

RTI Geometry Unit 1 - Segments and Transformations Review

Name Answer Key
 Hour _____

Directions: All work must be shown to receive full credit.

1) Simplify the radical: $\sqrt{192}$

$\sqrt{192} = 2 \cdot 2 \cdot 2 \sqrt{3} = 8\sqrt{3}$
 $\sqrt{192} = \sqrt{64 \cdot 3} = 8\sqrt{3}$
 (8) ← $\sqrt{64}$

This is DUE:

2) Describe the figure as a point, line, segment, or ray.

a) Ray \overrightarrow{AB}



b) Segment \overline{XY}



c) Line \overleftrightarrow{JP}



d) Segment \overline{MS}



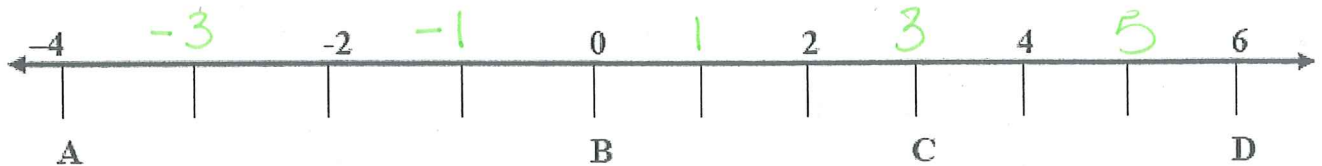
e) Ray \overrightarrow{WP}



f) line \overleftrightarrow{KP}



For questions 3-8, refer to the number line below to find each measure.



3. AB 4

6. CB 3

4. CD 3

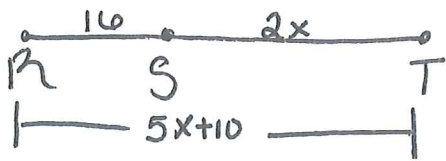
7. DA 10

5. BD 6

8. AC 7

Ask your self: "Self, are these midpoints?" If Yes, Set = if "no" Add them up and set = to the largest length.

- 9) Find the value of the variable and ST if S is between R and T. Let $RS = 16$, $ST = 2x$, $RT = 5x + 10$. You must start this problem with a geometry step. Show all of your work.



$$RS + ST = RT$$

$$16 + 2x = 5x + 10$$

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

$$16 = 3x + 10$$

$$\begin{array}{r} -10 \quad -10 \\ \hline \end{array}$$

$$6 = 3x$$

$$\frac{6}{3} = \frac{3x}{3}$$

$$\boxed{2 = x}$$

$$\underline{x = 2}$$

$$\underline{ST = 4}$$

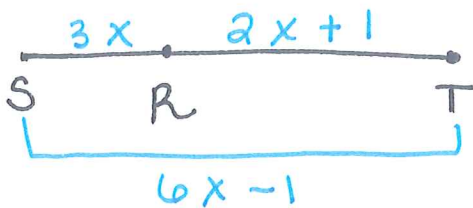
Find ST

$$ST = 2x$$

so plug in $x = 2$ in for x

$$ST = 2(2)$$

- 10) Find the value of x and SR if R is between S and T. $SR = 3x$, $RT = 2x + 1$, $ST = 6x - 1$. You must start this problem with a geometry step. Show all of your work.



$$SR + RT = ST$$

$$3x + 2x + 1 = 6x - 1$$

$$5x + 1 = 6x - 1$$

$$\begin{array}{r} +1 \quad +1 \\ \hline \end{array}$$

$$5x + 2 = 6x$$

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

$$\boxed{2 = x}$$

$$\underline{x = 2}$$

$$\underline{SR = 6}$$

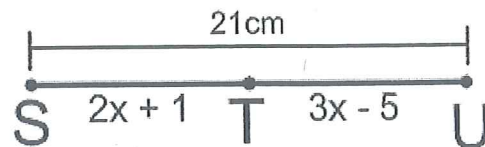
Find SR

$$SR = 3(x)$$

$$SR = 3(2)$$

$$\boxed{SR = 6}$$

11) Find the value of x and \overline{ST} using the figure to the right. You must start this problem with a geometry step. Show all of your work.



$$ST + TU = SU$$

$$2x + 1 + 3x - 5 = 21$$

CLT

$$5x - 4 = 21$$

$$+4 \quad +4$$

$$5x = 25$$

$$5x = 25$$

$$\frac{5x}{5} = \frac{25}{5}$$

$$ST = 2x + 1$$

$$ST = 2(5) + 1$$

$$ST = 11$$

$$\underline{x = 5}$$

$$\underline{ST = 11}$$

12) Find x and the measure of \overline{JK} if K is the midpoint of \overline{JL} . You must start this problem with a geometry step. Show all of your work.

$$JK \cong KL$$

$$3x - 4 = 5x - 26$$

$$-3x \quad -3x$$

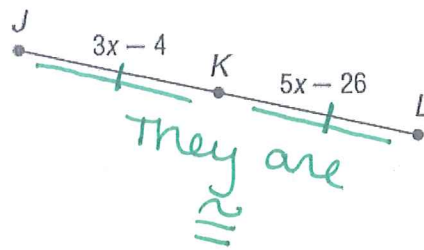
$$-4 = 2x - 26$$

$$+26 \quad +26$$

$$22 = 2x$$

$$\frac{22}{2} = \frac{2x}{2}$$

$$\boxed{11 = x}$$



$$\underline{x = 11}$$

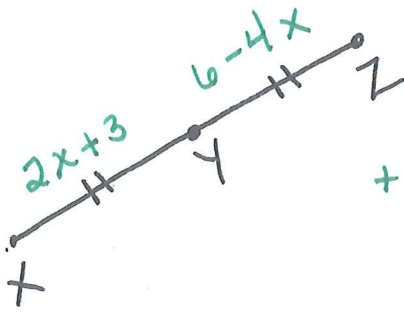
$$JK = 3(11) - 4$$

$$JK = 33 - 4$$

$$\boxed{JK = 29}$$

$$\underline{JK = 29}$$

13) Find XY if Y is the midpoint of \overline{XZ} , $XY = 2x + 3$ and $YZ = 6 - 4x$. You must start this problem with a geometry step. Show all of your work.



$$XY \cong YZ$$

$$2x + 3 = 6 - 4x$$

$$+4x \quad \quad +4x$$

$$6x + 3 = 6$$

$$-3 \quad -3$$

$$6x = 3$$

$$\frac{6x}{6} = \frac{3}{6}$$

$$x = 0.5$$

$$x = 0.5$$

or

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

Find the distance, midpoint, and slope of each segment. You must show work, simplify all radicals and fractions!

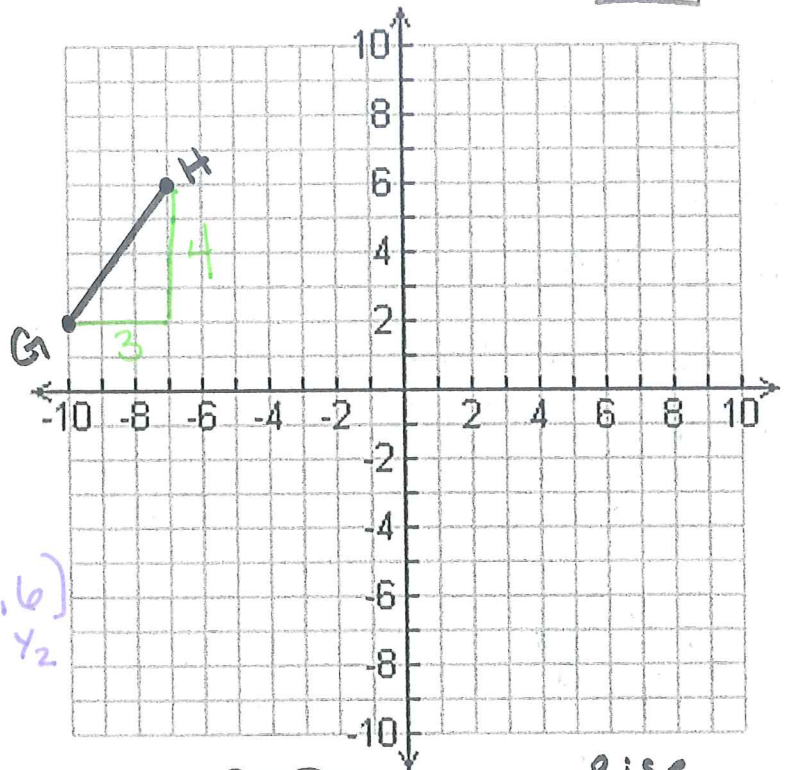
14) $G(-10, 2)$, $H(-7, 6)$

Distance: $3^2 + 4^2 = c^2$

$$9 + 16 = c^2$$

$$\sqrt{25} = \sqrt{c^2}$$

$$5 = c$$



Distance: 5 units

Midpoint: $(-\frac{17}{2}, 4)$

Slope: _____

midpoint $G(-10, 2)H(-7, 6)$

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\left(\frac{-10 + -7}{2}, \frac{2 + 6}{2} \right)$$

$$\left(-\frac{17}{2}, \frac{8}{2} \right) \text{ simplify}$$

$$\left(-\frac{17}{2}, 4 \right)$$

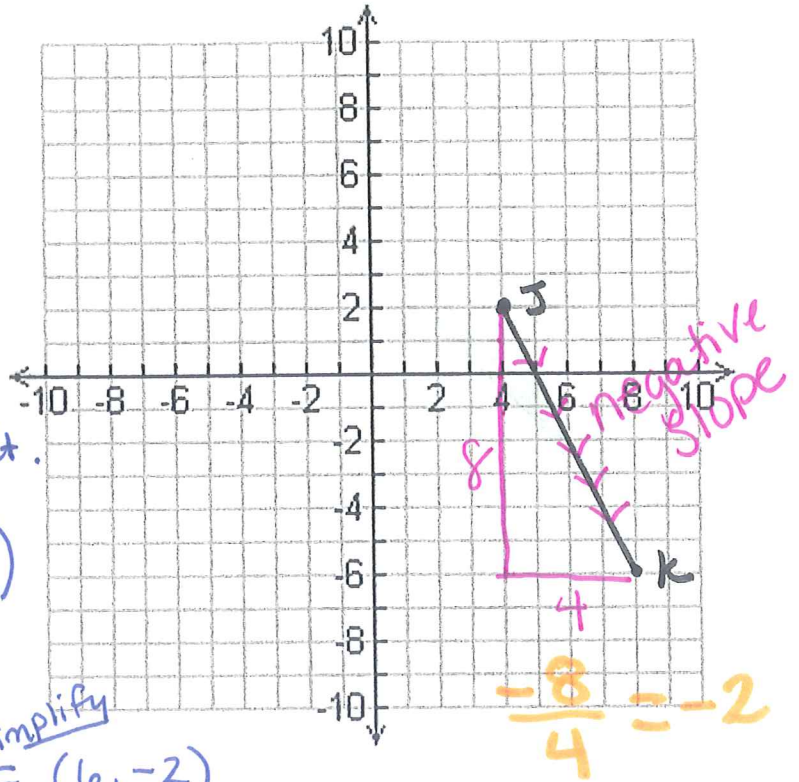
Remember Slope: $\frac{\text{Rise}}{\text{Run}}$
distance is $a^2 + b^2 = c^2$

midpoint is $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

15) J(4, 2), K(8, -6)

Distance $8^2 + 4^2 = c^2$
 $64 + 16 = c^2$
 $\sqrt{80} = \sqrt{c^2}$
 $4\sqrt{5}$

Slope = $\frac{\text{rise}}{\text{run}} = -\frac{8}{4} = -2$



Distance: $4\sqrt{5}$

Midpoint: $(6, -2)$ ← make sure this is a point.

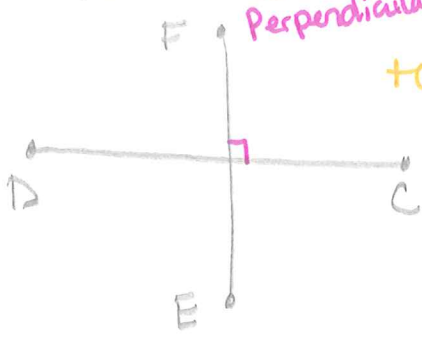
Slope: -2

midpoint $(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2})$

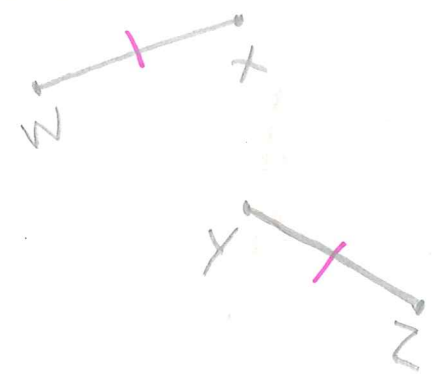
J(4, 2), K(8, -6)
 x_1 y_1 x_2 y_2

$(\frac{4+8}{2}, \frac{2+(-6)}{2}) = (\frac{12}{2}, \frac{-4}{2}) \xrightarrow{\text{simplify}} (6, -2)$

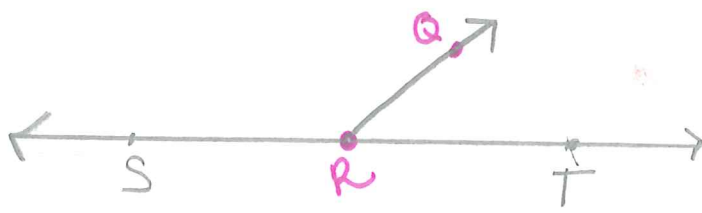
16) Draw $\overline{FE} \perp \overline{DC}$ *many different looking answers to questions, the important markings are in PINK*



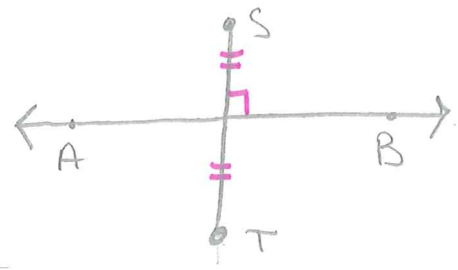
17) Draw $\overline{WX} \cong \overline{YZ}$



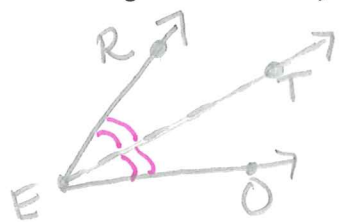
18) Draw $\angle QRS$ and $\angle QRT$ are a linear pair



19) Draw \overline{AB} is a \perp bisector of \overline{ST}



20) Draw \overline{ET} is an angle bisector of $\angle REO$

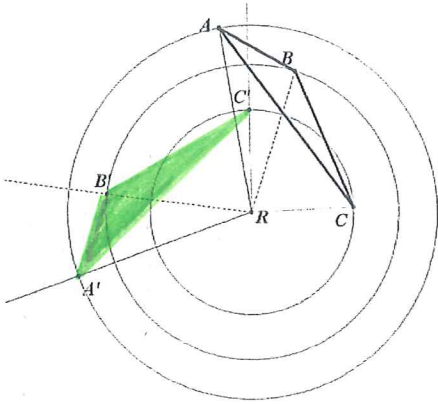


CONSTRUCTIONS OF TRANSFORMATIONS —

YOU WILL NEED TO CONSTRUCT TRANSFORMATIONS!!!!!!!!!!!!

21. FINISH THE CONSTRUCTION

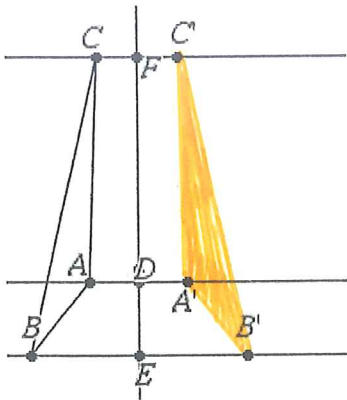
NAME THE TYPE OF TRANSFORMATION



Rotation

22. FINISH THE CONSTRUCTION.

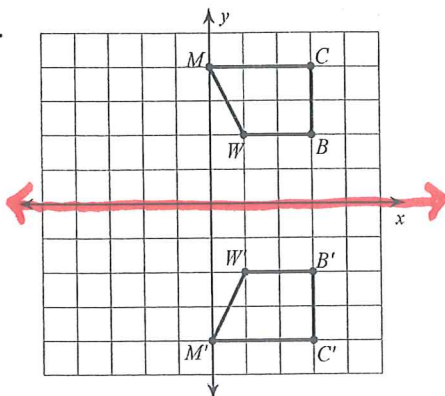
NAME THE TYPE OF TRANSFORMATION



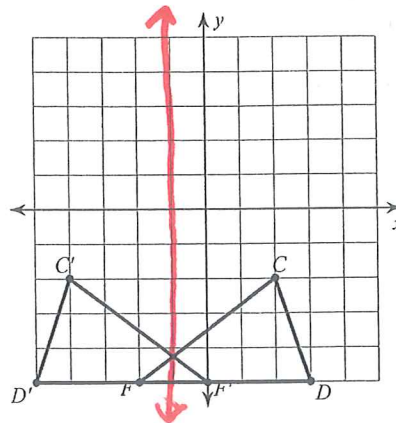
Reflection

Draw in the line of reflection for 23 through 24.

23.

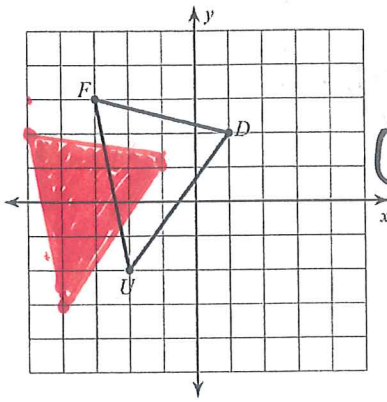


24.



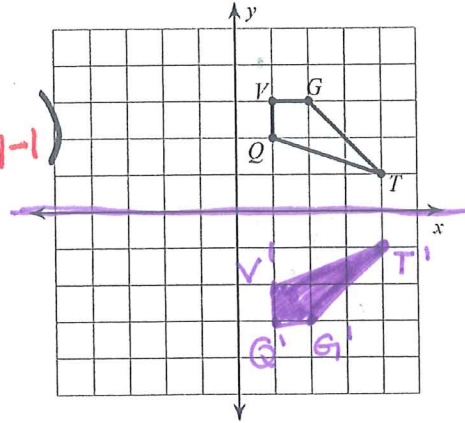
Graph the transformation for 25 through 32. If it is a translation, write the rule for the translation. ^{in vector} ^{and pt form}

25. translation: 2 units left and 1 unit down

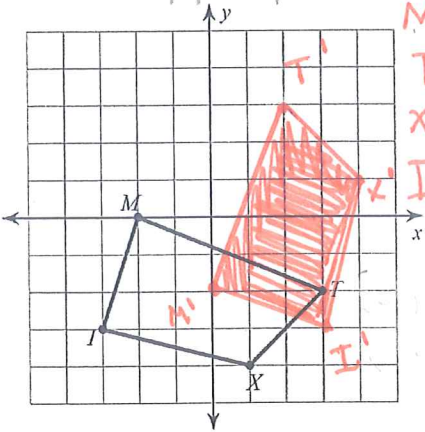


$\langle -2, -1 \rangle$
 $(x, y) \rightarrow (x-2, y-1)$

26. Reflection across the x-axis



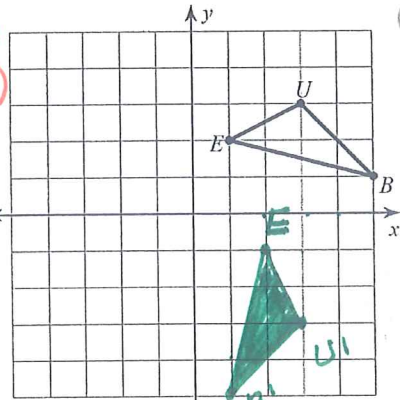
27. rotation 90° counterclockwise about the origin



$(-y, x)$

$M(-2, 0) \rightarrow (0, -2)$
 $T(3, -2) \rightarrow (-2, 3)$
 $X(-1, -4) \rightarrow (4, 1)$
 $I(-3, -3) \rightarrow (3, -3)$

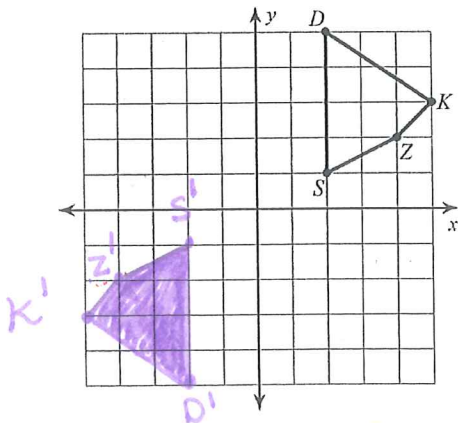
28. rotation 90° clockwise about the origin



$(y, -x)$

$E(1, 2) \rightarrow (2, -1)$
 $B(5, 1) \rightarrow (1, -5)$
 $U(3, 3) \rightarrow (3, -3)$

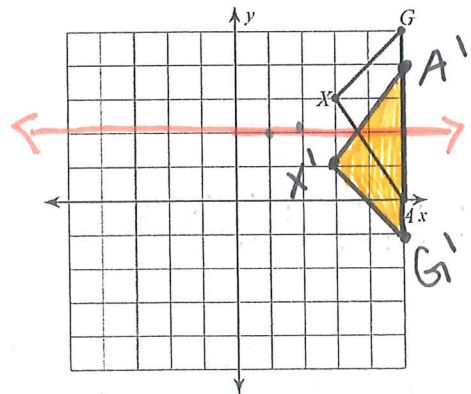
29. rotation 180° about the origin



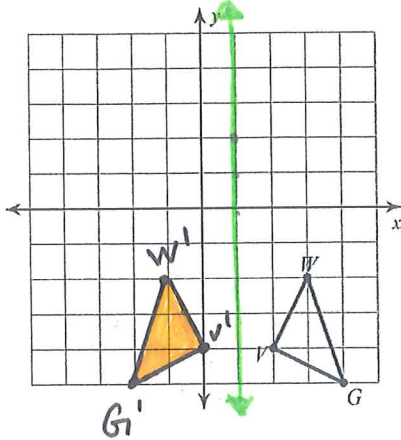
$(-x, -y)$

$D(2, 5) \rightarrow (-2, -5)$
 $K(5, 3) \rightarrow (-5, -3)$
 $Z(4, 2) \rightarrow (-4, -2)$
 $S(2, 1) \rightarrow (-2, -1)$

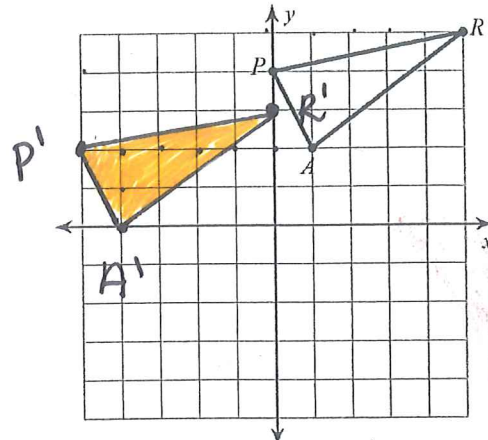
30. reflection across $y = 2$



31. reflection across $x = 1$



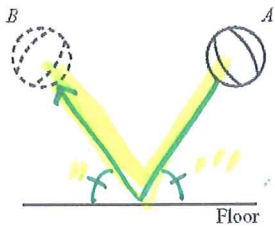
32. translation: 5 units left and 2 units down



$$\langle -5, -2 \rangle$$

$$(x, y) \longrightarrow (x-5, y-2)$$

33. In a basketball game, Roger is standing at position A and he bounces the ball to Edwin standing at position B . ~~Copy the diagram and~~ sketch the path the ball must travel after being bounced to Edwin by Roger.



34. Find the slopes of lines. Simplify all fractions, if possible.

$S(6, 5)$, $T(-4, 3)$ $X(-4, 2)$, $Y(-3, -3)$

Slope formula

$$\text{Slope } ST: \frac{3-5}{-4-6} = \frac{-2}{-10} = \frac{1}{5}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Slope of ST: $\frac{1}{5}$

Slope of XY: -5

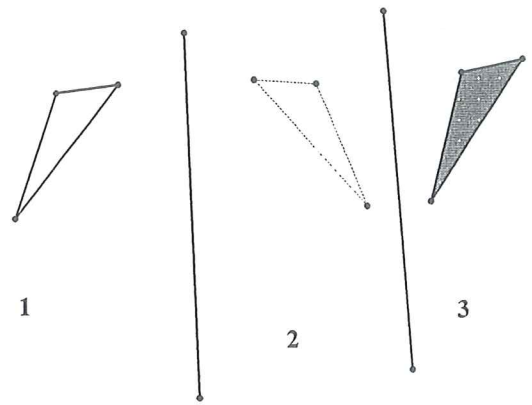
$$\text{Slope } XY = \frac{-3-2}{-3--4} = \frac{-5}{1}$$

35. The composite of reflections over two parallel lines results in a translation.

From 1 to 2 the transformation performed is: Reflection

From 2 to 3 the transformation performed is: Reflection

From 1 to 3 the transformation performed is: translation



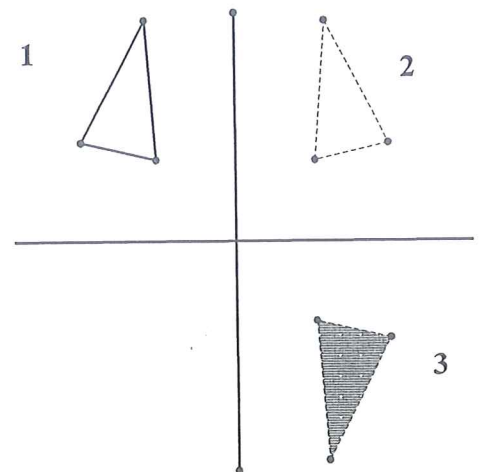
36. The composite of reflections over two intersecting lines results in a Rotation.

This is a composite of transformations.

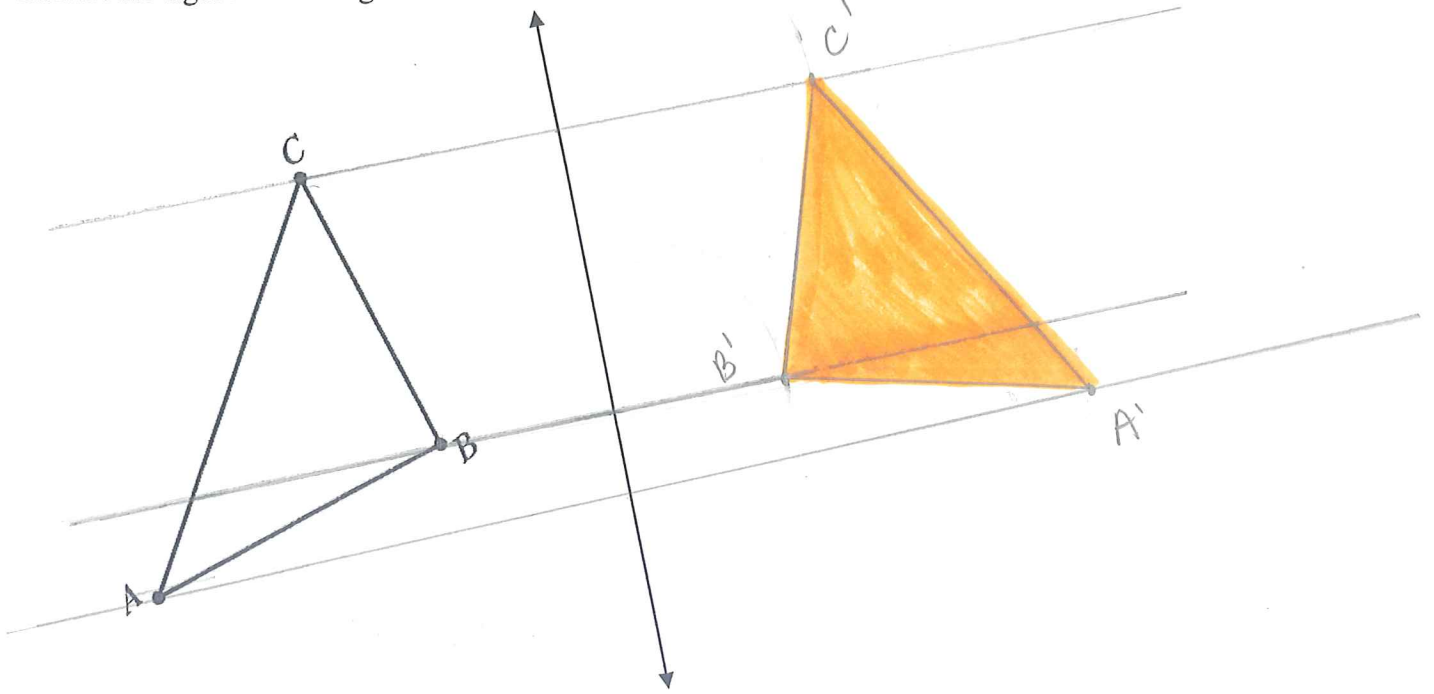
From 1 to 2 the transformation performed is: Reflection

From 2 to 3 the transformation performed is: Reflection

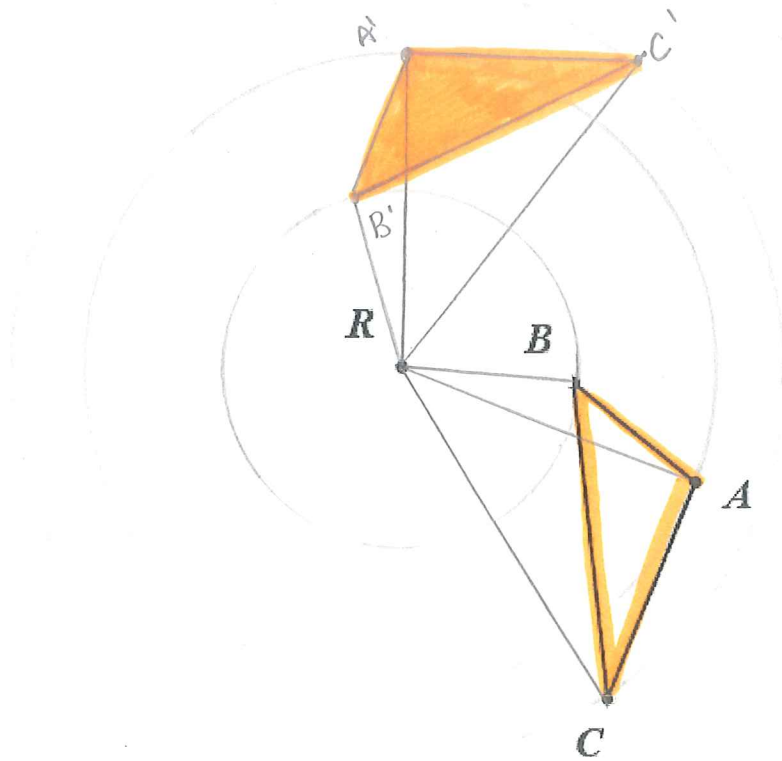
From 1 to 3 the transformation performed is: Rotation



37. Reflect the figure over the given line.



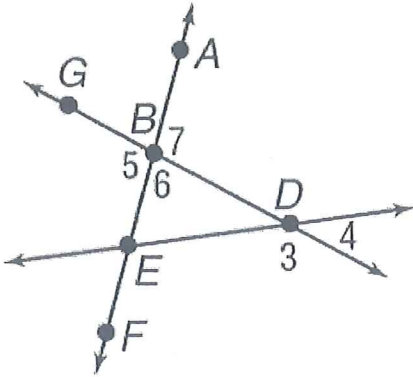
38. Rotate the figure 110 degrees counterclockwise around point R



ES Summer Work and Middle School Review:

If you are struggling, look in summer work, google, Book, LOTS of places to find Help for this REVIEW material.

Use the figure to answer questions 1-4.



1) Name all angles that have B as a vertex.

$\angle 5, \angle 6, \angle 7, \angle GBA, \angle ABD, \angle DBE, \angle GBE$

2) Name a pair of supplementary angles. (linear Pairs)

$\angle 6 + \angle 7 = 180^\circ$

$\angle 3 + \angle 4 = 180^\circ$

3) Name a pair of vertical angles.

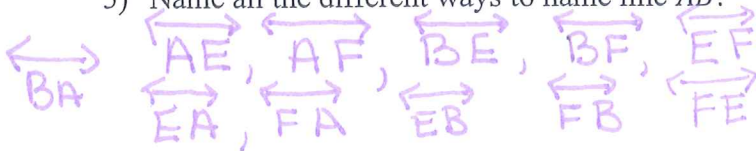
$\angle 5 \cong \angle 7 \quad \angle ABG \cong \angle 6$

Vertical \angle s are \cong

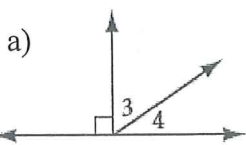
4) Name a linear pair.

Linear pairs are supplementary
 $\angle 3 + \angle 4 = 180^\circ$

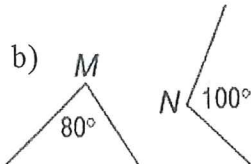
5) Name all the different ways to name line \overleftrightarrow{AB} .



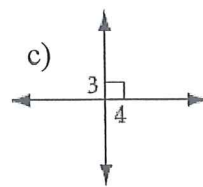
6) Classify all that apply: adjacent, vertical, linear pairs, complementary, supplementary, right angle and/or congruent.



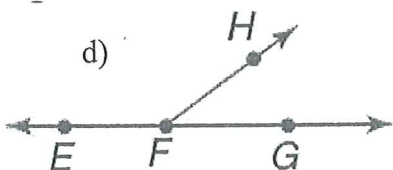
adjacent
complementary



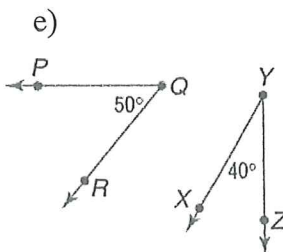
Supplementary



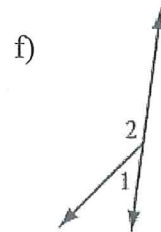
Vertical \angle s
Suppl.
 \cong



adjacent
Suppl.
linear pairs



complementary



adjacent
linear pairs
Suppl.

This page is
DUE: Wed Oct 14
2015

Name: _____

Hour: _____

Equations and Slopes of Parallel and Perpendicular Lines

Parallel have same slopes

Perpendicular have opposite reciprocal slopes

Determine whether \overline{MN} and \overline{RS} are *parallel*, *perpendicular*, or *neither*.

1. $M(0, 3), N(2, 4), R(2, 1), S(8, 4)$

2. $M(-1, 3), N(0, 5), R(2, 1), S(6, -1)$

must show 2

Sets of work

for each question

use the Slope formula!

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Slope MN: $\frac{1}{2}$

Slope MN: 2

Slope RS: $\frac{1}{2}$

Slope RS: $-\frac{1}{2}$

3. $M(-1, 3), N(4, 4), R(3, 1), S(-2, 2)$

4. $M(0, -3), N(-2, -7), R(2, 1), S(0, -3)$

Slope MN: $\frac{1}{5}$

Slope MN: 2

Slope RS: $-\frac{1}{5}$

Slope RS: 2

Find the slope of \overline{MN} and the slope of any line perpendicular to \overline{MN} .

7. $M(2, -4), N(-2, -1)$

8. $M(1, 3), N(-1, 5)$

Slope of \overline{MN} : $-\frac{3}{4}$

Slope of \overline{MN} : -1

\perp slope: $\frac{4}{3}$

\perp slope: 1

This page is due: Wed Oct 14, 2015

RTI Geometry Unit 1 - Segments and Transformations Review

Name _____

Hour _____

Directions: All work must be shown to receive full credit.

1) Simplify the radical: $\sqrt{192}$

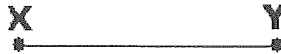
This is DUE:

2) Describe the figure as a point, line, segment, or ray.

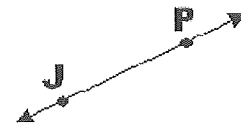
a) _____



b) _____



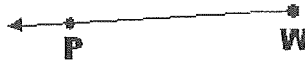
c) _____



d) _____



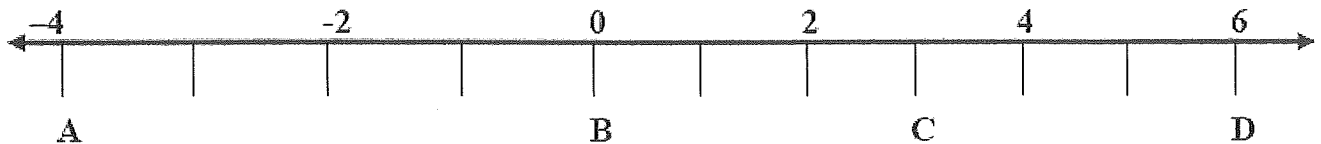
e) _____



f) _____



For questions 3-8, refer to the number line below to find each measure.



3. AB

6. CB

4. CD

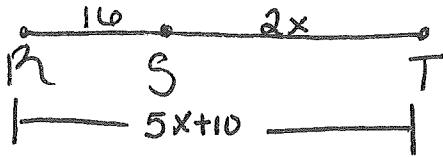
7. DA

5. BD

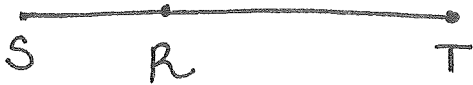
8. AC

Ask your self: "Self, are these midpoints?" If Yes, Set = if "no" Add them up and set = to the largest length.

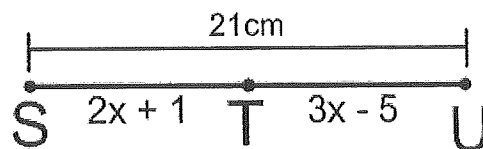
- 9) Find the value of the variable and ST if S is between R and T . Let $RS = 16$, $ST = 2x$, $RT = 5x + 10$. You must start this problem with a geometry step. Show all of your work.



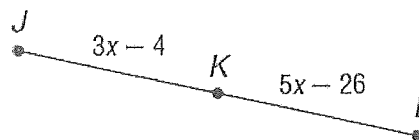
- 10) Find the value of x and SR if R is between S and T . $SR = 3x$, $RT = 2x + 1$, $ST = 6x - 1$. You must start this problem with a geometry step. Show all of your work.



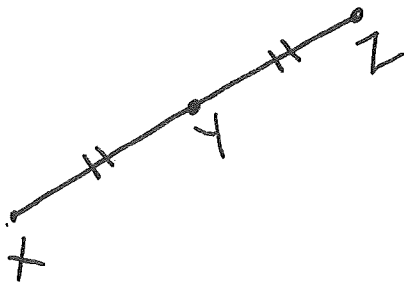
11) Find the value of x and \overline{ST} using the figure to the right. You must start this problem with a geometry step. Show all of your work.



12) Find x and the measure of \overline{JK} if K is the midpoint of \overline{JL} . You must start this problem with a geometry step. Show all of your work.

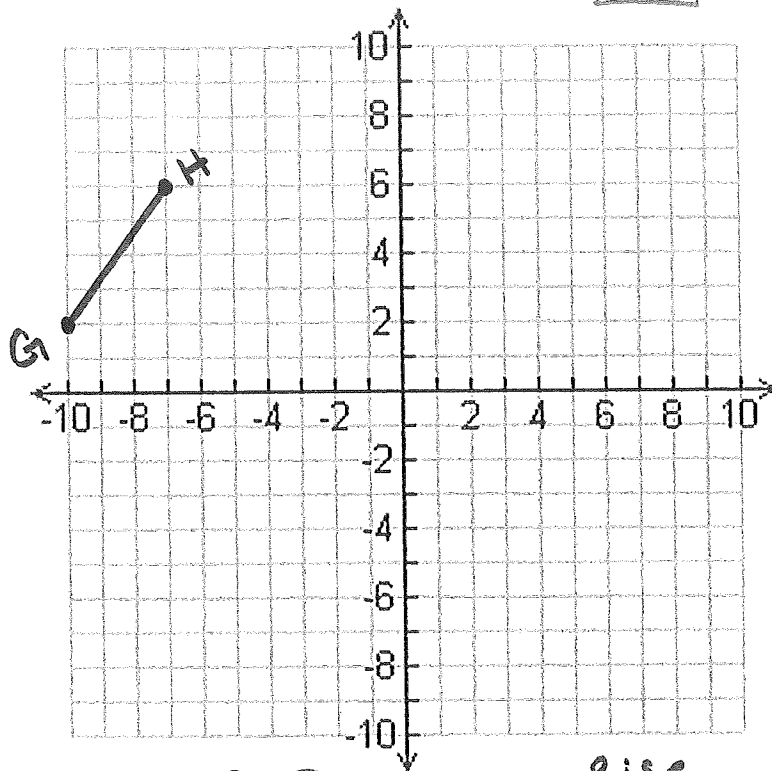


13) Find XY if Y is the midpoint of \overline{XZ} , $XY = 2x + 3$ and $YZ = 6 - 4x$. You must start this problem with a geometry step. Show all of your work.



Find the distance, midpoint, and slope of each segment. You must show work, simplify all radicals and fractions!

14) $G(-10, 2)$, $H(-7, 6)$



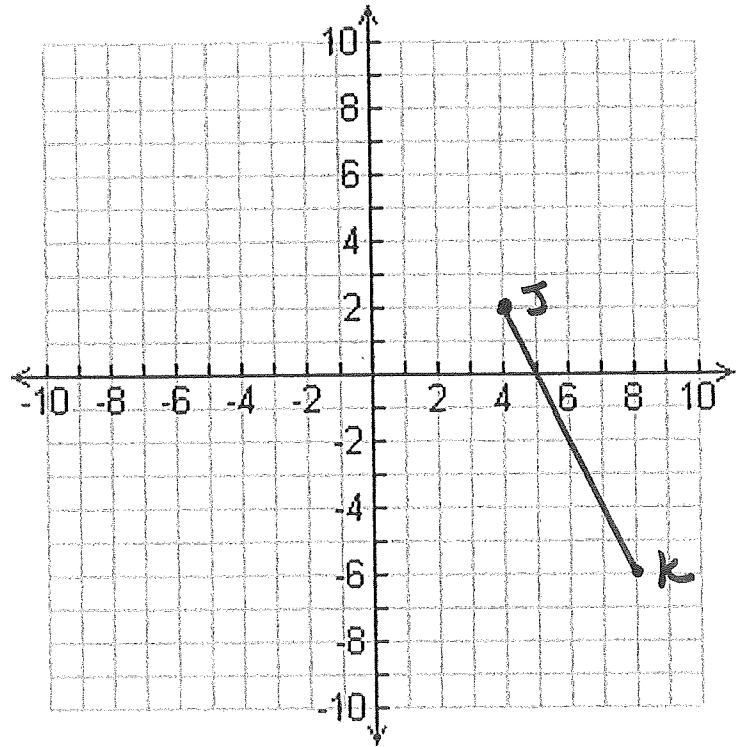
Distance: _____

Midpoint: _____

Slope: _____

Remember Slope: $\frac{\text{Rise}}{\text{Run}}$
 distance is $a^2 + b^2 = c^2$
 midpoint is $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

15) J(4, 2), K(8, -6)



Distance: _____

Midpoint: _____

Slope: _____

16) Draw $\overline{FE} \perp \overline{DC}$

17) Draw $\overline{WX} \cong \overline{YZ}$

18) Draw $\angle QRS$ and $\angle QRT$ are a linear pair

19) Draw \overline{AB} is a \perp bisector of \overline{ST}

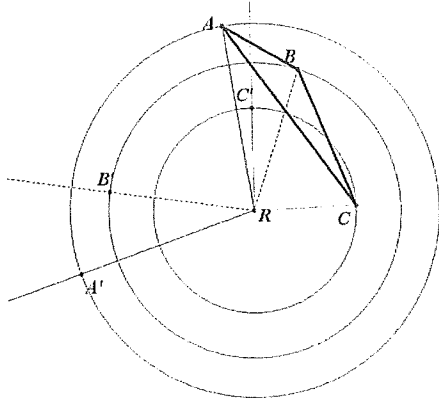
20) Draw \overline{ET} is an angle bisector of $\angle REO$

CONSTRUCTIONS OF TRANSFORMATIONS —

YOU WILL NEED TO CONSTRUCT TRANSFORMATIONS!!!!!!!!!!!!

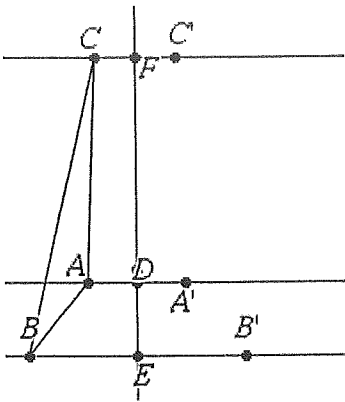
21. FINISH THE CONSTRUCTION

NAME THE TYPE OF TRANSFORMATION



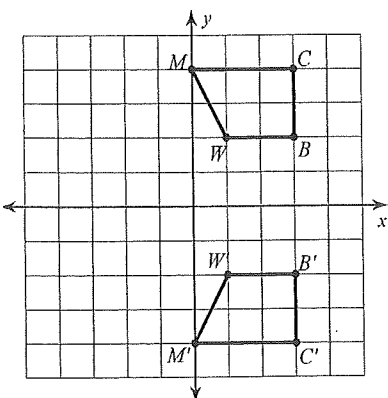
22. FINISH THE CONSTRUCTION.

NAME THE TYPE OF TRANSFORMATION

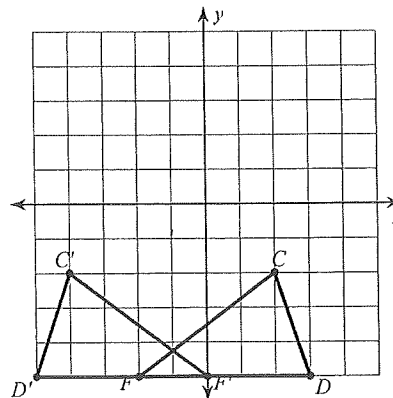


Draw in the line of reflection for 23 through 24.

23.

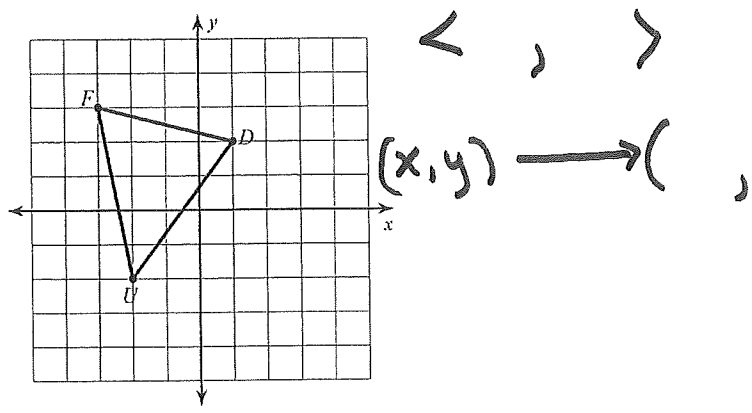


24.

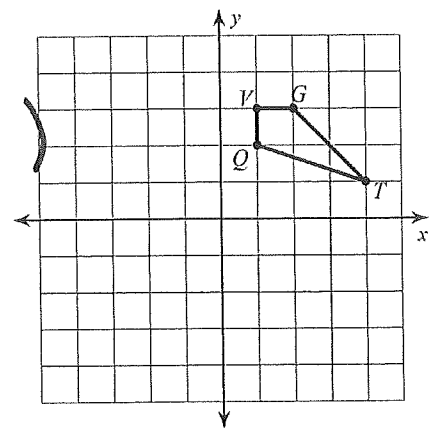


Graph the transformation for 25 through 32. If it is a translation, write the rule for the translation. *in vector and pt form*

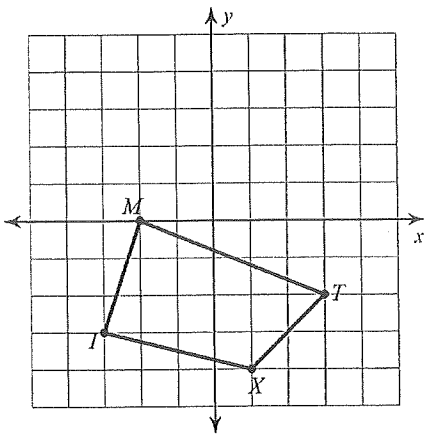
25. translation: 2 units left and 1 unit down



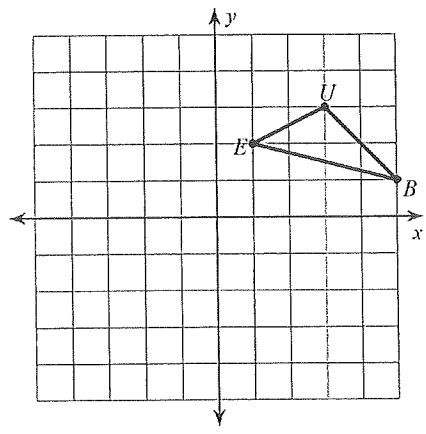
26. Reflection across the x-axis



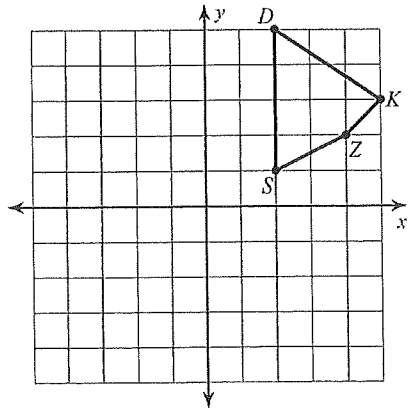
27. rotation 90° counterclockwise about the origin



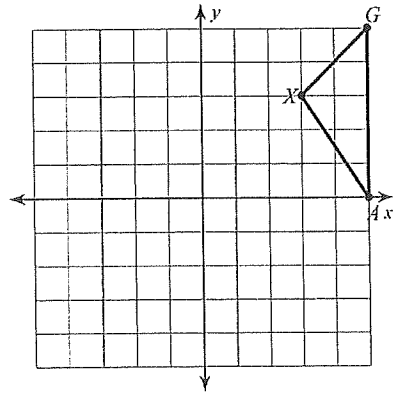
28. rotation 90° clockwise about the origin



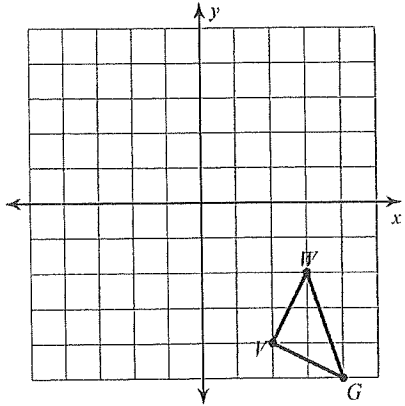
29. rotation 180° about the origin



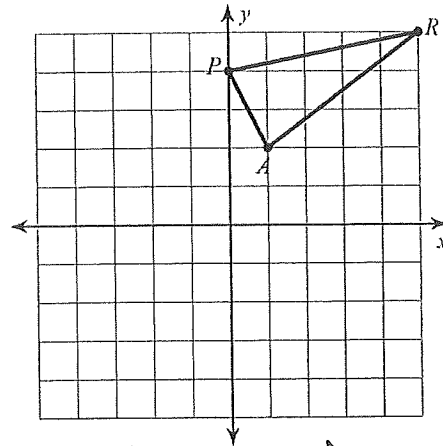
30. reflection across $y = 2$



31. reflection across $x = 1$



32. translation: 5 units left and 2 units down



\leftarrow , \rightarrow
 $(x, y) \longrightarrow (\quad , \quad)$

33. In a basketball game, Roger is standing at position A and he bounces the ball to Edwin standing at position B . ~~Copy the diagram and~~ sketch the path the ball must travel after being bounced to Edwin by Roger.



_____ Floor

34. Find the slopes of lines. Simplify all fractions, if possible.

$S(6, 5)$, $T(-4, 3)$ $X(-4, 2)$, $Y(-3, -3)$

Slope of ST: _____

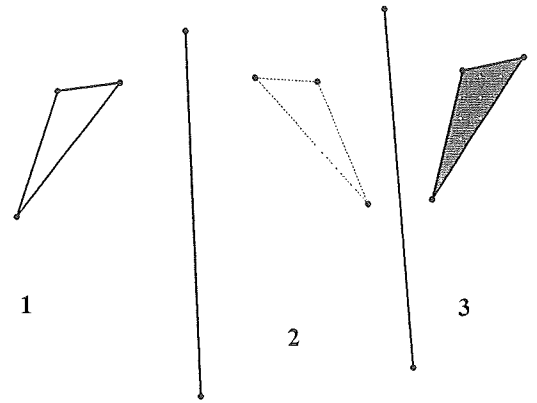
Slope of XY: _____

35. The composite of reflections over two parallel lines results in a _____.

From 1 to 2 the transformation performed is : _____

From 2 to 3 the transformation performed is : _____

From 1 to 3 the transformation performed is : _____



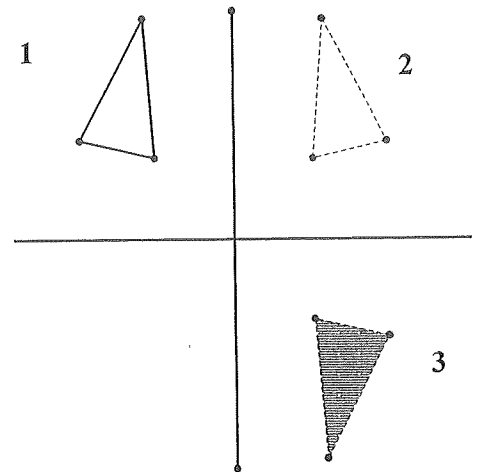
36. The composite of reflections over two intersecting lines results in a _____.

This is a composite of transformations.

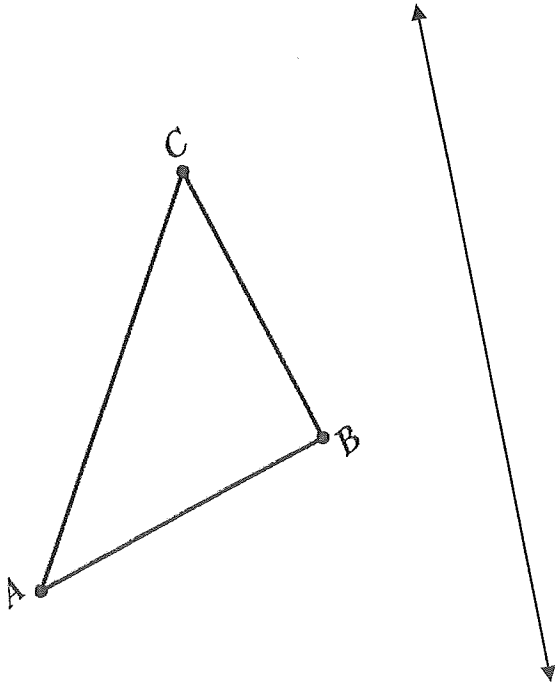
From 1 to 2 the transformation performed is : _____

From 2 to 3 the transformation performed is : _____

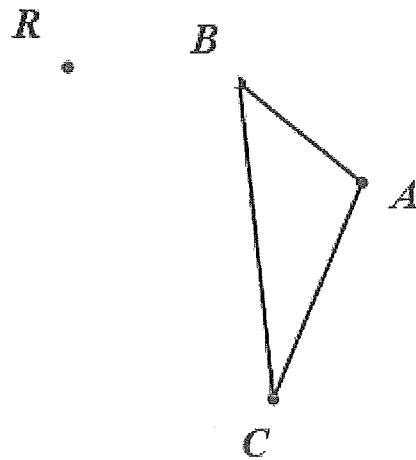
From 1 to 3 the transformation performed is : _____



37. Reflect the figure over the given line.



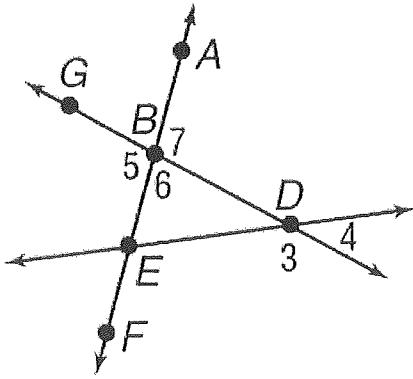
38. Rotate the figure 110 degrees counterclockwise around point R



ES Summer Work and Middle School Review:

If you are struggling, look in summer work, google, book, LOTS of places to find help for this REVIEW material.

Use the figure to answer questions 1-4.



1) Name all angles that have B as a vertex.

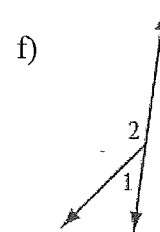
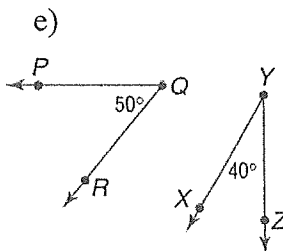
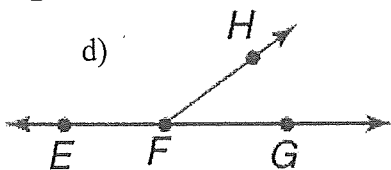
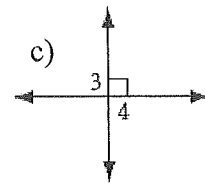
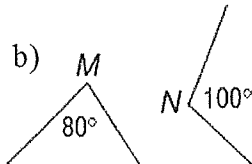
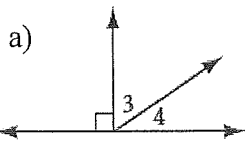
2) Name a pair of supplementary angles.

3) Name a pair of vertical angles.

4) Name a linear pair.

5) Name all the different ways to name line \overleftrightarrow{AB} .

6) Classify all that apply: adjacent, vertical, linear pairs, complementary, supplementary, right angle and/or congruent.



Name: _____

Hour: _____

Equations and Slopes of Parallel and Perpendicular Lines

Parallel have same slopes

Perpendicular have opposite reciprocal slopes

Determine whether \overline{MN} and \overline{RS} are *parallel, perpendicular, or neither*.

1. $M(0, 3), N(2, 4), R(2, 1), S(8, 4)$

2. $M(-1, 3), N(0, 5), R(2, 1), S(6, -1)$

Slope MN: _____

Slope MN: _____

Slope RS: _____

Slope RS: _____

3. $M(-1, 3), N(4, 4), R(3, 1), S(-2, 2)$

4. $M(0, -3), N(-2, -7), R(2, 1), S(0, -3)$

Slope MN: _____

Slope MN: _____

Slope RS: _____

Slope RS: _____

Find the slope of \overline{MN} and the slope of any line perpendicular to \overline{MN} .

7. $M(2, -4), N(-2, -1)$

8. $M(1, 3), N(-1, 5)$

Slope of \overline{MN} : _____

Slope of \overline{MN} : _____

⊥ slope: _____

⊥ slope: _____

This page is due : _____