

$$X = 26.4$$

15. Find the width of the river.



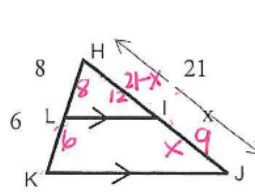
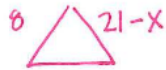
$$\frac{x}{60} = \frac{48+x}{90}$$

$$90x = 60(48+x)$$

$$90x = 2880 + 60x$$

$$\frac{30x}{30} = \frac{2880}{30} \quad X = 96$$

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



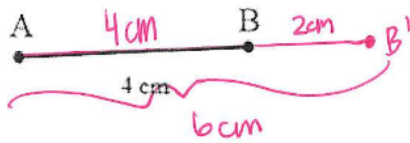
$$\frac{14}{8} = \frac{21}{21-x}$$

$$168 = 294 - 14x$$

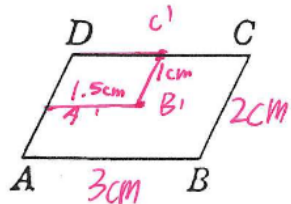
$$-126 = -14x$$

$$\boxed{x=9}$$

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'.



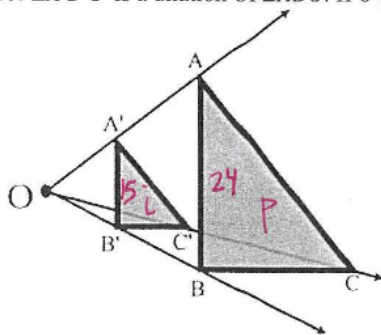
18. For the given shape, draw a dilation centered at D with a scale factor of $\frac{1}{2}$.



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?

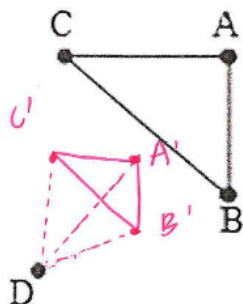
Original Figure: 3 x 2
 Dilated Figure: 1.5 x 1

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 $A'B' = 15$.

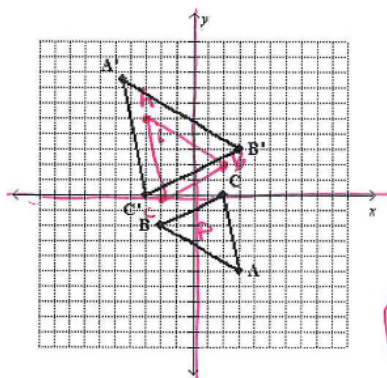


$$K = \frac{i}{p} = \frac{15}{24} = \frac{5}{8} = .625 = K$$

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 $\triangle A'B'C'$.



original
 $A(3, -5)$
 $B(-2, -2)$
 $C(-2, 0)$

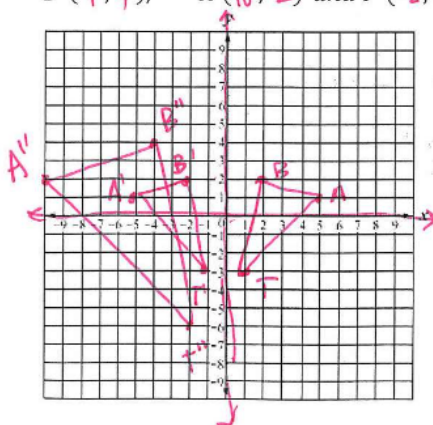
Rotate 180°
 $A'(-3, 5)$
 $B'(2, 2)$
 $C'(-2, 0)$

Dilation $i: B''(3, 3)$
 $k = \frac{i}{p} = \frac{3}{2}$ $p: B'(2, 2)$

Rotate 180° , dilate w/ $k = \frac{3}{2}$

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.

$B''(-4, 4)$, $A''(-10, 2)$ and $T''(-2, -6)$



Reflection
 $A'(-5, 1)$
 $B'(-2, 2)$
 $T'(-1, -3)$

Dilation
 $A''(-10, 2)$
 $B''(-4, 4)$
 $T''(-2, -6)$

Similar Polygons...

Same shape, not the same size

Corresponding angles are Congruent

Corresponding sides are proportional

Corresponding angles:

Q
R
S
P

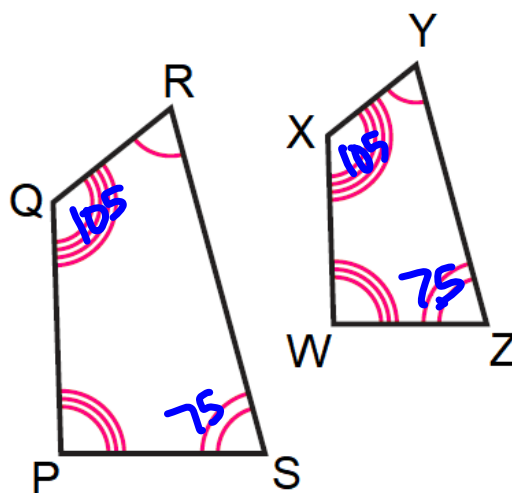
X
Y
Z
W

Corresponding sides:

QR
RS
SP
PQ

X
Y
Z
W

XY
YZ
ZW
WX



Are the polygons similar?

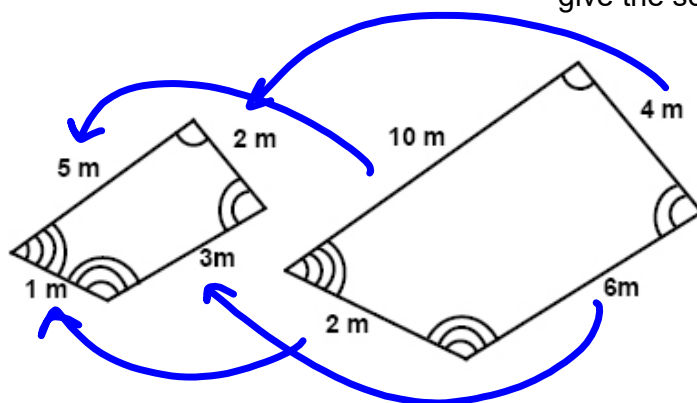
If so, write a similarity statement and give the scale factor from small to big

$$\frac{4}{2} = \frac{6}{3}$$

$$2 = 2$$

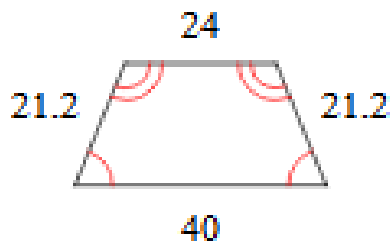
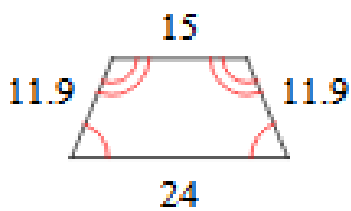
$$\frac{2}{1} = 2$$

$$\frac{5}{5} = 2$$



Are the polygons similar?

If so, write a similarity statement and give the scale factor from small to big



Angles \cong ✓

not similar

Sides Prop.

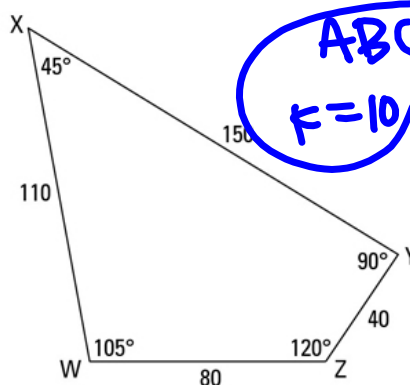
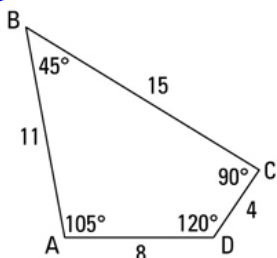
$$\frac{21.2}{11.9} \approx 1.78$$

$$\frac{40}{24} = 1.\bar{6}$$

Are the polygons similar?

If so, write a similarity statement and give the scale factor from small to big

\cong Angles? \checkmark
Prop. Sides?



$ABCD \sim WXYZ$
 $k = 10$

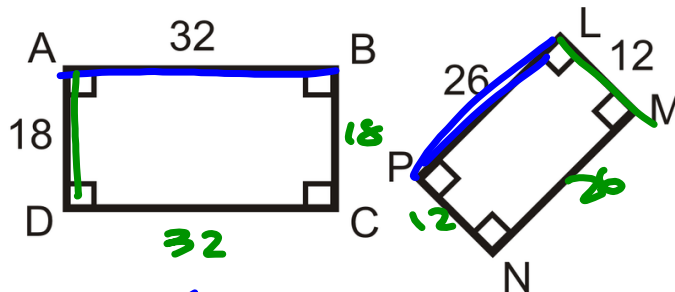
$$\frac{150}{15} = 10$$

$$\frac{40}{4} = 10$$

Are the polygons similar?

If so, write a similarity statement and give the scale factor from small to big

Not Similar ☹



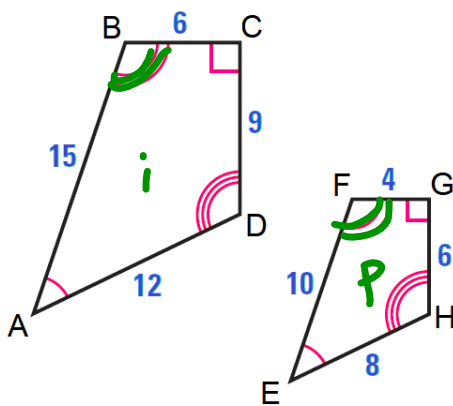
$$\frac{32}{26} = 1.23$$

$$\frac{18}{12} = 1.5$$

≅ Angles? ✓

Prop. Sides?

Are the polygons similar?



If so, write a similarity statement and give the scale factor from small to big

$$\frac{6}{4} = 1.5$$

$$\frac{12}{8} = 1.5$$

$$k = \frac{i}{p}$$

$$k = 1.5$$

$$\frac{9}{6} = 1.5$$

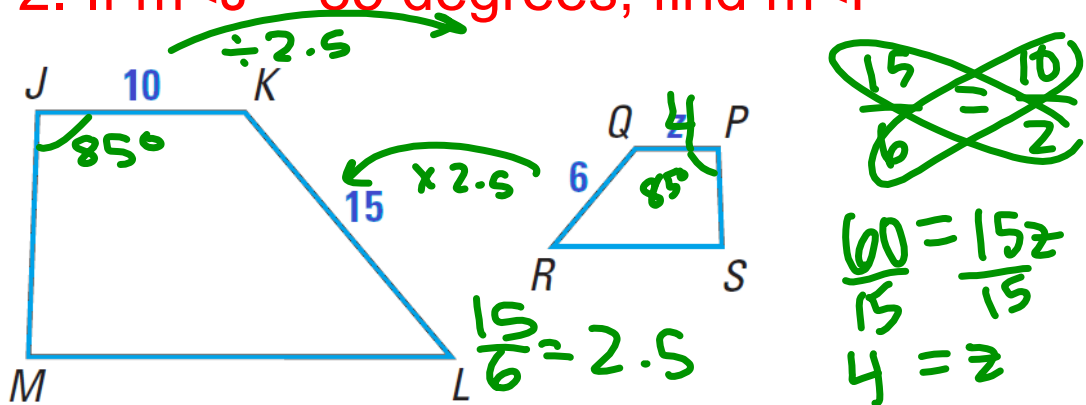
$$\frac{15}{10} = 1.5$$

$$ABCD \sim EFGH$$

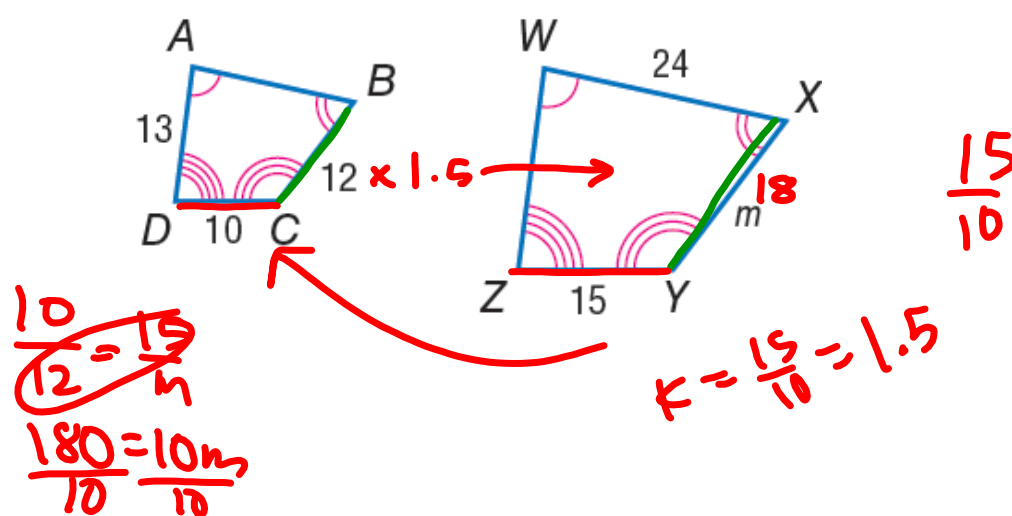
The polygons are similar.

1. Find z

2. If $m\angle J = 85$ degrees, find $m\angle P$



The polygons are similar. Find m .



due Wednesday

Secondary Math 2

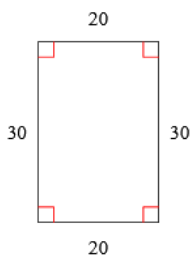
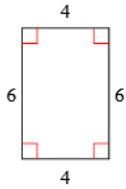
Name _____

10.2 Similar Polygons

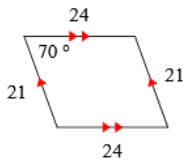
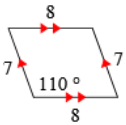
Date _____ Hour _____

State if the polygons are similar.

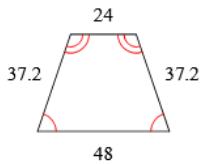
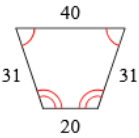
1)



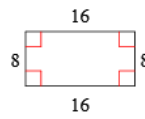
3)



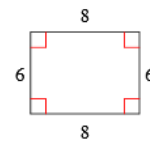
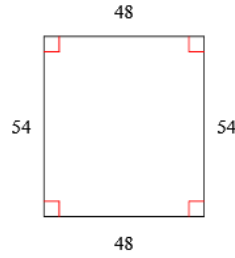
5)



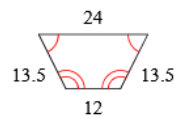
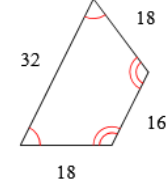
2)



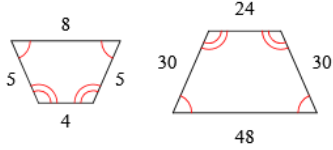
4)



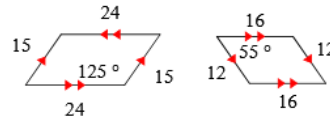
6)



7)

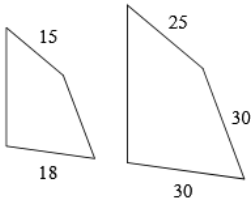


8)

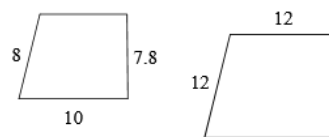


The polygons in each pair are similar. Find the scale factor of the smaller figure to the larger figure.

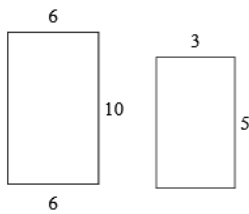
9)



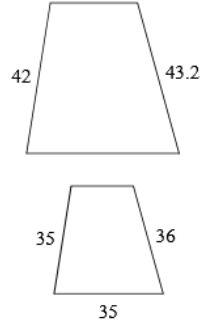
10)



11)

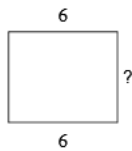


12)

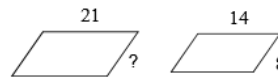


The polygons in each pair are similar. Find the missing side length.

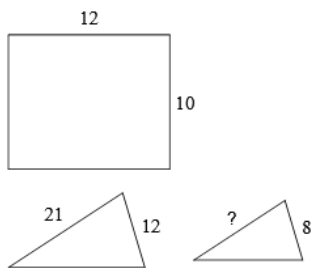
13)



14)



15)



16)

