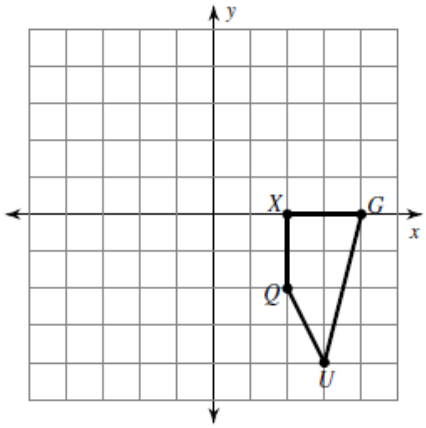
Day 1 Homework

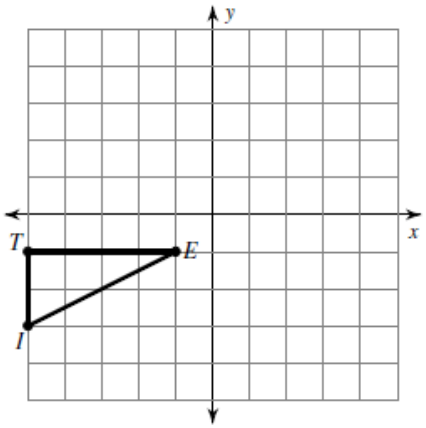
Graph the image of the figure using the transformation given and give the algebraic rule.

1) translation: 1 unit left



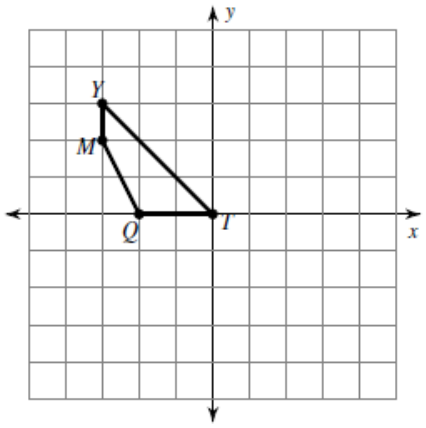
Algebraic Rule:

2) translation: 1 unit right and 2 units down



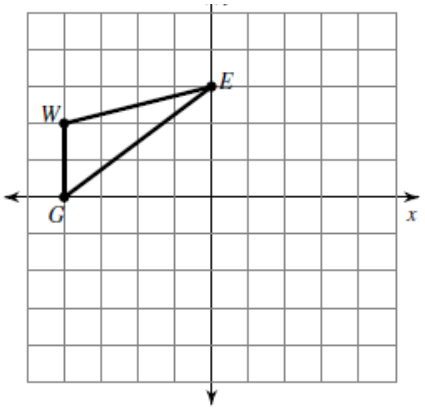
Algebraic Rule:

3) translation: 3 units right



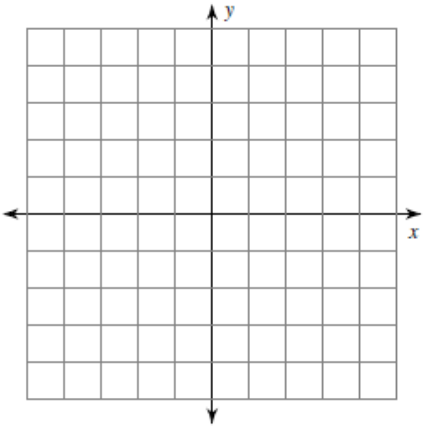
Algebraic Rule:

4) translation: < 1, -2 >



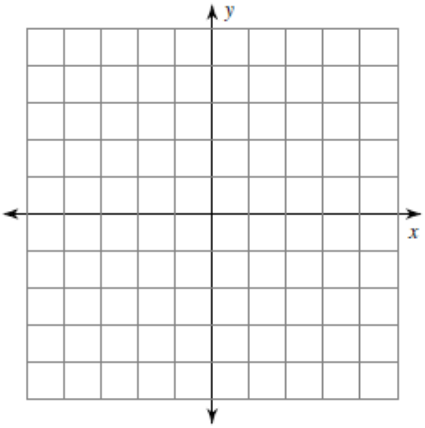
Algebraic Rule:

5) translation: 5 units up
$U(-3, -4), M(-1, -1), L(-2, -5)$



Algebraic Rule:

6) translation: < 0, 3 >
$R(-4, -3), D(-4, 0), L(0, 0), F(0, -3)$



Algebraic Rule:

Find the coordinates of the vertices of each figure after the given transformation and give the algebraic rule.

7) translation: 2 units left and 1 unit down
$Q(0, -1), D(-2, 2), V(2, 4), J(3, 0)$

Vertices:

Algebraic Rule:

8) translation: 2 units down
$D(-4, 1), A(-2, 5), S(-1, 4), N(-1, 2)$

Vertices:

Algebraic Rule:

9) translation: < -4, 4 >
$J(-1, -2), A(-1, 0), N(3, -3)$

Vertices:

Algebraic Rule:

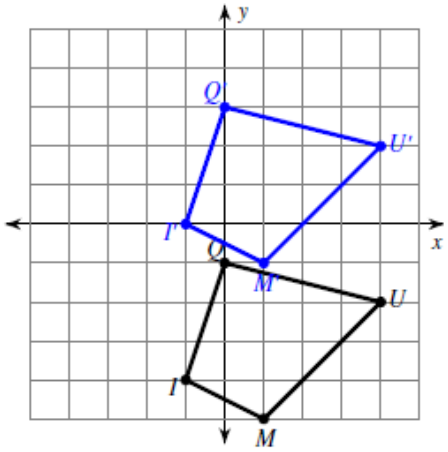
10) translation: 3 units right and 4 units up
$Z(-4, -3), I(-2, -2), V(-2, -4)$

Vertices:

Algebraic Rule:

Write a description of each transformation and give the algebraic rule.

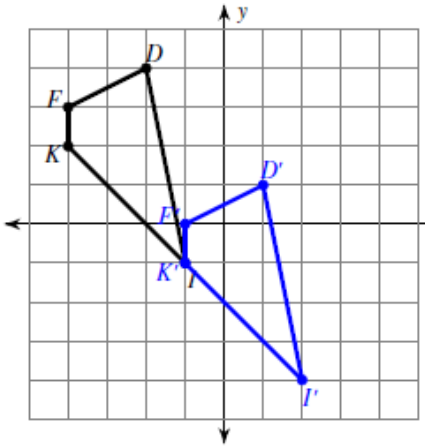
11)



Description:

Algebraic Rule:

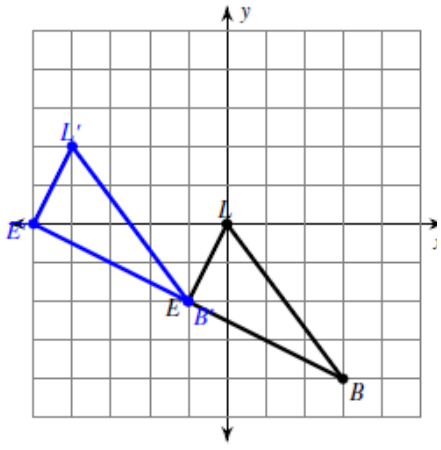
12)



Description:

Algebraic Rule:

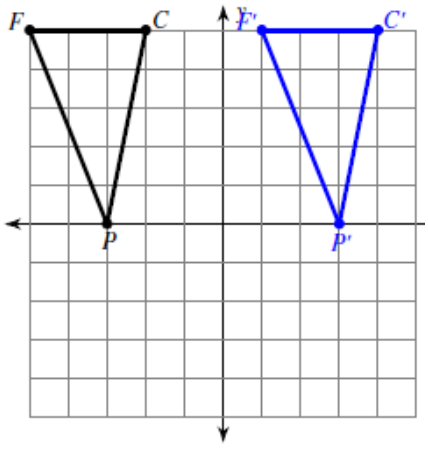
13)



Description:

Algebraic Rule:

14)



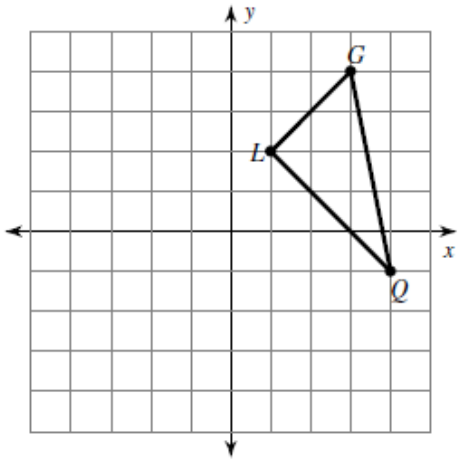
Description:

Algebraic Rule:

Day 2 Homework Part 1

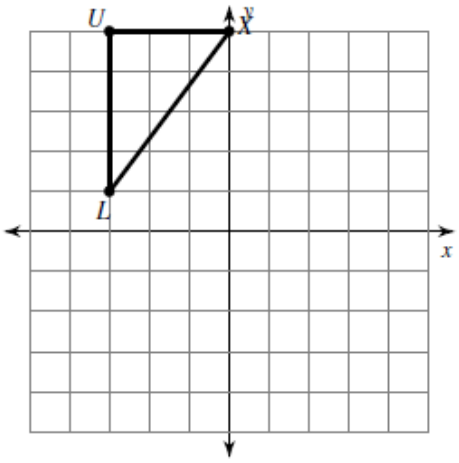
Graph the image using the transformation given and give the algebraic rule as requested.

1) reflection across the x-axis

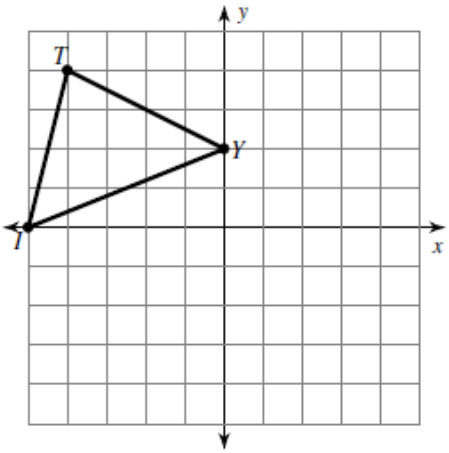


Algebraic Rule:

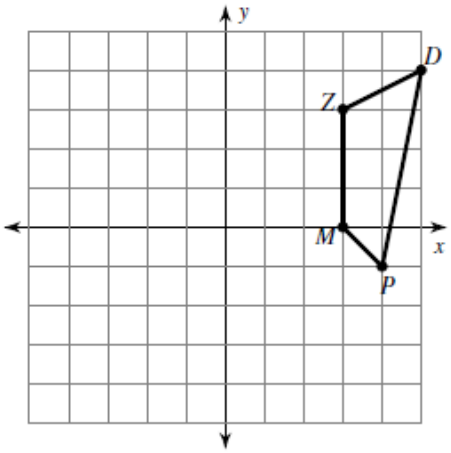
2) reflection across $y = 3$



3) reflection across $y = 1$

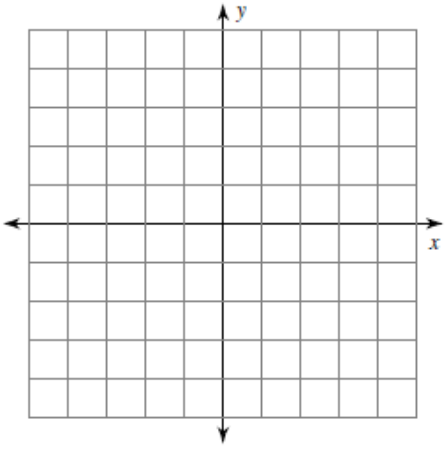


4) reflection across the x-axis



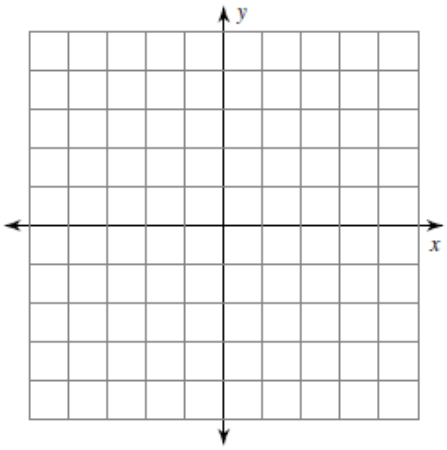
Algebraic Rule:

5) reflection across the x-axis
$T(2, 2), C(2, 5), Z(5, 4), F(5, 0)$



Algebraic Rule:

6) reflection across $y = -2$
$H(-1, -5), M(-1, -4), B(1, -2), C(3, -3)$



Find the coordinates of the vertices of each figure after the given transformation and give the algebraic rule, as requested.

7) reflection across the x-axis
$K(1, -1), N(4, 0), Q(4, -4)$

Algebraic Rule:

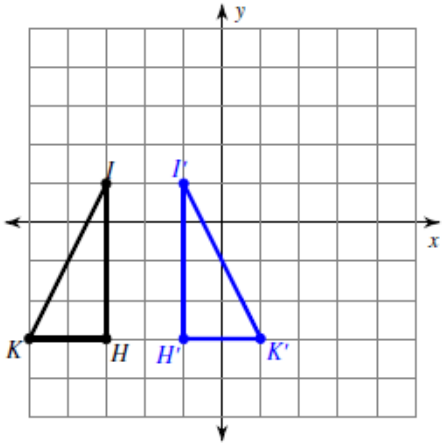
8) reflection across $y = -1$
$R(-3, -5), N(-4, 0), V(-2, -1), E(0, -4)$

9) reflection across $x = 3$
$F(2, 2), W(2, 5), K(3, 2)$

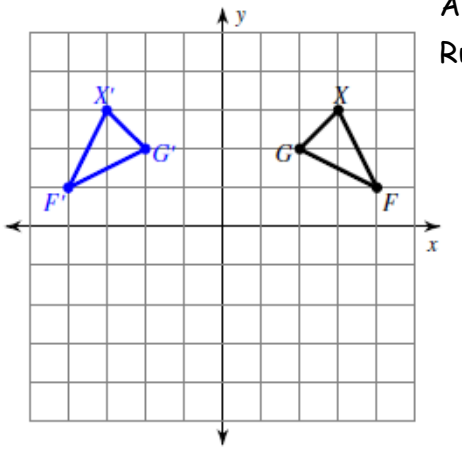
10) reflection across $x = -1$
$V(-3, -1), Z(-3, 2), G(-1, 3), M(1, 1)$

Write a description of each transformation and give the algebraic rule, as requested.

11)

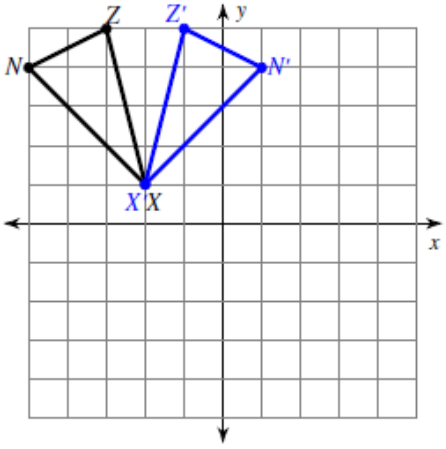


12)

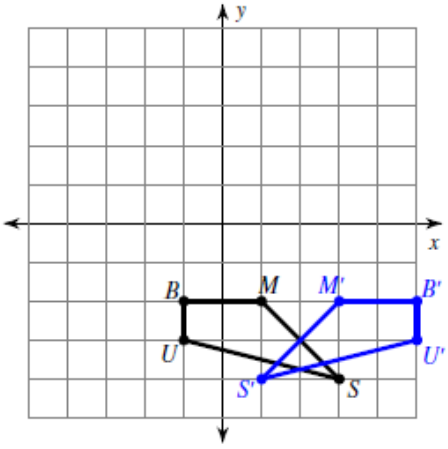


Algebraic Rule:

13)



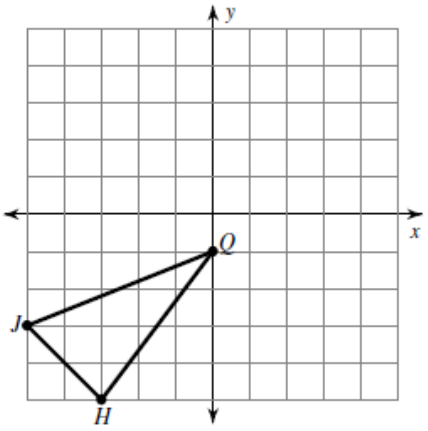
14)



Day 3 – Homework Part 1

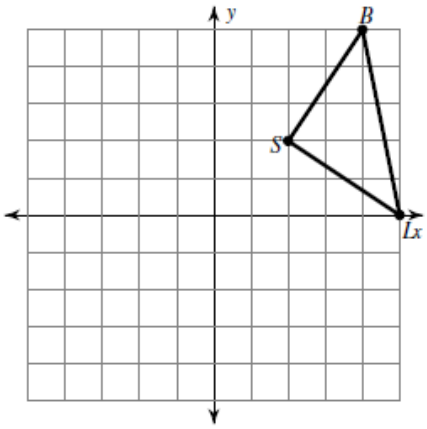
Graph the image of the figure using the transformation given. Also, give the coordinates of the image and the algebraic rule for the transformation.

1) rotation 180° about the origin



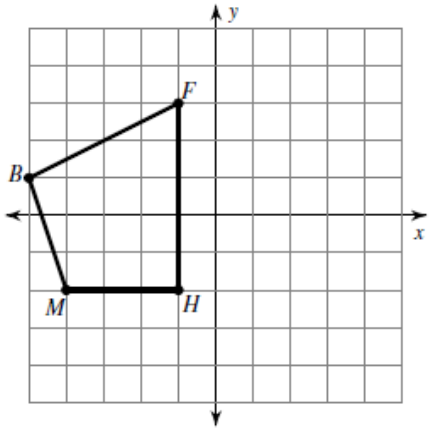
Algebraic Rule:

2) rotation 90° counterclockwise about the origin



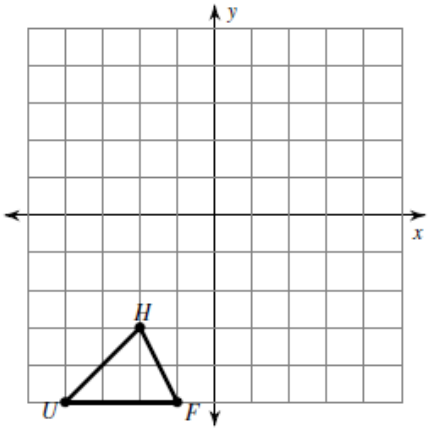
Algebraic Rule:

3) rotation 90° clockwise about the origin



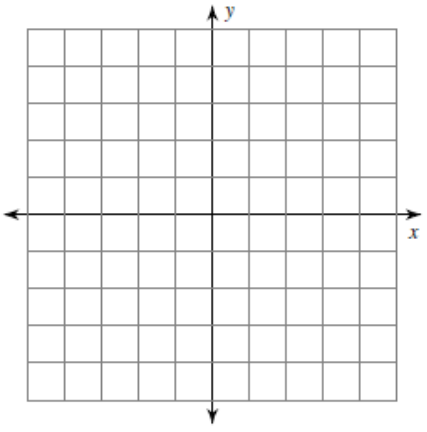
Algebraic Rule:

4) rotation 180° about the origin



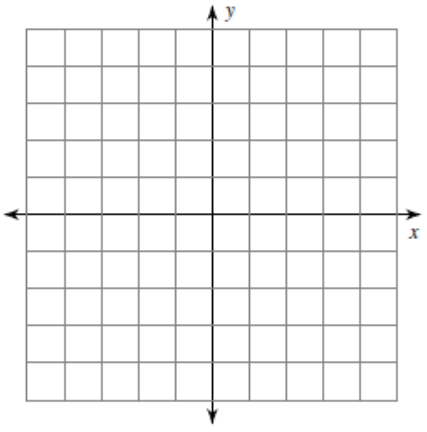
Algebraic Rule:

5) rotation 90° clockwise about the origin
$U(1, -2)$, $W(0, 2)$, $K(3, 2)$, $G(3, -3)$



Algebraic Rule:

6) rotation 180° about the origin
$V(2, 0)$, $S(1, 3)$, $G(5, 0)$



Algebraic Rule:

Identify the coordinates of the vertices or each figure after the given transformation. Also, give the algebraic rule for each transformation.

7) rotation 180° about the origin
$Z(-1, -5)$, $K(-1, 0)$, $C(1, 1)$, $N(3, -2)$
Vertices:

Algebraic Rule:

8) rotation 180° about the origin
$L(1, 3)$, $Z(5, 5)$, $F(4, 2)$
Vertices:

Algebraic Rule:

9) rotation 90° clockwise about the origin
$S(1, -4)$, $W(1, 0)$, $J(3, -4)$
Vertices:

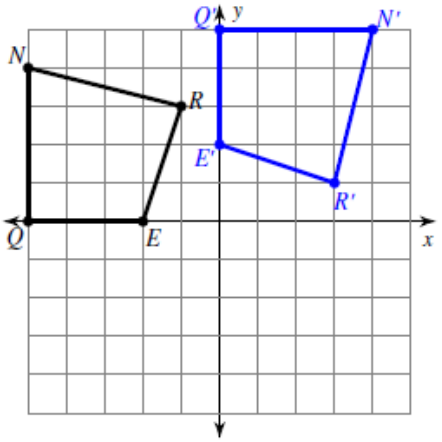
Algebraic Rule:

10) rotation 180° about the origin
$V(-5, -3)$, $A(-3, 1)$, $G(0, -3)$
Vertices:

Algebraic Rule:

Write a description of each transformation and give the algebraic rule.

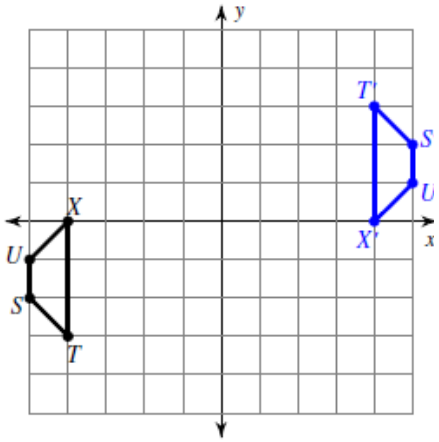
11)



Description:

Algebraic Rule:

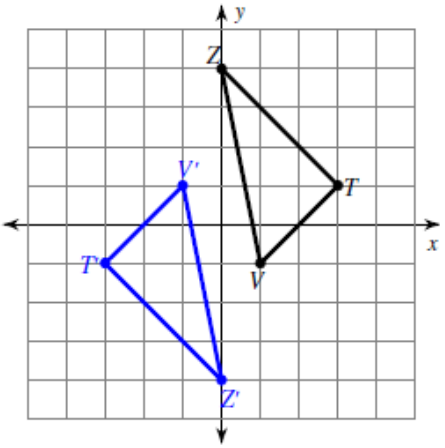
12)



Description:

Algebraic Rule:

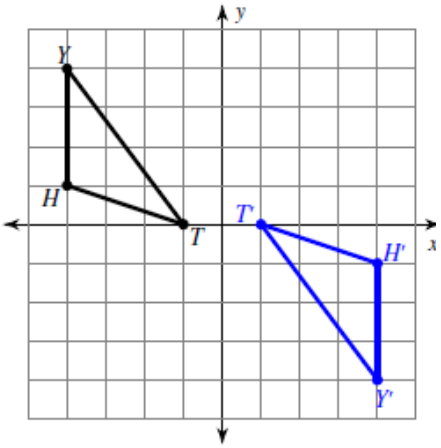
13)



Description:

Algebraic Rule:

14)



Description:

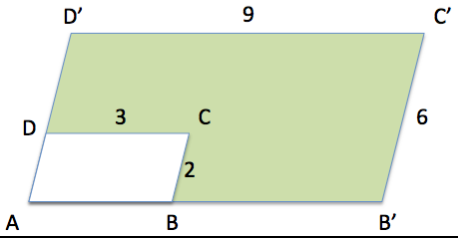
Algebraic Rule:

Day 4 – Homework Part 1

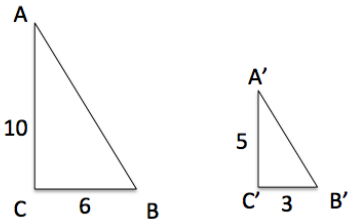
1. Describe the transformation given by rule $x, y \rightarrow 3x, y$. Is it an isometry?

2. Write a rule that would cause a dilation by 3; a dilation by 1/2.

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

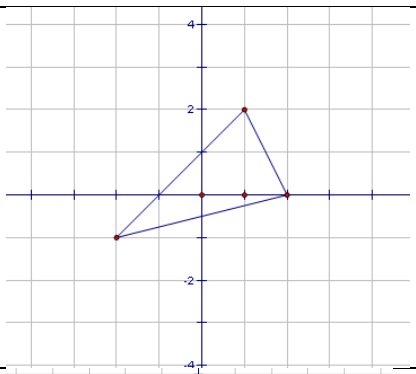


4. Find the scale factor of the dilation that maps ABC to A'B'C'.



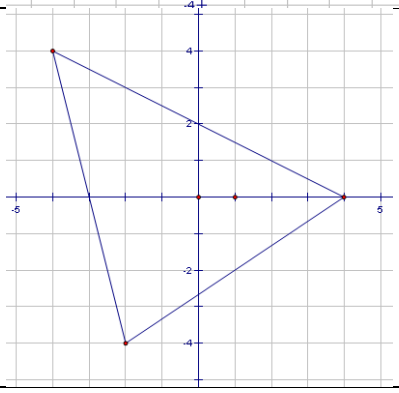
5. Graph the dilation of the object shown using a scale factor of 2.

Motion rule:



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

Motion rule:



Advanced:

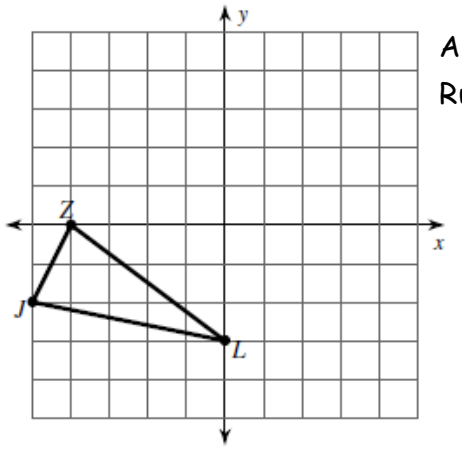
7. The package for a model airplane states the scale is 1:63. The length of the model is 7.6 cm. What is the length of the actual airplane?

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?

Day 5 – Homework Part 1

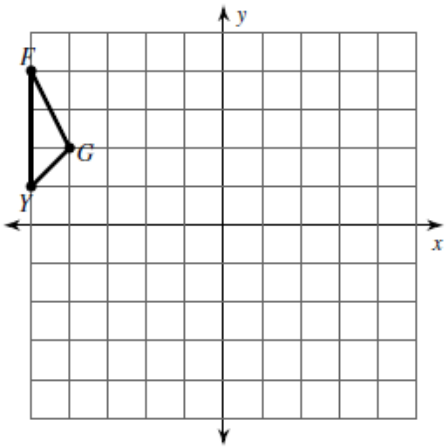
Graph the image of the figure using the transformation given and write the algebraic rule.

1) rotation 90° counterclockwise about the origin



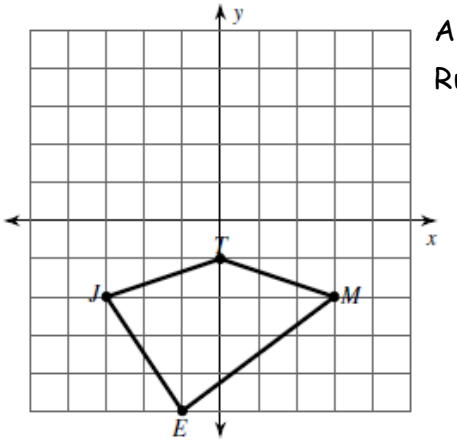
Algebraic Rule:

2) translation: 4 units right and 1 unit down



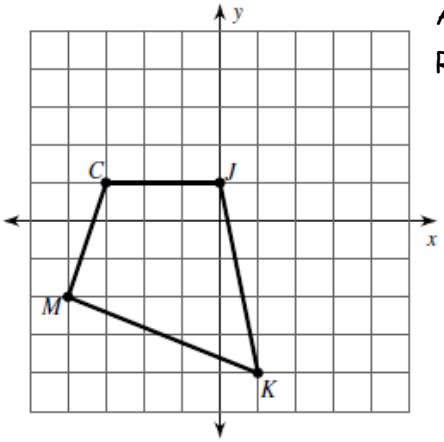
Algebraic Rule:

3) translation: 1 unit right and 1 unit up



Algebraic Rule:

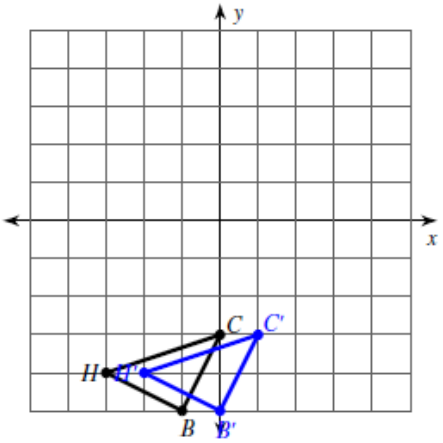
4) reflection across the x-axis



Algebraic Rule:

Write a verbal description and a motion rule, as requested, to describe each transformation.

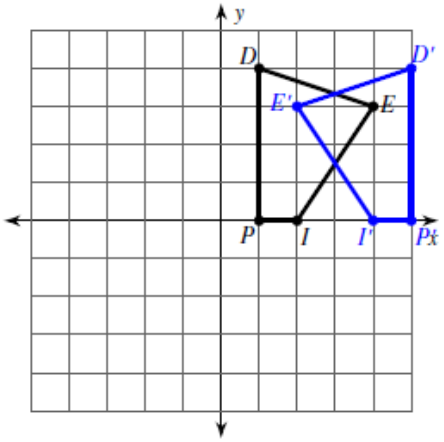
5)



Description:

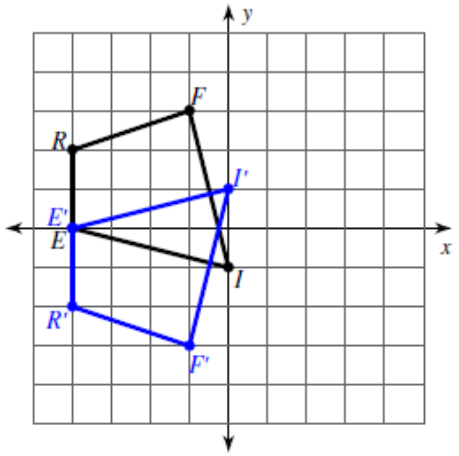
Algebraic Rule:

6)



Description:

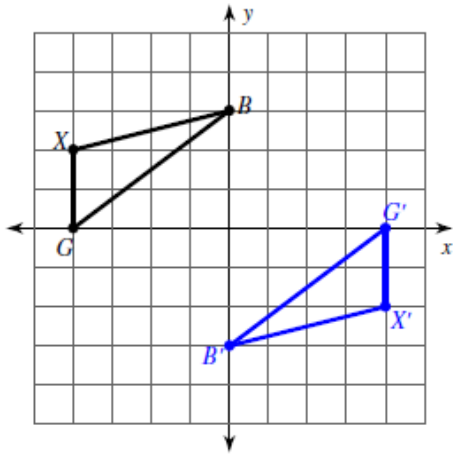
7)



Description:

Algebraic Rule:

8)

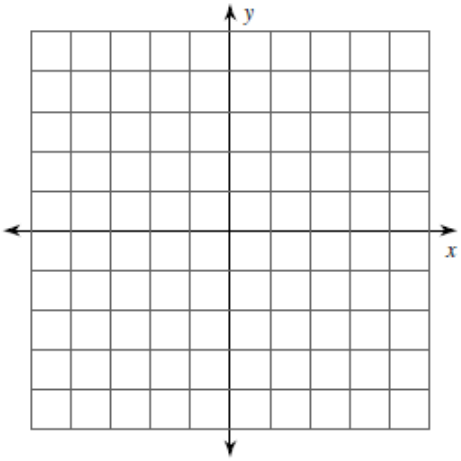


Description:

Algebraic Rule:

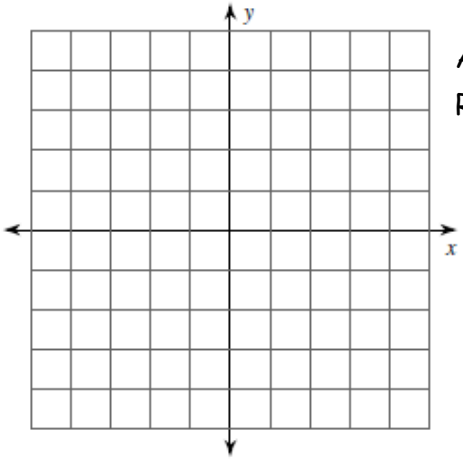
Graph the image of the figure using the transformation given and write the algebraic rule.

9) rotation 90° clockwise about the origin
$B(-2, 0), C(-4, 3), Z(-3, 4), X(-1, 4)$



Algebraic Rule:

10) reflection across $y = x$
$K(-5, -2), A(-4, 1), I(0, -1), J(-2, -4)$



Algebraic Rule:

Find the coordinates of the vertices of the figure using the transformation given and write the algebraic rule.

11) rotation 180° about the origin
$E(2, -2), J(1, 2), R(3, 3), S(5, 2)$

Vertices:

Algebraic Rule:

12) reflection across $y = 2$
$J(1, 3), U(0, 5), R(1, 5), C(3, 2)$

Vertices:

Algebraic Rule:

13) translation: 7 units right and 1 unit down
$J(-3, 1), F(-2, 3), N(-2, 0)$

Vertices:

Algebraic Rule:

14) translation: 6 units right and 3 units down
$S(-3, 3), C(-1, 4), W(-2, -1)$

Vertices:

Algebraic Rule:

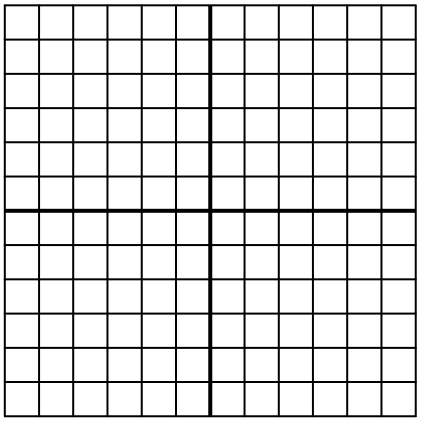
Unit 1 Transformations with Coordinates Review

Part 1: Graph the pre-image and image on the graph below. Then, write a description of the transformation given by the coordinates below. Finally, write an algebraic rule for the transformation. (Hint: for help with the Algebraic Rules, look at earlier packet pages.)

1. The coordinates of $\triangle ABC$ are A(2, 1), B(3, 5), C(0, 4).
The coordinates of $\triangle A'B'C'$ are A'(2, -1), B'(3, -5), C'(0, -4).

Description: _____

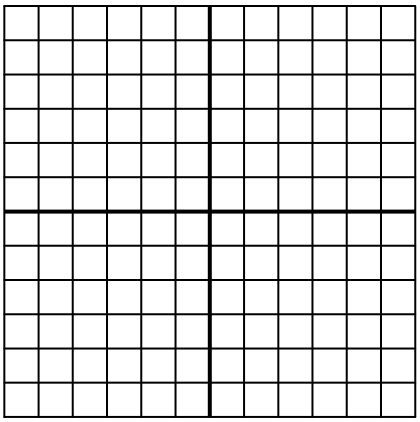
Algebraic Rule: _____



2. The coordinates of $\triangle ABC$ are A(-2, 3), B(4, 0), C(-1, -4).
The coordinates of $\triangle A'B'C'$ are A'(0, 0), B'(6, -3), C'(1, -7).

Description: _____

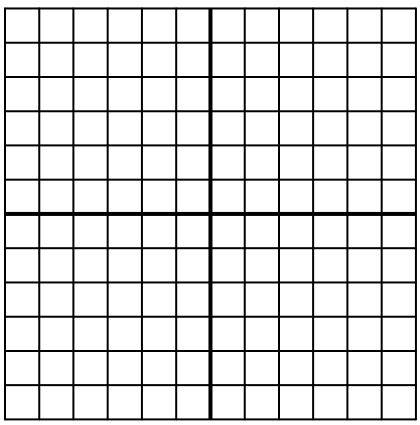
Algebraic Rule: _____



3. The coordinates of $\triangle ABC$ are A(-3, -2), B(-2, 3), C(1, 3).
The coordinates of $\triangle A'B'C'$ are A'(-6, -4), B'(-4, 6), C'(2, 6).

Description: _____

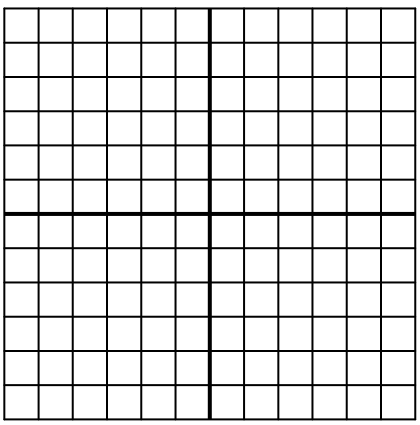
Algebraic Rule: _____



4. The coordinates of $\triangle ABC$ are A(-3, 1), B(-2, -1), C(2, 2).
The coordinates of $\triangle A'B'C'$ are A'(-6, 2), B'(-4, -2), C'(4, 4).

Description: _____

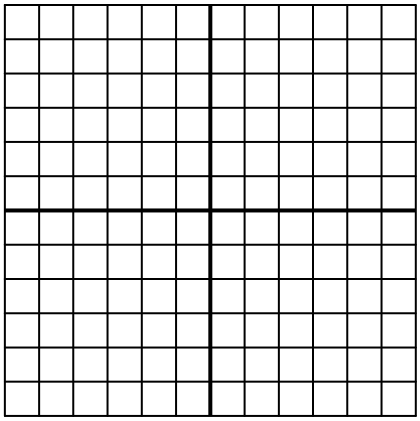
Algebraic Rule: _____



5. The coordinates of $\triangle ABC$ are A(-1, 1), B(0, 3), C(-3, 1).
The coordinates of $\triangle A'B'C'$ are A'(1, 1), B'(3, 0), C'(1, 3).

Description: _____

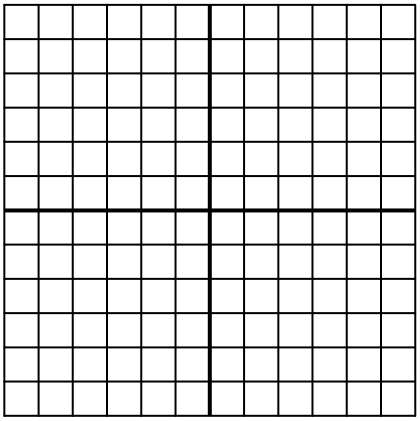
Algebraic Rule: _____



6. The coordinates of $\triangle ABC$ are A(-3, 0), B(-2, 3), C(1, -3).
The coordinates of $\triangle A'B'C'$ are A'(6, 0), B'(4, -6), C'(-2, 6).

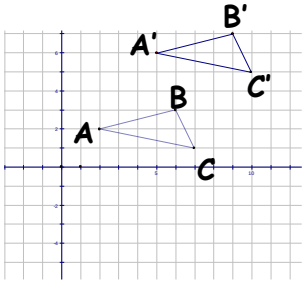
Description: _____

Algebraic Rule: _____



<u>Part 2</u>: Describe the transformations on the graph verbally and by writing an algebraic rule. Hint: The triangle with dotted lines is the preimage.

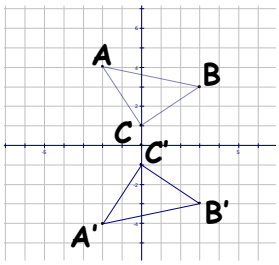
7.



Description: _____

Algebraic Rule: _____

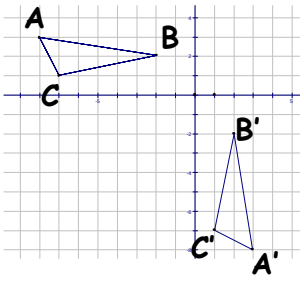
8.



Description: _____

Algebraic Rule: _____

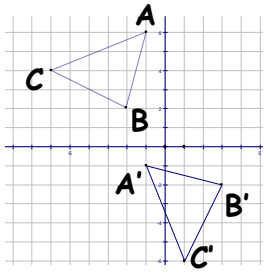
9.



Description: _____

Algebraic Rule: _____

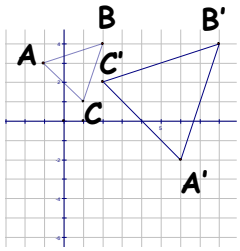
10.



Description: _____

Algebraic Rule: _____

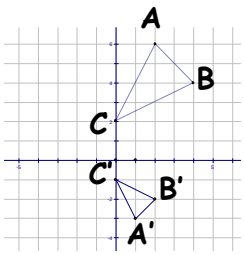
11.



Description: _____

Algebraic Rule: _____

12.

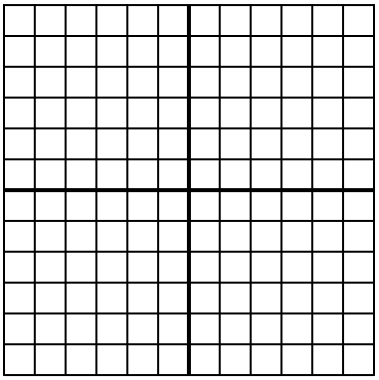


Description: _____

Algebraic Rule: _____

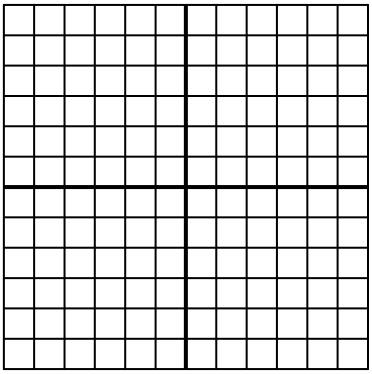
<u>Part 3</u>: Given the description, write an algebraic rule to represent the transformation. Then graph the pre-image and image on the graph below. Use ΔABC with A(2,-2), B(3,1), and C(1,2).

13) ΔABC is dilated by 2



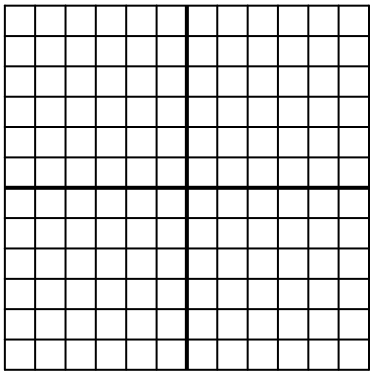
Algebraic Rule: _____

14) ΔABC is moved up 4 and 2 to the right



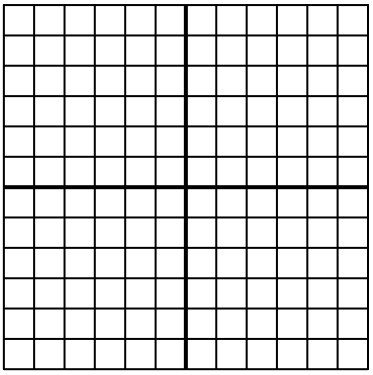
Algebraic Rule: _____

15) ΔABC is rotated 180° then stretched dilated by a factor of two.



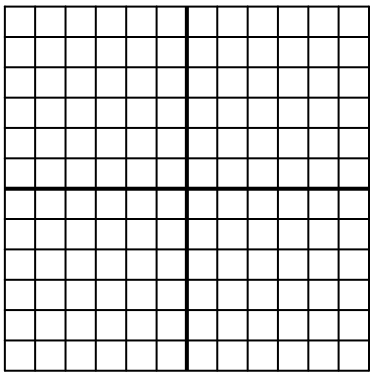
Algebraic Rule: _____

16) ΔABC is reflected over the y-axis then enlarged by two.



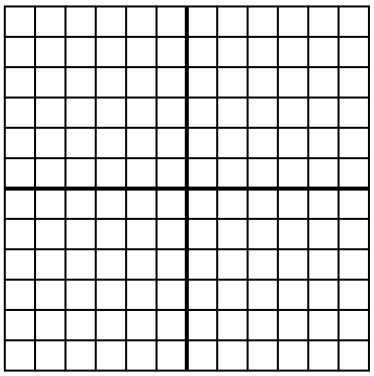
Algebraic Rule: _____

17) ΔABC is reflected over y = -x and moved up 2



Algebraic Rule: _____

18) ΔABC is reflected over the x-axis, then dilated by $\frac{1}{2}$, then moved down 2 and left 1.

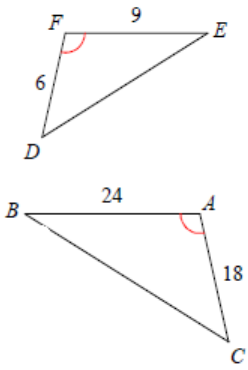


Algebraic Rule: _____

Day 6 Homework – Similarity Practice

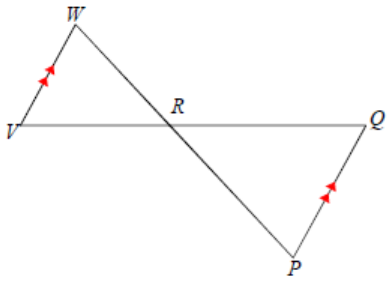
State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

1)



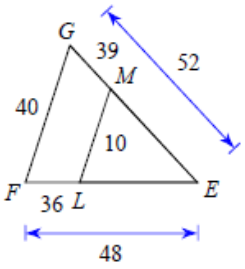
$\Delta ABC \sim$ _____ by _____

2)



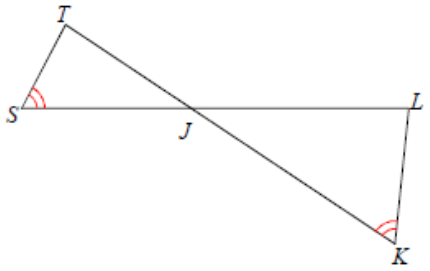
$\Delta RQP \sim$ _____ by _____

3)



$\Delta EFG \sim$ _____ by _____

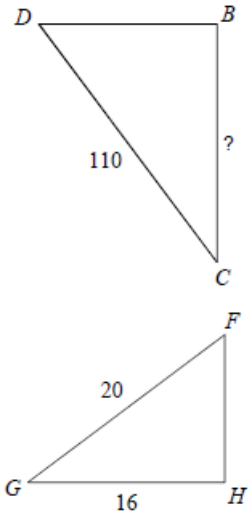
4)



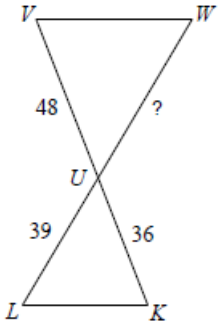
$\Delta JKL \sim$ _____ by _____

Given the information below, solve for the length of the missing segment in the similar triangles.

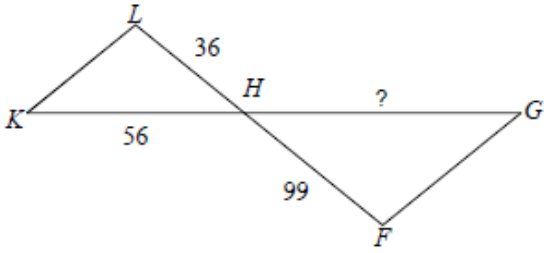
9) ΔDBC ~ ΔFHG



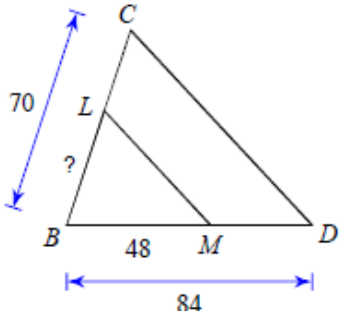
10) $\overline{VW}$ // $\overline{KL}$



11) ΔLHK ~ ΔFHG



12) $\overline{LM}$ // $\overline{CD}$



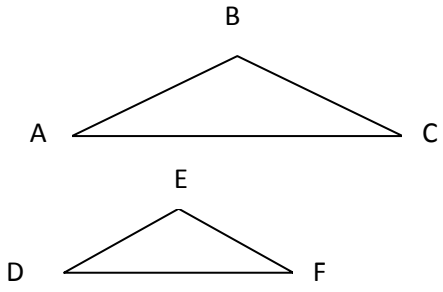
13) Given **ΔCBA ~ ΔFED**. Find x, y, and the measure of each angle.

m∠A = 7x + 2y

m∠D = 24

m∠C = 30

m∠F = 8x + 2y



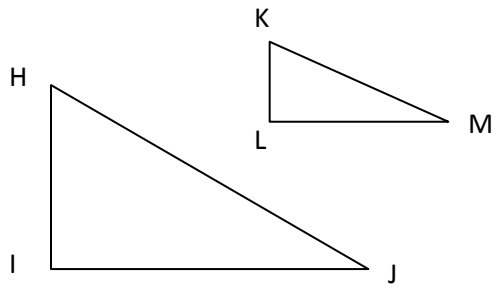
14) Given **ΔHIJ ~ ΔKLM**. Find x, y, and the measure of each angle.

Angle H = 20

Angle K = 4x – y

Angle J = -2x – 2y

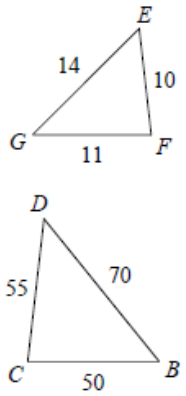
Angle M = 10



Day 7 - Homework

Are the triangles similar? If so, complete the similarity statement and explain why they are similar. If not, explain why.

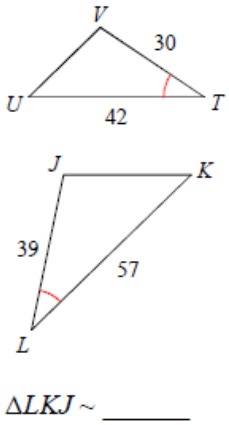
5)



$\Delta BCD \sim$ _____

by _____

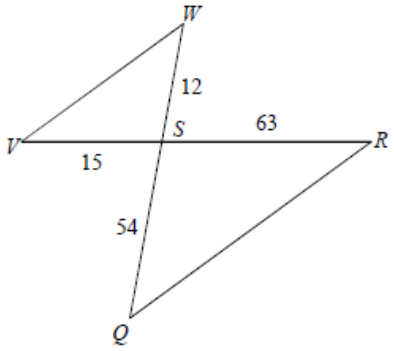
6)



$\Delta LKJ \sim$ _____

by _____

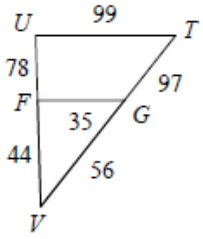
7)



$\Delta SRQ \sim$ _____

by _____

8)

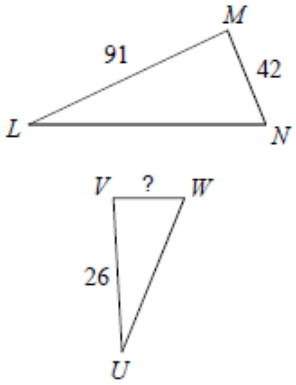


$\Delta VUT \sim$ _____

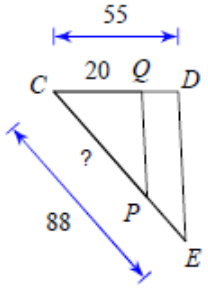
by _____

Given the information below, solve for the length of the missing segment in the similar triangles.

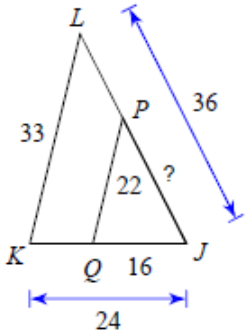
13) ΔLMN ~ ΔUVW



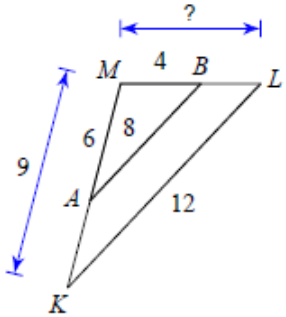
14) $\overline{QP}$ // $\overline{DE}$



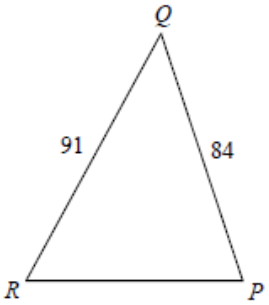
15) $\overline{LK}$ // $\overline{PQ}$

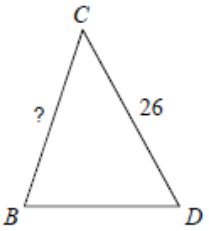


16) $\overline{BA}$ // $\overline{LK}$

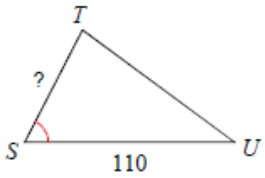


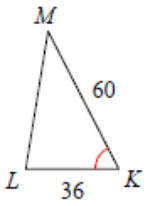
17) ΔPQR ~ ΔBCD





18) ΔUTS ~ ΔMLK





Solve each extended proportion for x and y with x > 0 and y > 0.

19) $\frac{x}{5} = \frac{9}{y} = \frac{y}{25}$

20) $\frac{x}{6} = \frac{x+10}{18} = \frac{4x}{y}$

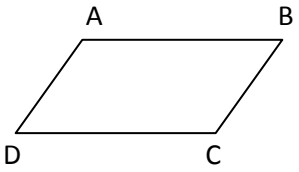
21) The two parallelograms below are similar. Find x, y, and the measure of each angle.

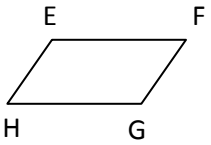
Angle B = 10

Angle F = 4x + 2y

Angle C= 10x – 10y

Angle G = 130





Algebra Review: Systems of Equations

Read the following example problem about solving by the Substitution Method.

Example 1:

$y = 5 - 2x$

$5x - 6y = 21$

Solution:

1) $5x - 6(5 - 2x) = 21$
2) $5x - 30 + 12x = 21$
3) $17x - 30 = 21$
4) $x = 3$
5) $y = 5 - 2(3) = -1$

Steps explained here:

1) Substitute $5 - 2x$ for y in the 2nd equation.
2) Distribute.
3) Simplify.
4) Solve by isolating x.
5) Substitute 3 for x in the first equation.

The solution is $x = 3, y = -1$ or $(3, -1)$

Solve each system of equations by the Substitution Method.
Show ALL work! Use separate paper if needed.

1. $y = 3x$
   $5x + y = 24$

2. $y = 2x + 5$
   $3x - y = 4$

3. $x = 8 + 3y$
   $2x - 5y = 8$

4. $3x + 2y = 71$
   $y = 4 + 2x$

5. $4x - 5y = 92$
   $x = 7y$

6. $y = 3x + 8$
   $x = y$

7. $8x + 3y = 26$
   $2x = y - 4$

8. $x - 7y = 13$
   $3x - 5y = 23$

9. $3x + y = 19$
   $2x - 5y = -10$

Read the following example problem about solving by the Elimination Method.

Example 2:

$3x - y = 13$

$8x + 2y = 44$

Solution:

1) $6x - 2y = 26$
   $8x + 2y = 44$
2) $14x = 70$
3) $x = 5$
4) $3(5) - y = 13$

Steps explained here:

1) Multiply the 1st equation by 2 to get the same number and opposite signs on 1 variable.
2) Add the two equations together.
3) Solve for x.
4) Substitute 5 for x in the first equation.

The solution is $x = 5, y = 2$ or $(5, 2)$

Solve each system by Elimination. Show ALL work! Use separate paper if needed.

10. $5x - y = 20$
    $3x + y = 12$

11. $x + 3y = 7$
    $x + 2y = 4$

12. $3x - 2y = 11$
    $3x - y = 7$

13. $7x + y = 29$
$5x + y = 21$

14. $8x - y = 17$
$6x + y = 11$

15. $9x - 2y = 50$
$6x - 2y = 32$

16. $7y = 2x + 35$
$3y = 2x + 15$

17. $2y = 3x - 1$
$2y = x + 21$

18. $19 = 5x + 2y$
$1 = 3x - 4y$

19. $u + v = 7$
$2u + v = 11$

20. $m - n = -9$
$7m + 2n = 9$

21. $3p - 5q = 6$
$2p - 4q = 4$

22. $4x - 5y = 17$
$3x + 4y = 5$

23. $2c + 6d = 14$
$\frac{1}{2}c - 3d = 8$

24. $3s + 2t = -3$
$s + 1/3t = -4$

Solve each system of equations by using either Substitution or Elimination.

25. $r + 4s = -8$
$3r + 2s = 6$

26. $10m - 9n = 15$
$5m - 4n = 10$

27. $3c - 7d = -3$
$2c + 6d = -34$

28. $6g - 8h = 50$
$4g + 6h = 22$

29. $2p = 7 + q$
$6p - 3q = 24$

30. $3x = -31 + 2y$
$5x + 6y = 23$

31. $3u + 5v = 6$
$2u - 4v = -7$

32. $3a - 2b = -3$
$3a + b = 3$

33. $s + 3t = 27$
$\frac{1}{2}s + 2t = 19$

Algebra Review: Ratios and Proportions

Simplify each ratio

Ex 1/ 4 to 6

$= \frac{4}{6}$

$= \frac{2 \cdot 2}{2 \cdot 3}$

$= \frac{2}{3}$

Ex 2/ 3ab:27ab

$= \frac{3ab}{27ab}$

$= \frac{3ab}{9 \cdot 3ab}$

$= \frac{1}{9}$

Ex 3/ (4a + 4b) : (a + b)

$= \frac{4a+4b}{a+b}$

$= \frac{4(a+b)}{a+b}$

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

STEPS
1) write ratio as a fraction
2) find and factor out common factors
3) reduce

Simplify each ratio

1) 25 to 15

2) 6 : 9

3) 0.8 to 2.4

4) $\frac{36}{54}$

5) $\frac{7}{14x}$

6) $\frac{12c}{14c}$

7) $22x^2$ to $35x$

8) 0.5ab : 8ab

9) $\frac{1}{4} r^2$ to $6r$

10) $(x^2 + x)$ to $2x$

11) (2x-6) : (6x-4)

12) (9x-9y) to (x-y)

Express each ratio in simplest form

13) shorter leg : longer leg

14) hypotenuse to shorter leg

15) shorter leg: hypotenuse

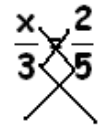
16) hypotenuse: longer leg

17) longer leg to shorter leg

18) longer leg: hypotenuse

Solve each proportion

Ex 1/ $\frac{x}{3}=\frac{2}{5}$



$5x = 6$

$\frac{5x}{5}=\frac{6}{5}$

$x=\frac{6}{5}$

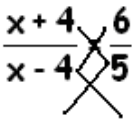
STEPS to solve proportions

1) Cross Multiply

2) Simplify

3) Solve for the variable

Ex 2/ $\frac{x+4}{x-4}=\frac{6}{5}$



$5(x+4) = 6(x-4)$

$5x+20=6x-24$

$x = 44$

Solve each proportion

19) $\frac{x}{4}=\frac{3}{5}$

20) $\frac{4}{x}=\frac{2}{5}$

21) $\frac{3x}{7}=\frac{2}{5}$

22) $\frac{8}{x}=\frac{2}{5}$

23) $\frac{x+5}{4}=\frac{1}{2}$

24) $\frac{x+3}{2}=\frac{4}{3}$

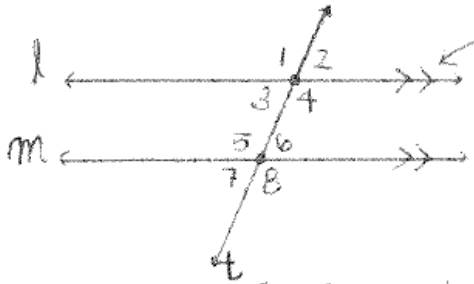
25) $\frac{x+2}{x+3}=\frac{4}{5}$

26) $\frac{2x+1}{4x-1}=\frac{2}{3}$

27) $\frac{x+3}{2}=\frac{2x-1}{3}$

Angle Relationships

Parallel Lines and Transversals



This symbol means the lines are **parallel**.

$\angle 1 \cong \angle 8 \cong \angle 5 \cong \angle 4$ (all are congruent)

$\angle 2 \cong \angle 3 \cong \angle 6 \cong \angle 7$ (all are congruent)

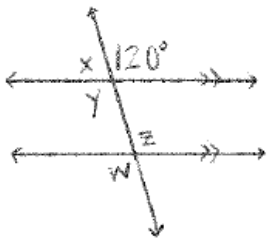
FACTS

$m\angle 1 + m\angle 2 = 180°$ because they form a line (180°).

↑ measure of $\angle 1$

This is a transversal (a line intersecting two other lines at two distinct points.)

DIRECTIONS: Find all variables for each problem.

① 

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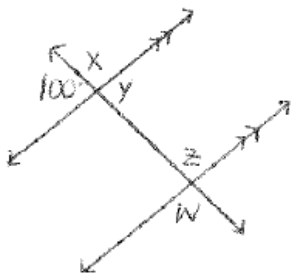
y =
z =
w =

② 

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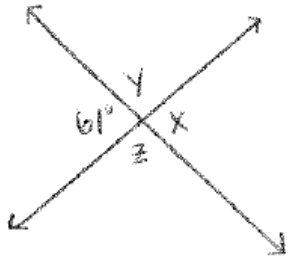
③ 

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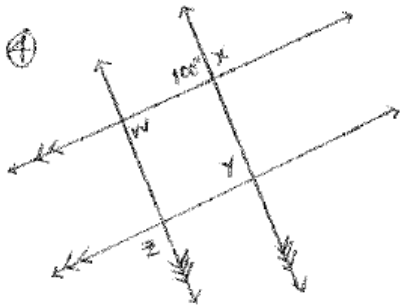
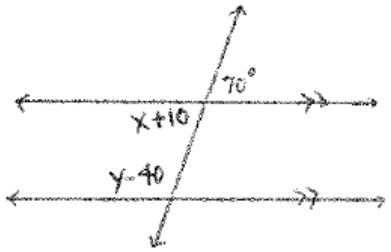
④ 

x =
y =
z =
w =

DIRECTIONS: Solve for all variables

⑤ 

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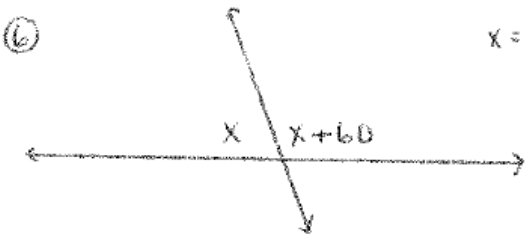
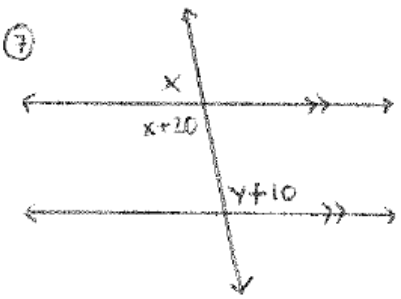
⑥ 

x =

⑦ 

x =
y =