

January 3, 2019

Welcome!

I am Mrs. Cole.

Please find your seat.

Start your pretest.

Jan 2-11:50 AM

Eyeopener

Simplify each expression.

1) $-3x + 3x = 0$

2) $8x(x+10)$

Syllabus

Solve each equation.

3) $-8(x+7) = -112$

Rules

Solve each equation for the indicated variable.

4) $u = \frac{k}{a}, \text{ for } a$

$a(u) = \left(\frac{k}{a}\right)a$

$a \cdot u = \frac{k}{a}$

$\frac{a \cdot u}{a} = \frac{k}{a}$

$a = \frac{k}{u}$

$-8(x+7) = -112$

$-8x - 56 = -112$

$-8x - 56 + 56 = -112 + 56$

$-8x = -56$

$\frac{-8x}{-8} = \frac{-56}{-8}$

$x = 7$

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1/3/19

Translation Definition. Translation is a term used in geometry to describe a function that moves an object a certain distance. The object is not altered in any other way. It is not rotated, reflected or re-sized. In a translation, every point of the object must be moved in the same direction and for the same distance. Sep 9, 2014

Let's see what a translation is...

Geogebra, translation, wolfram

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For translations you need to know pre-image, image, and the rules of translation:

A transformation is a general term for four specific ways to manipulate the shape of a point, a line, or shape. The original shape of the object is called the **pre-image** and the final shape and position of the object is the **image** under the transformation. Types of transformations in math. Translation. Reflection.

Rules of Translations

- A point slides to the **left** a number of spaces - subtract a from x .
New point: $(x', y') = (x - a, y)$
- A point slides to the **right** a number of spaces - add a to x .
New point: $(x', y') = (x + a, y)$
- A point slides **up** b number of spaces - add b to y .
New point: $(x', y') = (x, y + b)$
- A point slides **down** b number of spaces - subtract b from y .
New point: $(x', y') = (x, y - b)$

The rule is the vector (arrow)

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4.2 Translations (DOK 2)

To make a translation of a geometric figure, first duplicate the figure and then slide it along a path.

Triangle $A'B'C'$ is a translation of triangle ABC . Its point is translated 5 spaces to the right. In other words, the triangle slid 5 spaces to the right. Look the path of translation. It gives the same information as above. Count the number of spaces across (prime) a move 5 spaces to the right. Each new point is found at $(x+5, y)$. **Rule**

Point A is at $(-3, 3)$. Therefore, A' is found at $(-3 + 5, 3)$ or $(2, 3)$.

B is at $(-4, 1)$, so B' is at $(-4 + 5, 1)$ or $(1, 1)$.

C is at $(0, 1)$, so C' is at $(0 + 5, 1)$ or $(5, 1)$.

Quadrilateral FGH is translated 5 spaces to the right and 3 spaces down. The path of translation shows the same information. It points right 5 spaces and down 3 spaces. Each new point is found at $(x+5, y-3)$.

Point F is located at $(-4, 3)$. Point F' is located at $(-4 + 5, 3 - 3)$ or $(1, 0)$.

Point G is at $(-2, 5)$. Point G' is at $(-2 + 5, 5 - 3)$ or $(3, 2)$.

Point H is at $(-1, 4)$. Point H' is at $(-1 + 5, 4 - 3)$ or $(4, 1)$.

Point I is at $(-1, 2)$. Point I' is at $(-1 + 5, 2 - 3)$ or $(4, -1)$.

Rule: $(x+5, y-3)$

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4.2 Translations (DOK 2)

From the following translations, record the new coordinates of the translation. The figure for the first problem is drawn for you.

1. Translate figure $ABCD$ 4 spaces to the right and 1 space down. Label the vertices of the translated figure $A', B', C',$ and D' so that point A' corresponds to the translation of point A , B' corresponds to B , C' to C , and D' to D .

$A' = (2, 1)$ $C' = (2, 1)$
 $B' = (2, 3)$ $D' = (0, 2)$

2. Translate figure $ABCD$ 3 spaces down. Label the vertices of the translated figure $A', B', C',$ and D' so that point A' corresponds to the translation of point A , B' corresponds to the translation of point B , C' to C , and D' to D .

$A' = (-5, 0)$ $C' = (-2, -3)$
 $B' = (-3, -1)$ $D' = (-4, -2)$

3. Translate figure $ABCD$ along the path of translation. Label the vertices of the translated figure $A', B', C',$ and D' so that point A' corresponds to the translation of point A , B' corresponds to B , C' to C , and D' to D .

$A' =$ _____ $C' =$ _____
 $B' =$ _____ $D' =$ _____

4. Translate triangle FGH 6 spaces to the left and 3 spaces up. Label the vertices of the translated triangle $F', G',$ and H' so that point F' corresponds to the translation of point F , G' corresponds to G , and H' to H .

$F' =$ _____ $G' =$ _____ $H' =$ _____

5. Translate triangle FGH 4 spaces up and 1 space to the left. Label the vertices of the translated triangle $F', G',$ and H' so that point F' corresponds to the translation of point F , G' corresponds to G , and H' to H .

$F' =$ _____ $G' =$ _____ $H' =$ _____

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January 4, 2019, Friday

Draw a triangle, then this triangle translated.



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Rules of Reflections

- If a point is reflected over the y -axis
New point: $(x', y') = (-x, y)$
- If a point is reflected over the x -axis
New point: $(x', y') = (x, -y)$
- If a point is reflected over the line $y = x$
New point: $(x', y') = (y, x)$

Geogebra, reflection, Ingram

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Chapter 4 Transformations

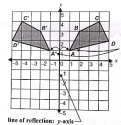
This chapter covers the following CCGPS standards:



Content Standards	
Congruence	G.CO.6, G.CO.7, G.CO.8, G.GPE.4

4.1 Reflections (DOK 2)

A reflection of a geometric figure is a mirror image of the object. Placing a mirror on the reflection will give you the position of the reflected image.



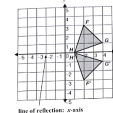
Quadrilateral $ABCD$ is reflected across the y -axis to form quadrilateral $A'B'C'D'$. The y -axis is the line of reflection. Point A' (read as A prime) is the reflection of point A , point B' corresponds to point B , C' to C , and D' to D .

- Point A is $+1$ space from the y -axis. Point A' is -1 space from the y -axis.
- Point B is $+2$ spaces from the y -axis. Point B' is -2 spaces from the y -axis.
- Point C is $+4$ spaces from the y -axis, and point C' is -4 spaces from the y -axis.
- Point D is $+5$ spaces from the y -axis, and point D' is -5 spaces from the y -axis.

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4.1 Reflections (DOK 2)



Triangle FGH is reflected across the x -axis to form triangle $F'G'H'$. The x -axis is the line of reflection. Point F' is the reflection of point F . Point G' corresponds to point G , and H' mirrors H .

- Point F is $+3$ spaces from the x -axis. Likewise, point F' is -3 spaces from the x -axis.
- Point G is $+1$ space from the x -axis, and point G' is -1 space from the x -axis.
- Point H is 0 spaces from the x -axis, so point H' is also 0 spaces from the x -axis.

Reflecting Across a 45° Line ($y = x$)

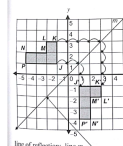


Figure $JKLMNP$ is reflected across line m to form figure $J'K'L'M'N'P'$. Line m is at a 45° angle. Point J corresponds to J' , K to K' , L to L' , M to M' , N to N' , and P to P' . Line m is the line of reflection. Pay close attention to how to determine the mirror image of figure $JKLMNP$ across line m described below. This method only works when the line of reflection is at a 45° angle.

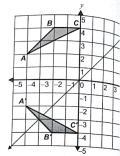
- Point J is 2 spaces over from line m , so J' must be 2 spaces down from line m .
- Point K is 4 spaces over from line m , so K' is 4 spaces down from line m , and so on.

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Draw the following reflections, and record the new coordinates of the reflection. The problem is done for you.

1. Reflect figure ABC across the x -axis. Label vertices A' , B' , and C' so that point A' is the reflection of point A , B' is the reflection of B , and C' is the reflection of C .
 $A' = (-1, -2)$ $B' = (-2, -1)$ $C' = (0, -4)$
2. Reflect figure ABC across the y -axis. Label vertices A'' , B'' , and C'' so that point A'' is the reflection of point A , B'' is the reflection of B , and C'' is the reflection of C .
 $A'' =$ _____ $B'' =$ _____ $C'' =$ _____
3. Reflect figure ABC across line p . Label vertices A''' , B''' , and C''' so that point A''' is the reflection of point A , B''' is the reflection of B , and C''' is the reflection of C .
 $A''' =$ _____ $B''' =$ _____ $C''' =$ _____



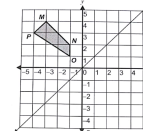
4. Reflect figure $DEFGH$ across the y -axis. Label vertices D' , E' , G' , and H' so that point D' is the reflection of point D , E' is the reflection of E , G' is the reflection of G , and H' is the reflection of H .
 $D' =$ _____ $E' =$ _____ $G' =$ _____ $H' =$ _____
5. Reflect figure $DEFGH$ across the x -axis. Label vertices D'' , E'' , G'' , and H'' so that point D'' is the reflection of D , E'' is the reflection of E , G'' is the reflection of G , and H'' is the reflection of H .
 $D'' =$ _____ $E'' =$ _____ $G'' =$ _____ $H'' =$ _____
6. Reflect figure $DEFGH$ across line r . Label vertices D''' , E''' , G''' , and H''' so that point D''' is the reflection of D , E''' corresponds to E , G''' to G , and H''' to H .
 $D''' =$ _____ $E''' =$ _____ $G''' =$ _____ $H''' =$ _____

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4.1 Reflections (DOK 2)

Use the following graph for questions 7-9.



7. Reflect quadrilateral $MNOP$ across the y -axis. Label vertices M' , N' , O' , and P' so that point M' is the reflection of point M , N' is the reflection of N , O' is the reflection of O , and P' is the reflection of P .
 $M' =$ _____ $O' =$ _____
 $N' =$ _____ $P' =$ _____

8. Reflect figure $MNOP$ across the x -axis. Label vertices M'' , N'' , O'' , and P'' so that point M'' is the reflection of M , N'' is the reflection of N , O'' is the reflection of O , and P'' is the reflection of P .
 $M'' =$ _____ $O'' =$ _____
 $N'' =$ _____ $P'' =$ _____

9. Reflect figure $MNOP$ across line w . Label vertices M''' , N''' , O''' , and P''' so that point M''' is the reflection of M , N''' corresponds to N , O''' to O , and P''' to P .
 $M''' =$ _____ $O''' =$ _____
 $N''' =$ _____ $P''' =$ _____

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