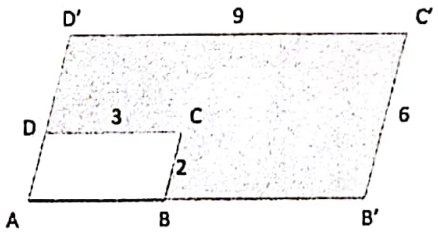
Day 6 Dilations Homework

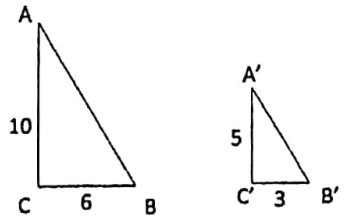
1. Describe the transformation given by rule $(x,y)\rightarrow(3x,y)$. Is it an "Isometry"? Why or why not?
Not an Isometry! It stretches the "x values" by a factor of 3
2. Write an algebraic rule that would cause dilation by a factor of 3 and dilation by a factor of 1/2.
$(x,y)\rightarrow(3x,3y)$ $(x,y)\rightarrow(\frac{1}{2}x,\frac{1}{2}y)$

3. Find the scale factor of the dilation that maps ABCD to A'B'C'D'.



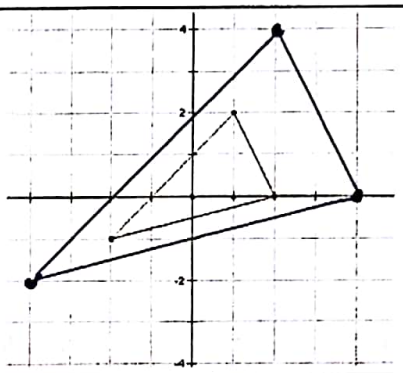
3

4. Find the scale factor of the dilation that maps ABC to A'B'C'.



$\frac{1}{2}$

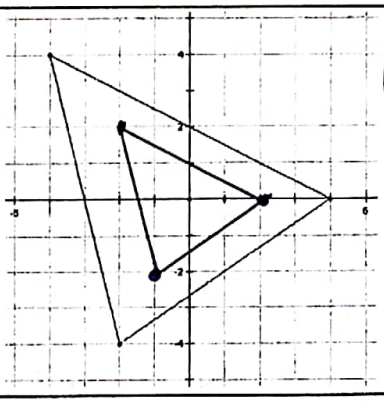
5. Graph the dilation of the object shown using a scale factor of 2.



Algebraic Rule:
$(x,y)\rightarrow(2x,2y)$

$(-2,-1)\rightarrow(-4,-2)$
$(1,2)\rightarrow(2,4)$
$(2,0)\rightarrow(4,0)$

6. Graph the dilation of the object shown using a scale factor of ½.



Algebraic Rule:
$(x,y)\rightarrow(\frac{1}{2}x,\frac{1}{2}y)$

$(-4,4)\rightarrow(-2,2)$
$(-2,-4)\rightarrow(-1,-2)$
$(4,0)\rightarrow(2,0)$

Applications:

M: A

7. The package for a model airplane states the scale is 1:63. The length of the model is 7.6 cm. What is the length of the actual airplane?

1:63

$7.6\times63=478.8$

M: A

8. Another model airplane states the scale is 1:96. The length of the real airplane is 48 feet. What is the length of the model?

1:96

$48\times96=\frac{1}{2}$ or .5

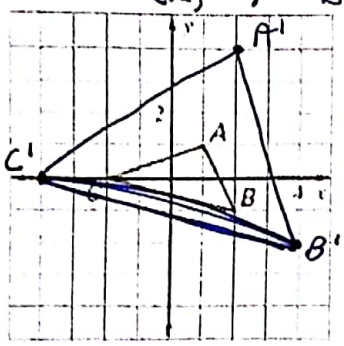
$\frac{1}{63}=\frac{7.6}{x}$

$x=478.8$

Day 7 Dilations and Angle Preservation Hw

Graph a dilation of the figure using the given scale factor, k, with a center of (0, 0). Then write and label the vertices of the image.

1. $k = 2$

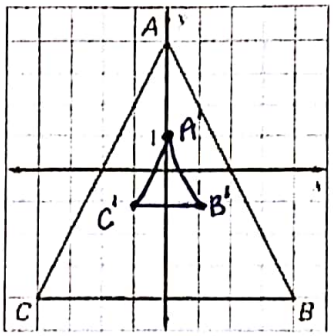


$A(1,2) \rightarrow A'(2,4)$

$B(2,-1) \rightarrow B'(4,-2$

$C(-2,0) \rightarrow C'(-4,0)$

2. $k = \frac{1}{4}$



$A(0,4) \rightarrow A'(0,1)$

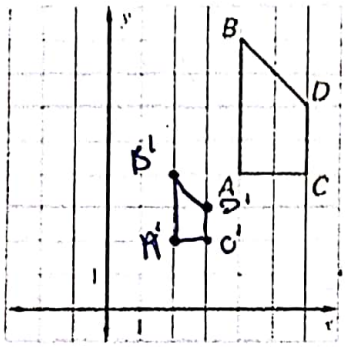
$B(4,4) \rightarrow B'(1,1)$

$C(-4,-4) \rightarrow C'(-1,-1)$

$A(4,4) \rightarrow A'(2,2)$

$B(4,8) \rightarrow B'(2,4)$

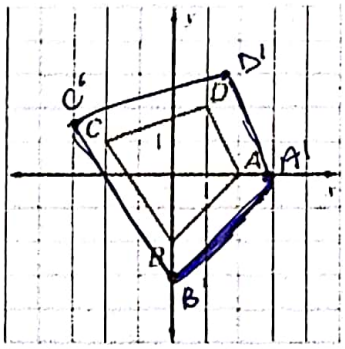
3. $k = \frac{1}{2}$



$C(6,4) \rightarrow C'(3,2)$

$D(6,6) \rightarrow D'(3,3)$

4. $k = 1\frac{1}{2}$



$A(2,0) \rightarrow A'(3,0)$

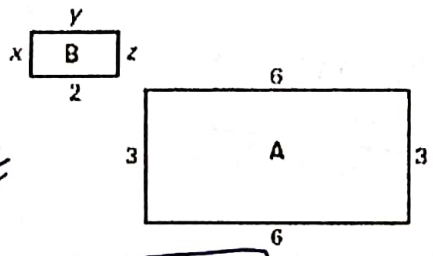
$B(0,-2) \rightarrow B'(0,-3)$

$C(-2,1) \rightarrow C'(-3,1.5)$

$D(1,2) \rightarrow D'(1.5,3)$

Determine whether the dilation from Figure A to Figure B is a *reduction* or an *enlargement*. Then, find the values of the variables.

5.



$K = \frac{1}{3}$

Reduction

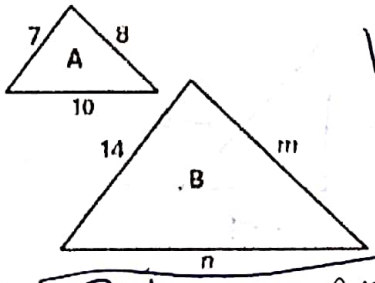
$A \rightarrow B$

$y = 2$

$x = 1$

$z = 1$

6.



$K = 2$

Enlargement

$A \rightarrow B$

$n = 20$

$m = 16$

Fill in the spaces:

7. Dilations create Similar figures.

8. Similar figures have Congruent angles and proportional sides.

9. When a line segment does not pass through the center of dilation the line segment and its image are parallel.

10. When a line segment passes through the center of dilation, the segment and its image lie on the same line.

11. The Scale factor is the ratio of the lengths of the corresponding sides.

Determine if the following scale factor would create an enlargement, a reduction, or an isometric figure. *Explain your reasoning.*

12. 3.5

enlargement

$3.5 > 1$

13. 4/3

enlargement

$\frac{4}{3} > 1$

14. 1

Isometric

$1 = 1$

15. 7/8

enlargement

$\frac{7}{8} > 1$

Given the point and its image, determine the scale factor.

16. A(3, 6) A'(4.5, 9)

$\frac{4.5}{3} = 1.5$

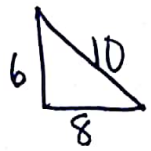
17. G'(3, 6) G(1.5, 3)

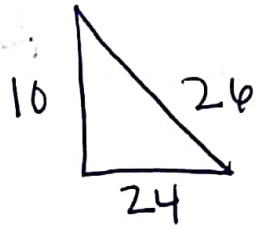
2

18. B(2, 5) B'(1, 2.5)

$\frac{1}{2}$

18. The sides of one right triangle are 6, 8, and 10. The sides of another right triangle are 10, 24, and 26. Determine if the triangles are similar. If so, what is the ratio of corresponding sides?





NOT similar

$\frac{6}{10} = .6$ $\frac{8}{24} = .33$ $\frac{10}{26} = .385$

no common ratio / scale factor