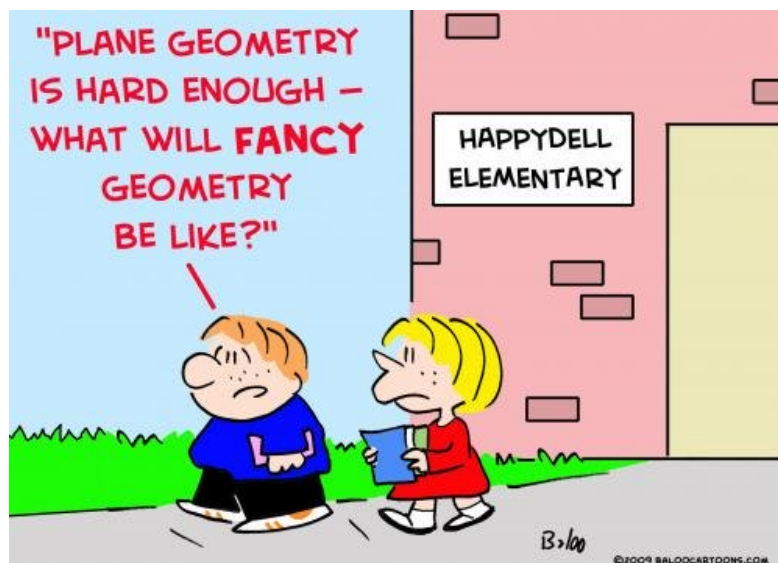


Good morning!

1. "Here"

2. Notes on Unit 2: Similarity

3. Practice



Notes

Ratios in Similar Polygons: Notes

Fill in the blanks to complete each definition.

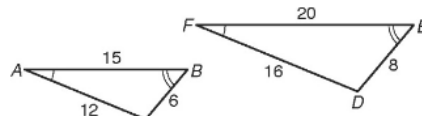
1. A similarity ratio is the ratio of the lengths of the **corresponding** sides of two similar polygons.
2. Two polygons are similar if and only if their corresponding angles are **Congruent** and their corresponding sides are **proportional**.
3. Figures that are similar have the same shape but not necessarily the same

"prop. size"
"angles"

Use the figure for Exercises 4 and 5. The triangles are similar.

4. Name the pairs of congruent angles.

- $\angle A \cong \angle F$
- $\angle B \cong \angle E$
- $\angle C \cong \angle D$



5. Write the corresponding side lengths in the proportion.

smaller
larger

$$\frac{AB}{FE} = \frac{CB}{DE} = \frac{AC}{FD}$$

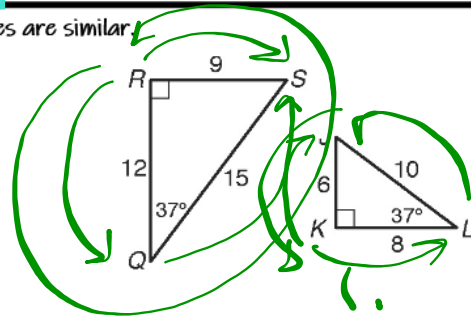
Use the figure to the right for Exercises 6 and 7. The triangles are similar.

6. Circle the correct similarity statement.

- $\triangle QRS \sim \triangle KJL$
- $\triangle RSQ \sim \triangle KJL$
- $\triangle QSR \sim \triangle LKJ$

Write the corresponding side lengths in the proportion.

$$\frac{RS}{KJ} = \frac{RQ}{KL} = \frac{QS}{LJ} = \frac{15}{10} = \frac{3}{2}$$

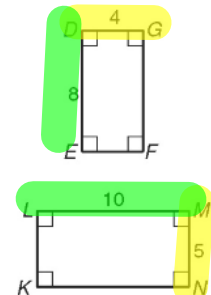


Use the figure to the right for Exercise 8.

8. Substitute numbers for the side lengths and reduce each ratio to simplest form.

$$\frac{DG}{MN} = \frac{4}{5}$$

$$\frac{DE}{LM} = \frac{8}{10} = \frac{4}{5}$$



Notes

multiply

Scale Factor

Scale Factor – the ratio of corresponding sides

- When scale factor is greater than 1, the shape gets *bigger* and this is called an **enlargement**.
- When scale factor is less than 1, but greater than 0, the shape gets *smaller* and this is called a **reduction**.

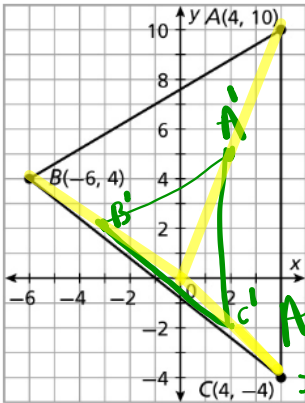
Formula: $\frac{\text{new}}{\text{original}} = \frac{\text{image}}{\text{pre-image}} = k$

Dilations

Apply the dilation D to the polygon with the given vertices. Name the coordinates of the image points. Identify and describe the transformation as an enlargement or reduction.

9. $D(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$
 $A(4, 10), B(-6, 4), \text{ and } C(4, -4)$

multiply
 $k = \frac{1}{2}$
 $\frac{1}{2} < 1$
reduction



$A(4, 10)$
 $\times \frac{1}{2}$
 $\times \frac{1}{2}$

$A'(2, 5)$

A prime after 1st transformation

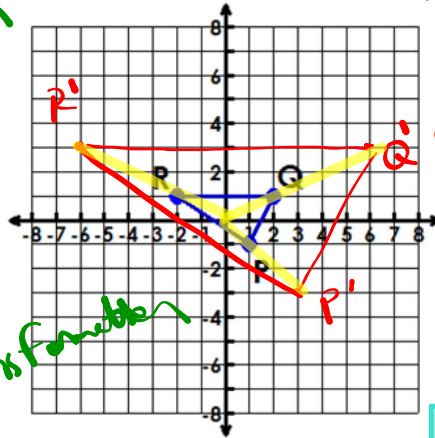
$A'(2, 5), B'(-3, 2), \text{ and } C'(2, -2)$

This shape is a **reduction**.

The scale factor is $\frac{1}{2}$

10. $D(x, y) \rightarrow (3x, 3y)$
 $P(1, -1), Q(2, 1), R(-2, 1)$

$k = 3$
 $k > 1$
enlargement



$P'(3, -3), Q'(6, 3), \text{ and } R'(-6, 3)$

This shape is a/n **enlargement**.

The scale factor is **3**.

DILATION OF A PENNY WITH A SCALE FACTOR OF 100



PRE-IMAGE

img1170.com



IMAGE

Geometry

2- Similarity & Right Triangles

Name: _____ Date: _____

Similarity and Dilations

In the diagram, $\triangle CAT \sim \triangle DOG$. Use the diagram to find each of the following.

1. Scale factor of $\triangle CAT$ to $\triangle DOG$ (Simplify)

Scale Factor = $\frac{18}{8} = \frac{9}{4}$ or 2.25 **LARGER** $k > 1$

2. Find x and y (Show Work!)

$x = 22.5$ $y = 10.67$

3. Find $m\angle D$ **LARGER**

4. Find $m\angle O$ **SMALL**

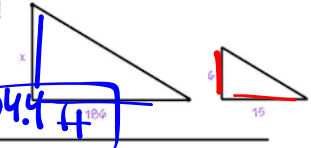
5. Find $m\angle A = 48^\circ$

6. What is the ratio of the perimeter of $\triangle CAT$ to the perimeter of $\triangle DOG$?

ADD ALL SIDES
 $\frac{CAT}{DOG} = \frac{sum}{sum} = \frac{4}{9}$

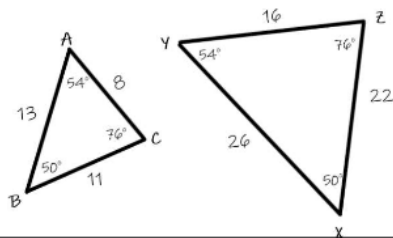
7. A boy who is 6 ft. tall cast a shadow that is 15 ft long. At the same time, a building nearby cast a shadow that is 186 ft long. How tall is the building? Draw a picture!

$\frac{Building\ x}{Person\ 6} = \frac{186}{15}$ $\frac{15x}{15} = \frac{1116}{15}$

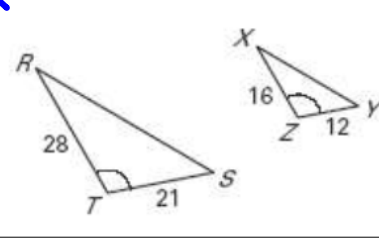


Determine why the triangles are similar (postulate or theorem), and write a similarity statement.

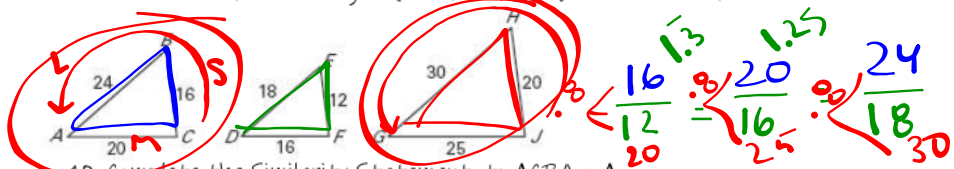
$\triangle BAC \sim$



$\triangle TRS \sim$



Determine which of the triangles ($\triangle DEF$ or $\triangle GHJ$) is similar to $\triangle ABC$:



10. Complete the Similarity Statement to $\triangle CBA \sim \triangle$

11. Find the Scale Factor =

$.8 = \frac{4}{5}$ or $\frac{5}{4} = 1.25$

Congruent | Similar

\cong

Angles }
Sides } SAME

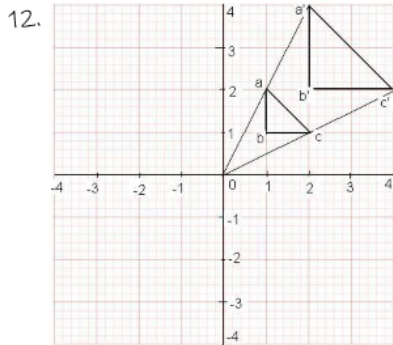
\sim

Angles SAME
Sides are Proportional

Geometry

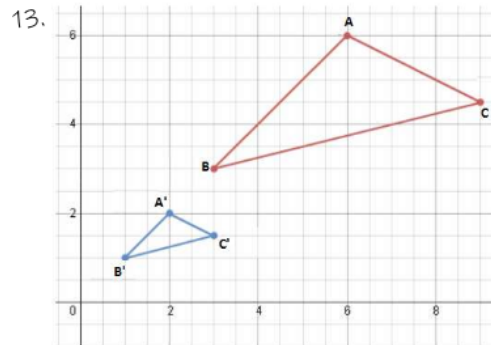
2- Similarity & Right Triangles

Determine whether the dilation from Figure ABC to Figure A'B'C' is a reduction or an enlargement. Then find its scale factor and simplify if possible.



Reduction or enlargement?

scale factor =

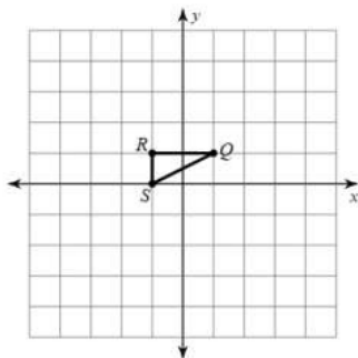


Reduction or enlargement?

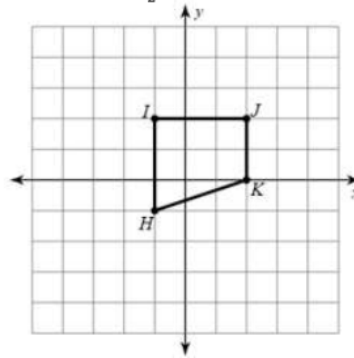
scale factor =

Graph the image of the figure using the transformation given.

14) dilation of 4 about the origin



15) dilation of $\frac{1}{2}$ about the origin



Find the coordinates of the vertices of each figure after the given transformation. Identify if it is an enlargement or reduction.

16) dilation of $\frac{1}{2}$ about the origin
 R(-1, -1), S(0, 2), T(1, 2), U(2, -2)

17) dilation of 2 about the origin
 Z(-1, -1), Y(-1, 2), X(1, 1)

① practice 1

② ~~graph practice 2~~
choose 10!

③ DeltaMath

Geometry

Name _____ ID: 1

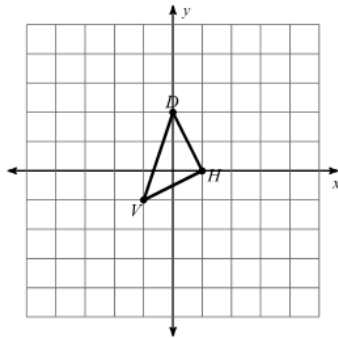
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Dilations

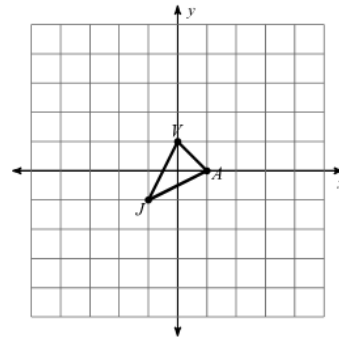
Date _____ Period _____

Graph the image of the figure using the transformation given.

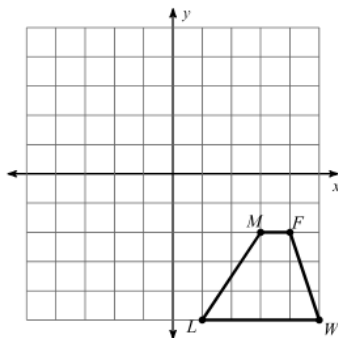
1) dilation of 2



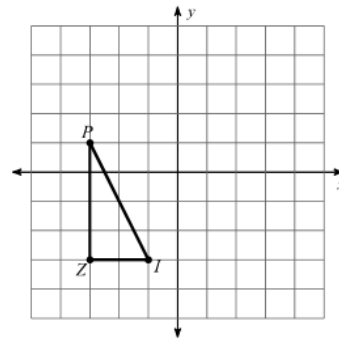
2) dilation of 4



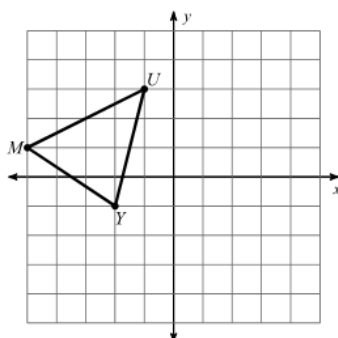
3) dilation of $\frac{1}{2}$



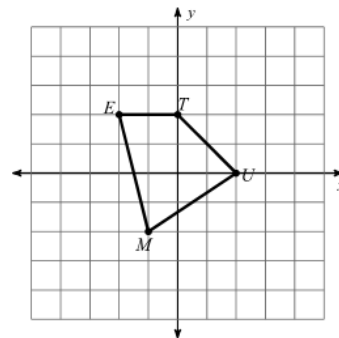
4) dilation of 1.5



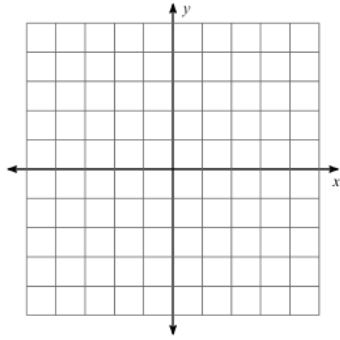
5) dilation of $\frac{1}{2}$



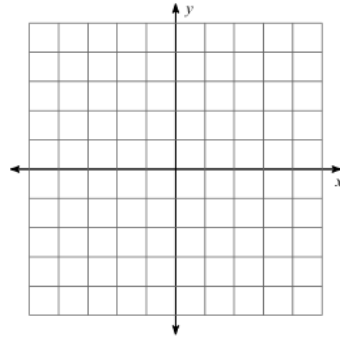
6) dilation of 2



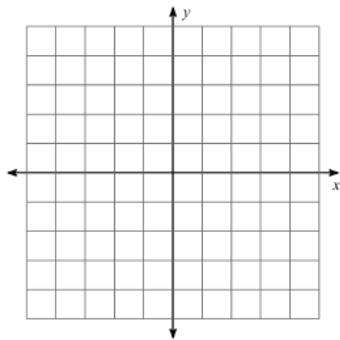
- 7) dilation of 2
 $K(-1, 0)$, $C(1, 2)$, $U(0, -2)$



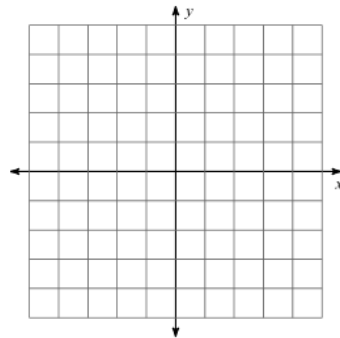
- 8) dilation of 2.5
 $Z(-1, 0)$, $G(0, 2)$, $E(1, 2)$, $W(-1, -1)$



- 9) dilation of 1.5
 $L(-1, -1)$, $K(-2, 1)$, $Q(3, 1)$

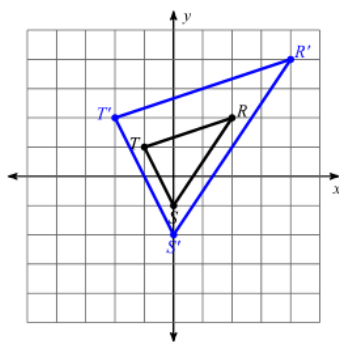


- 10) dilation of $\frac{1}{4}$
 $V(-4, 2)$, $M(-4, 4)$, $S(0, 4)$

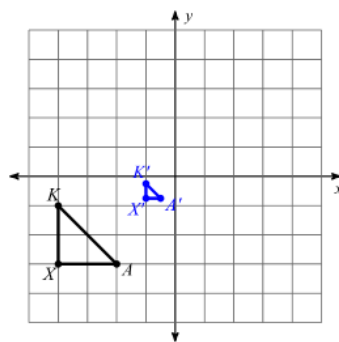


Write a rule to describe each transformation.

11)



12)



Geometry

Name _____ ID: 2

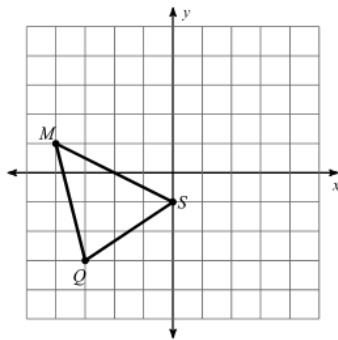
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Dilations

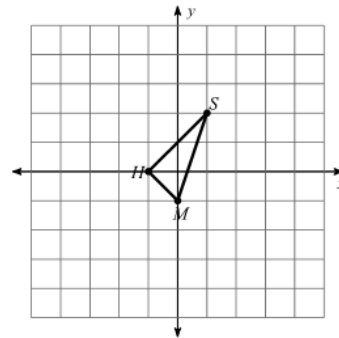
Date _____ Period _____

Graph the image of the figure using the transformation given.

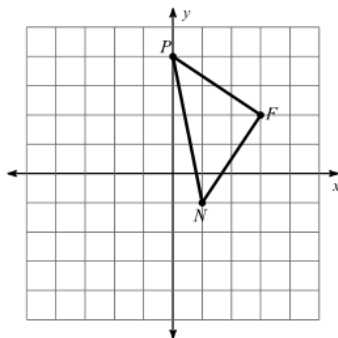
1) dilation of 0.25



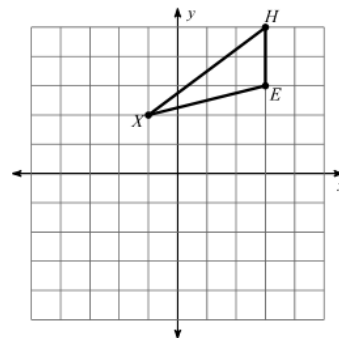
2) dilation of $\frac{5}{2}$



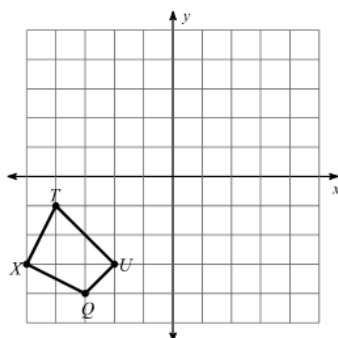
3) dilation of 0.5



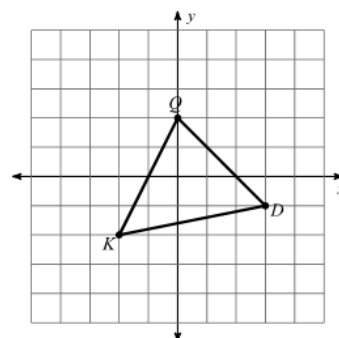
4) dilation of 0.25



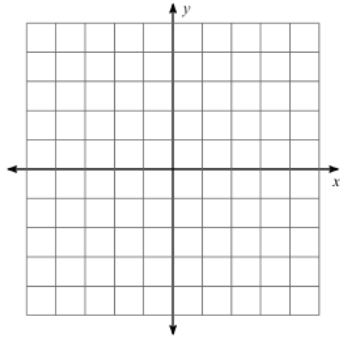
5) dilation of 0.5



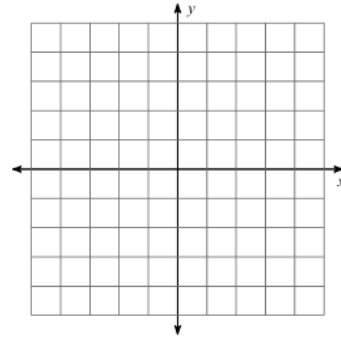
6) dilation of 1.5



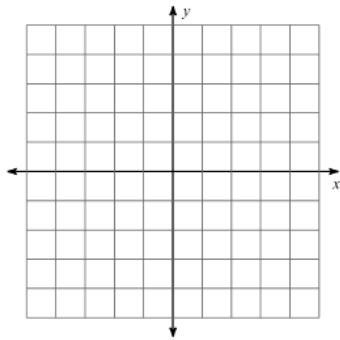
- 7) dilation of 0.5
 $Y(0, -3), Z(1, -1), D(4, -1), L(1, -4)$



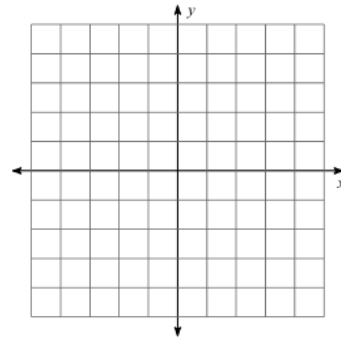
- 8) dilation of 0.25
 $H(0, -3), G(0, 2), U(5, 1), A(5, -1)$



- 9) dilation of $\frac{1}{2}$
 $U(-4, 2), L(-3, 5), X(-1, 5)$

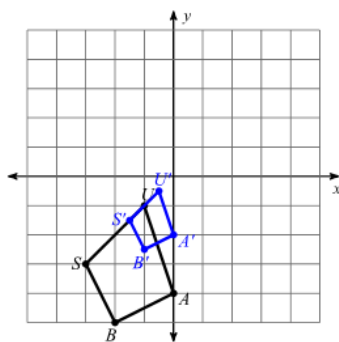


- 10) dilation of 1.5
 $A(-2, 0), G(-2, 1), M(2, 3), U(1, -2)$



Write a rule to describe each transformation.

11)



12)

