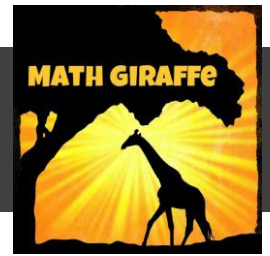


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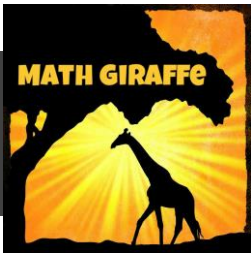
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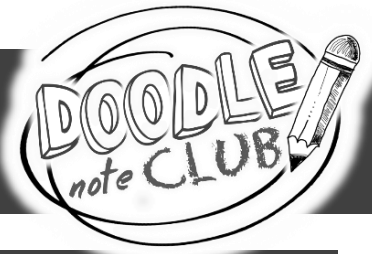
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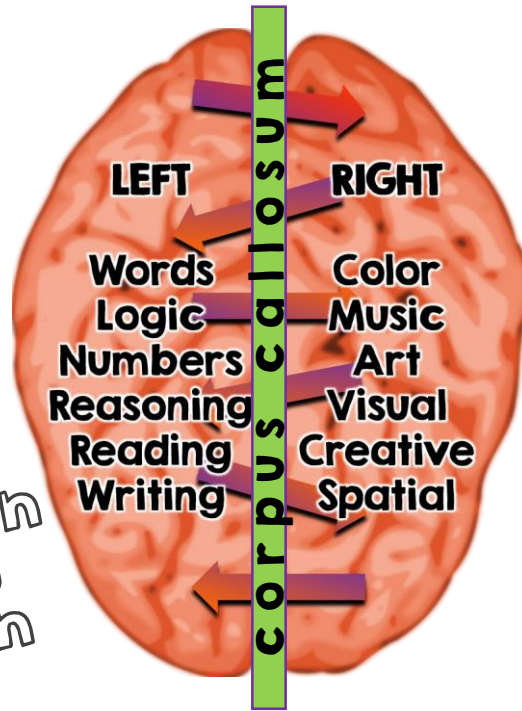




# Brain Benefits



Memory  
Focus  
Relaxation  
Problem Solving  
Attention  
Creativity  
Energy  
Alertness  
Concentration  
Engagement  
Coordination  
Retention



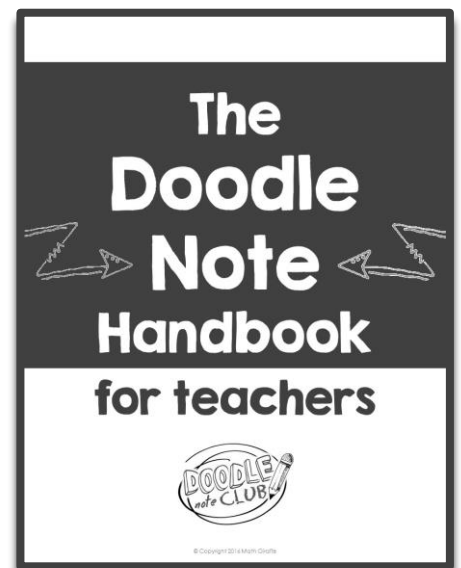
Integrating doodle notes into the classroom experience activates both hemispheres of the brain at the same time. When a student engages in coloring, doodling, or artistic embellishment of their lesson material, the two sides of the brain work together.

## How to Use Doodle Notes

**Maximize your students' retention, focus, and more!**

**Learn all about the brain-based doodle note strategy ...**

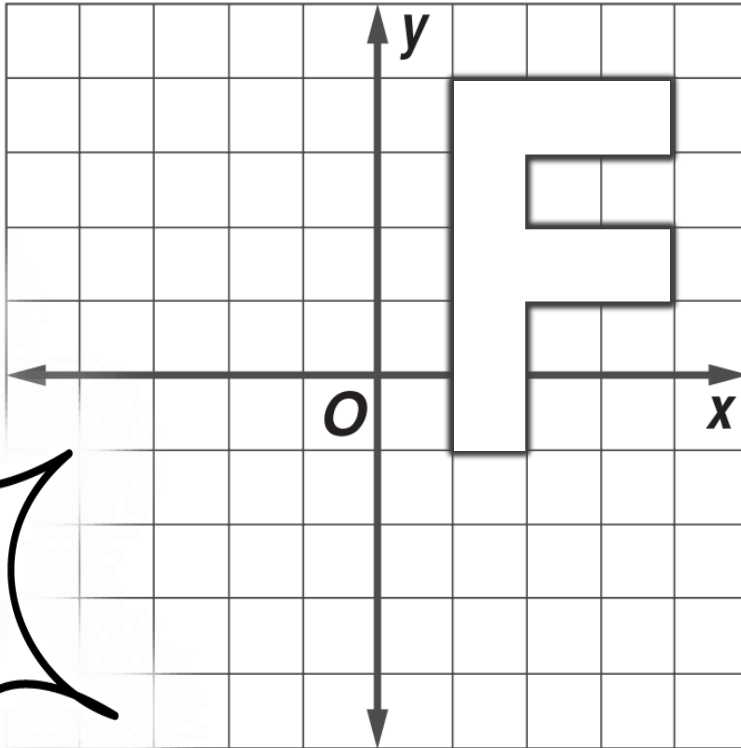
**Download your  
FREE Doodle Note  
Handbook [here](#)**



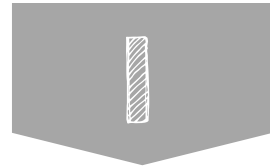
Name: \_\_\_\_\_

Reflect the figure across the y-axis.

A figure and its reflection are...



notation



Identify key points in the

\_\_\_\_\_.



Create the image such that each point maintains its

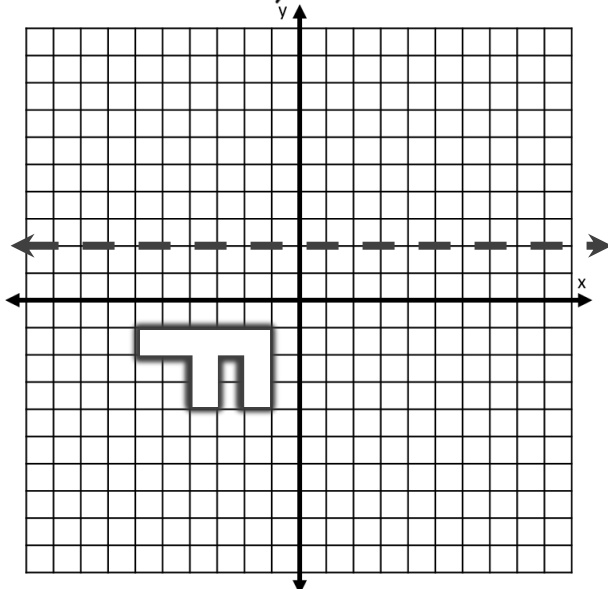
\_\_\_\_\_ from the

\_\_\_\_\_  
\_\_\_\_\_.

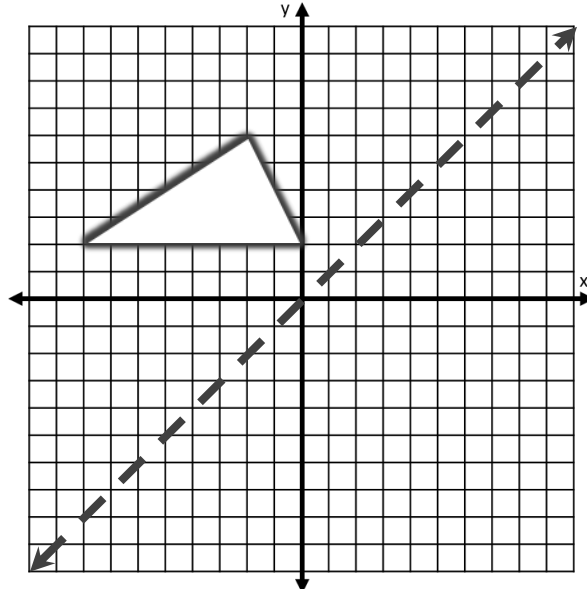
FLIP

REFLECTION

Reflect the figure across the line  $y = 2$ .

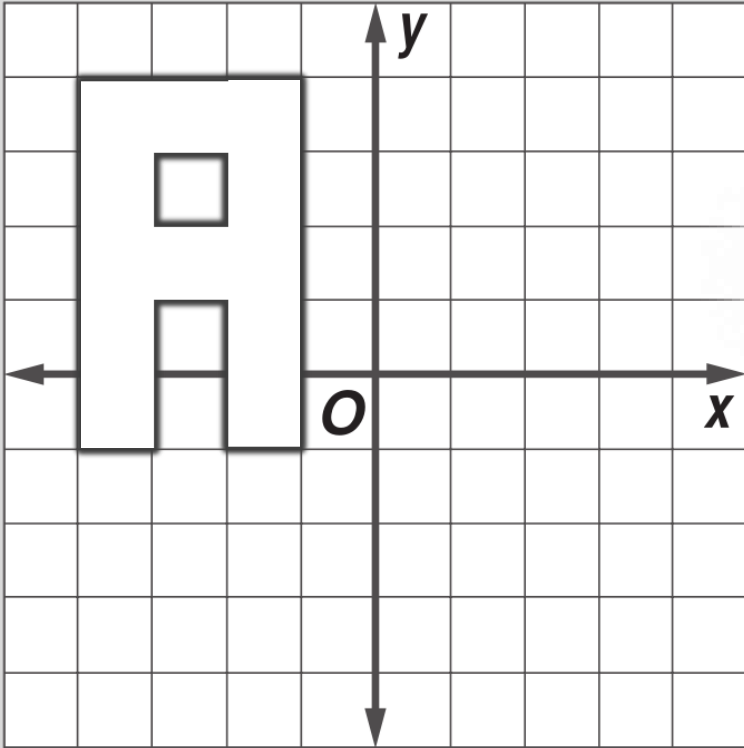


Reflect the figure across the line  $y = x$ .



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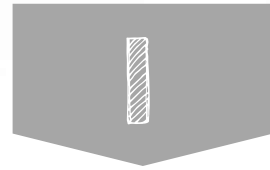
Rotate the figure  $90^\circ$  clockwise around the origin.



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An image and its pre-image before a rotation are...

AROUND



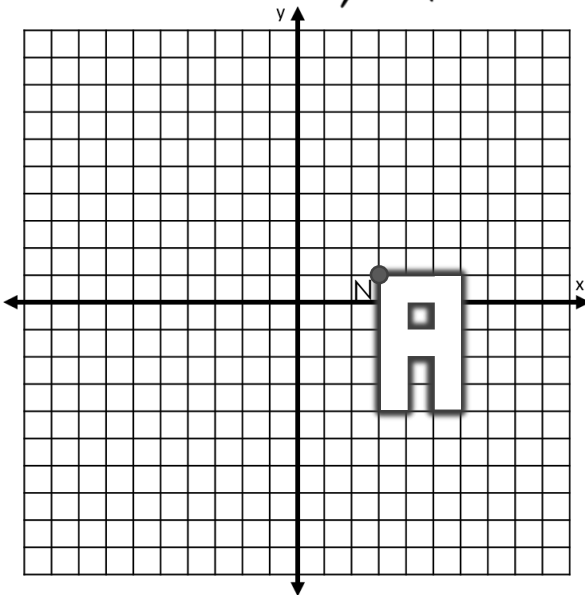
Identify key points in the \_\_\_\_\_.



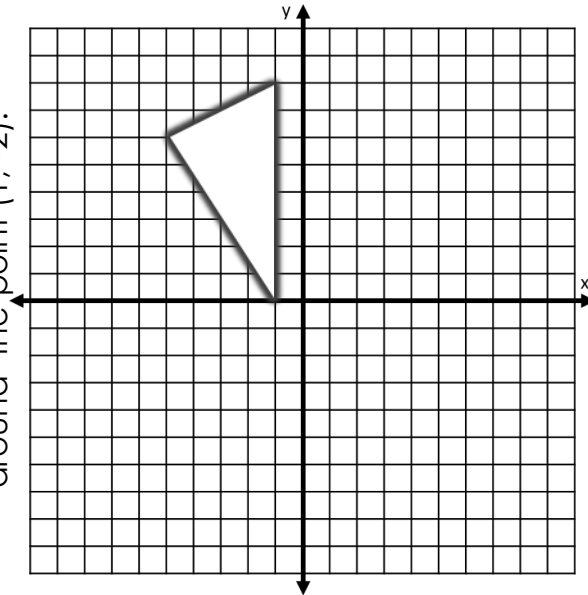
Create the image such that each point is rotated the correct number of degrees in the correct direction.

# ROTATION

Rotate the figure  $180^\circ$  around point N.



Rotate the figure  $90^\circ$  anticlockwise around the point  $(1, -2)$ .

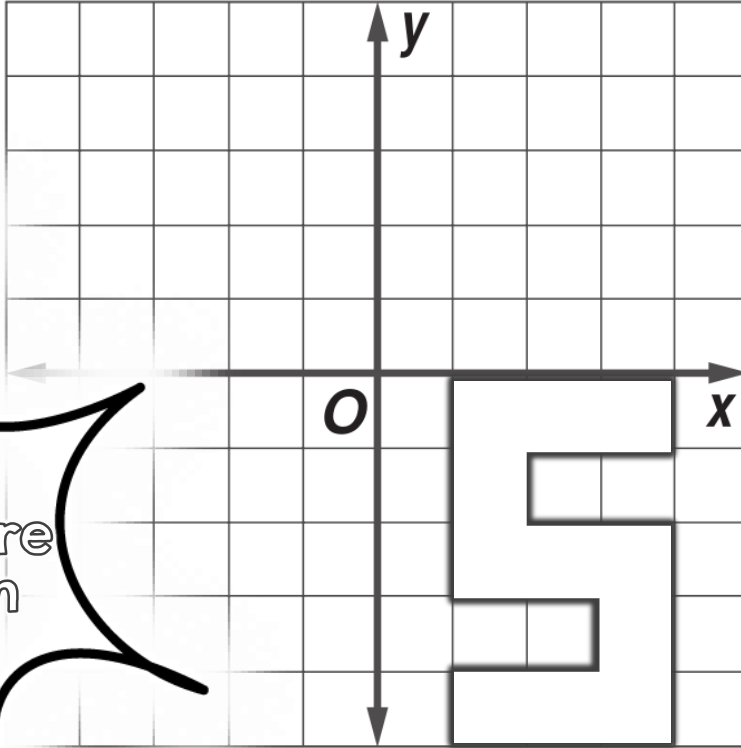


Name: \_\_\_\_\_

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n

Name: \_\_\_\_\_

Translate the figure up 4 units and left 3 units.



An image and its pre-image before a translation are...

1

Identify key points in the

\_\_\_\_\_.

2

Add or subtract from each coordinate as directed to get the resulting

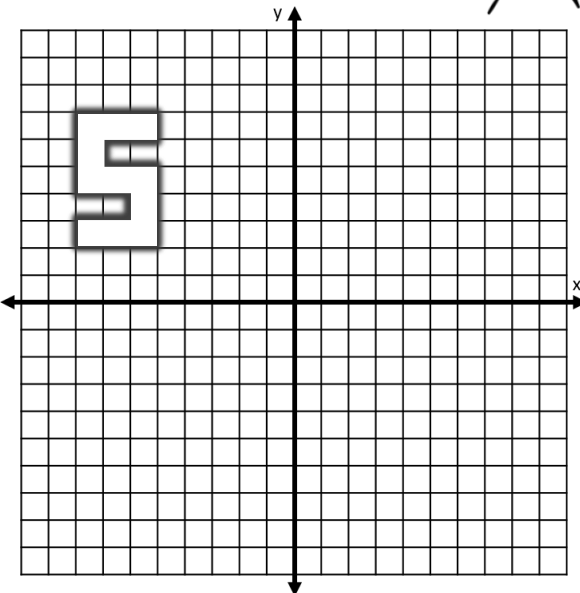
\_\_\_\_\_.

notation

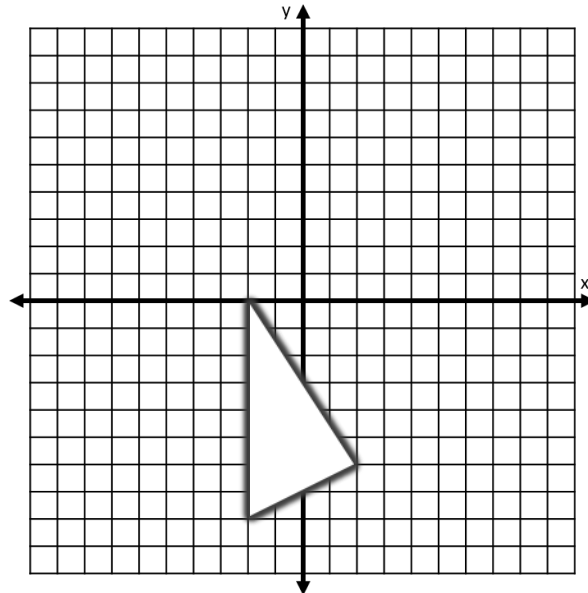
SLIDE

TRANSLATION

Use the translation  $(x, y) \rightarrow (x + 11, y - 7)$

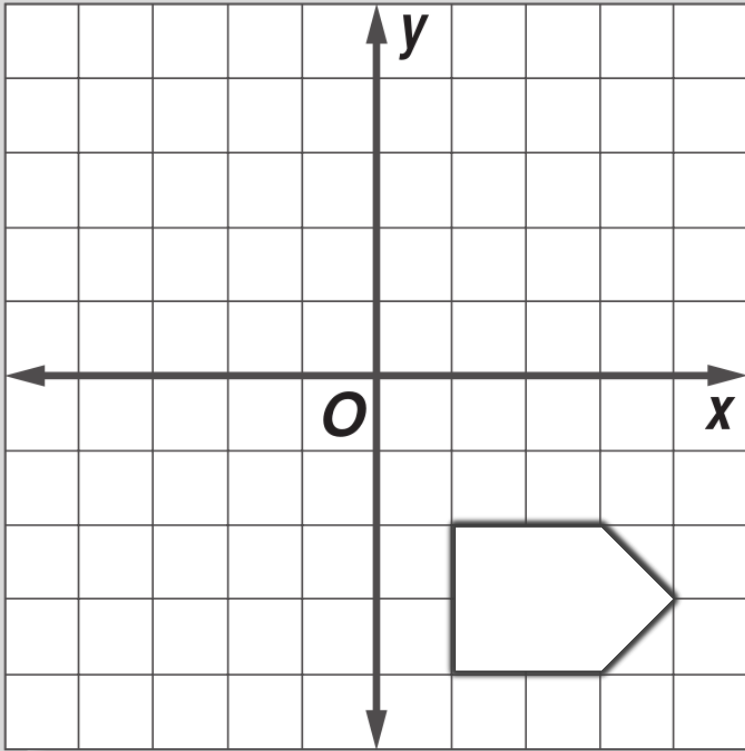


Use the translation  $(x, y) \rightarrow (x, y + 5)$



Translations for primary

Name: \_\_\_\_\_

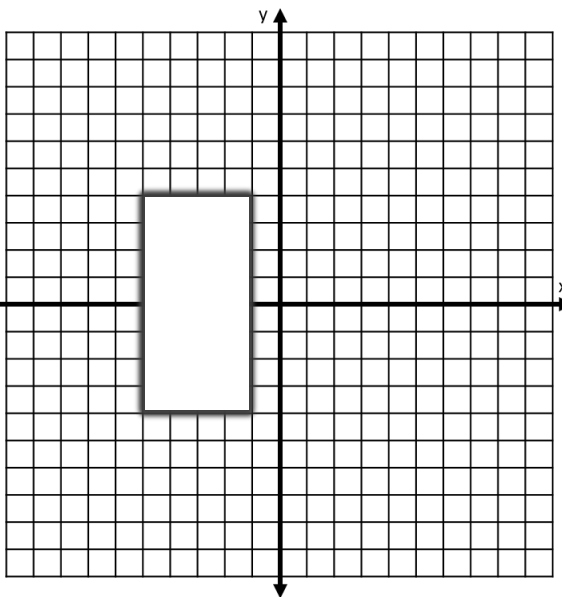


Perform a translation using  $(x, y) \rightarrow (x - 3, y)$ , then reflect the figure across the x-axis.

A TRANSFORMATION is...  
ISOMETRY:  
Composite Transformation

TRY IT ∞

Rotate the figure 180° around the origin, then reflect it across the line  $x = 5$ .



Describe TWO DIFFERENT single transformations that each could have achieved the same image in one step?

Any combination of \_\_\_\_\_ and \_\_\_\_\_ will always maintain the \_\_\_\_\_ & \_\_\_\_\_ of the original figure.

# Sample

Reflect the figure across the y-axis.

A figure and its reflection are... **CONGRUENT**

notation  
 PRE-IMAGE: "POINT A"  
 IMAGE: "A PRIME"

1 Identify key points in the **PRE-IMAGE**.

2 Create the image such that each point maintains its **DISTANCE** from the **LINE OF REFLECTION**.

**FLIP REFLECTION**

Reflect the figure across the line  $y = 2$ .

Reflect the figure across the line  $y = x$ .

LINE OF REFLECTION

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Transformations

Rotate the figure  $90^\circ$  clockwise around the origin.

An image and its pre-image before a rotation are... **CONGRUENT**

1 Identify key points in the **PRE-IMAGE**.

2 Create the image such that each point is rotated the correct number of degrees in the correct direction.

**ROTATE 90°**

**AROUND**

**ROTATION**

Turn the figure  $180^\circ$  around point N.

Turn the figure  $90^\circ$  anticlockwise around the point  $(1, -2)$ .

**TURN**

Transformations

# Sample

Name: \_\_\_\_\_

Translate the figure up 4 units and left 3 units.

**1** Identify key points in the **PRE IMAGE**

**2** Add or subtract from each coordinate as directed to get the resulting **IMAGE**

**SLIDE**

left 3 units  
UP 4 UNITS

$(x, y)$   
 $(x-3, y+4)$

An image and its pre-image before a translation are... **CONGRUENT**

**SLIDE TRANSLATION**

Notation  
PRE-IMAGE  $(x, y)$   
TRANSLATES TO  
IMAGE  $(x\#\#, y\#\#)$

Use the translation  $(x, y) \rightarrow (x+11, y-7)$

RIGHT 11  
DOWN 7

ADD 11 TO EACH X-COORD.  
SUBTRACT 7 FROM EACH Y-COORD.

Use the translation  $(x, y) \rightarrow (x, y+5)$

UP 5 UNITS → ADD 5 TO EACH Y-COORD.

**Transformations**

Name: \_\_\_\_\_

**A TRANSFORMATION is...**

**MANIPULATION** of a shape OR **FIGURE**.  
It can change the **ORIENTATION**, **POSITION** or even **SIZE** of the original.

**ISOMETRY:**  
A **TRANSFORMATION** that does **NOT** change the dimensions of the **FIGURE**.  
The image and original are **CONGRUENT**.

**Composite Transformations**

**TRY IT:**

Rotate the figure 180° around the origin, then reflect it across the line  $x = 5$ .

Show **TWO DIFFERENT** single transformations each could have achieved the same image in one step?

① Reflect over  $x = 2$   
OR  
② Translate  $(x, y) \rightarrow (x+10, y)$

**Any combination of ROTATIONS, TRANSLATIONS and REFLECTIONS will always maintain the SHAPE & SIZE of the original figure.**

Use the translation  $(x, y) \rightarrow (x-3, y)$ , then reflect the figure across the x-axis.

**2** PRE-IMAGE  
**1** PRE-IMAGE  
LINE OF REFLECTION  
REFLECT  
TRANSLATE

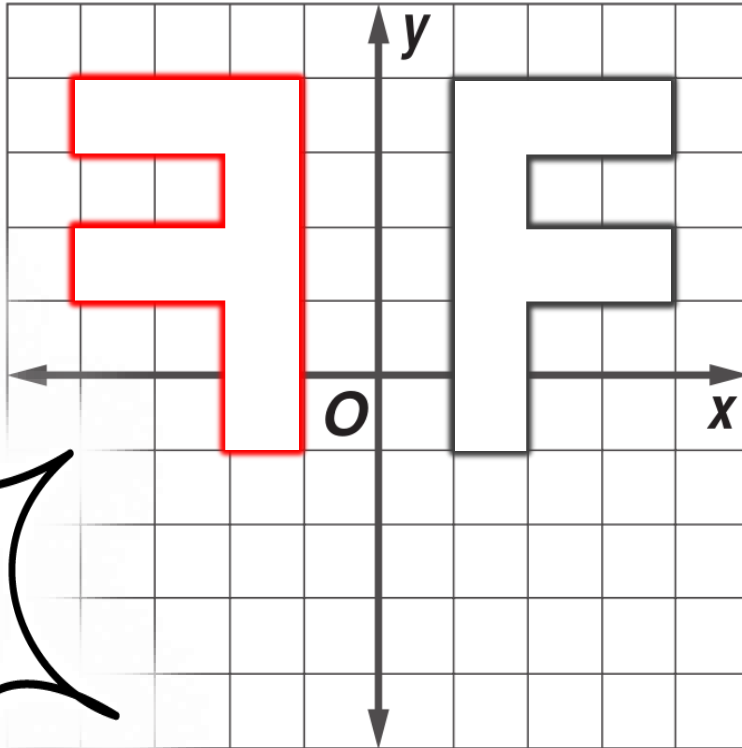
**Transformations**



Name: Answer Key / Teacher Guide

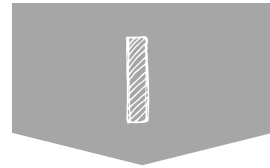
Reflect the figure across the y-axis.

A figure and its reflection are... **congruent**



notation

The preimage points are labeled with regular letters. (A)  
The image points are labeled with "prime notation" (A').  
Said as "A Prime"



Identify key points in the pre-image.



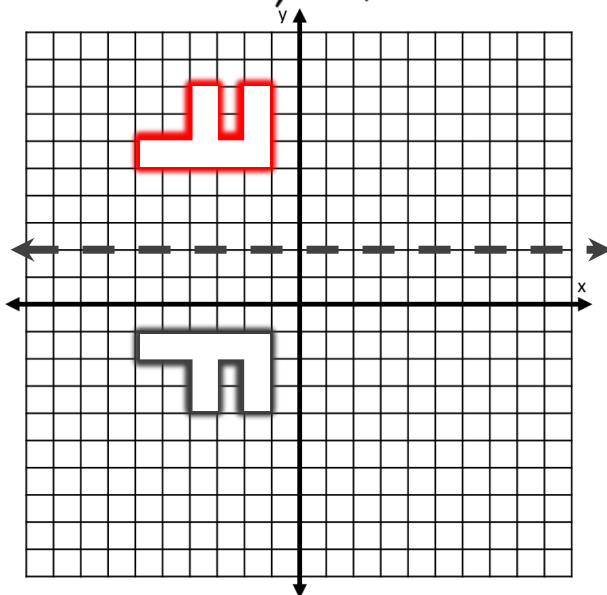
Create the image such that each point maintains its distance from the line of reflection.  
(Make a **MIRROR IMAGE!**)

**FLIP**

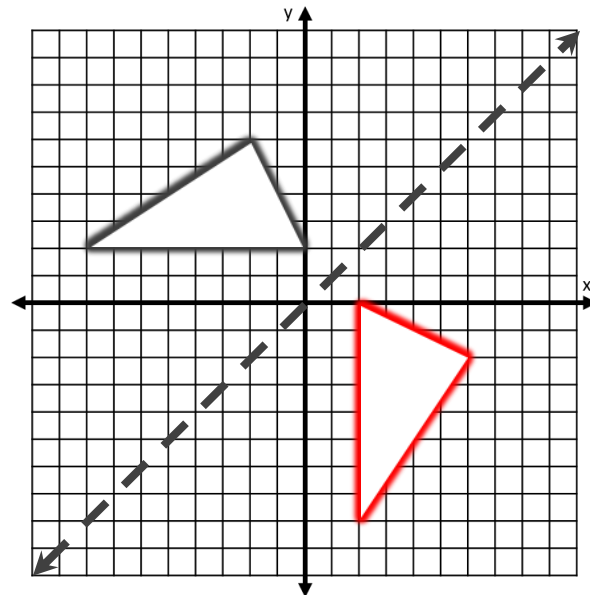
\*(Have students draw a mirror as a reminder and/or note that they can remember "reflection" goes with "flip" because they both have the letter F in them!)

**REFLECTION**

Reflect the figure across the line  $y = 2$ .



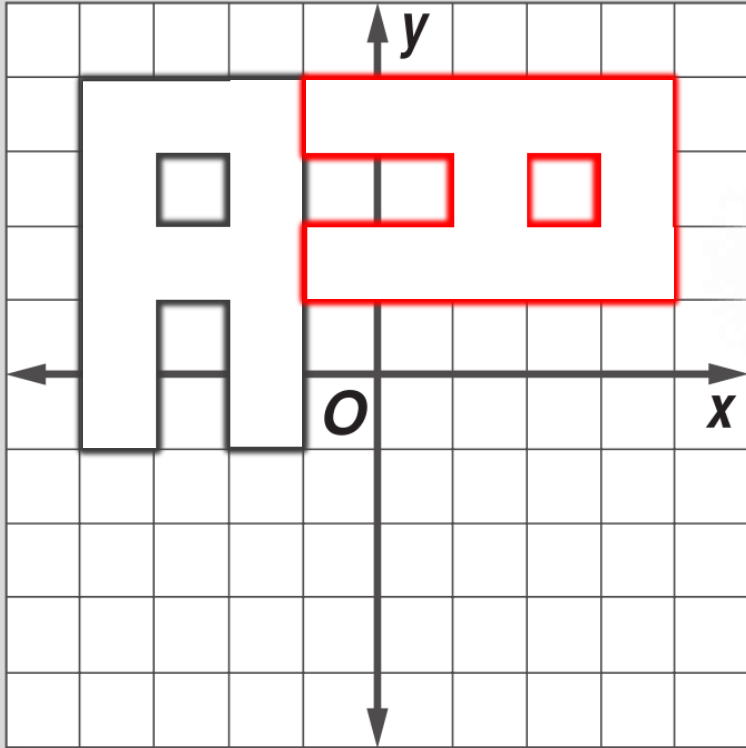
Reflect the figure across the line  $y = x$ .



\*(Have students label all points and draw arrows to show the transformation of each point if needed).

Translations

Rotate the figure 90° clockwise around the origin.



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An image and its pre-image before a rotation are... **congruent.**

AROUND

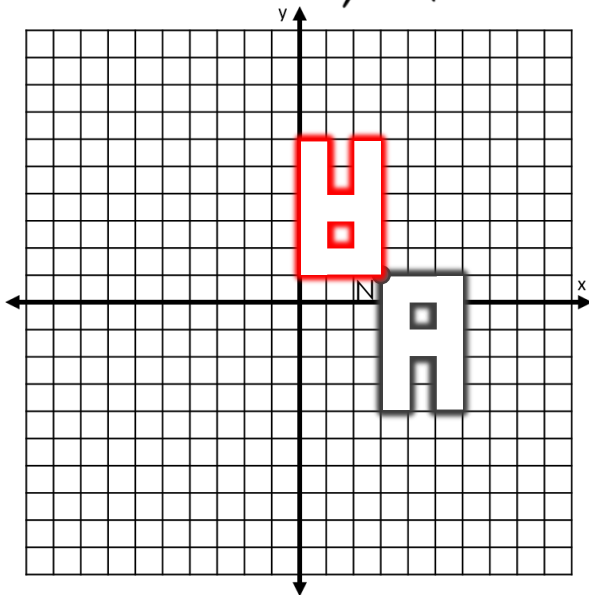
# ROTATION

Identify key points in the preimage.

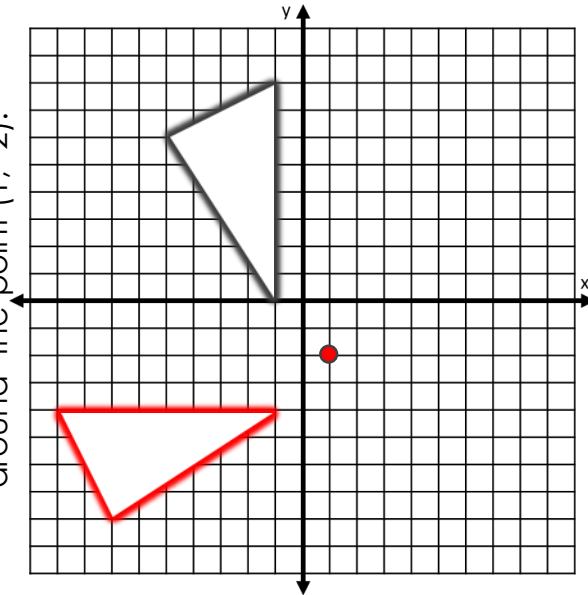


Create the image such that each point is rotated the correct number of degrees in the correct direction.

Rotate the figure 180° around point N.



Rotate the figure 90° anticlockwise around the point (1, -2).

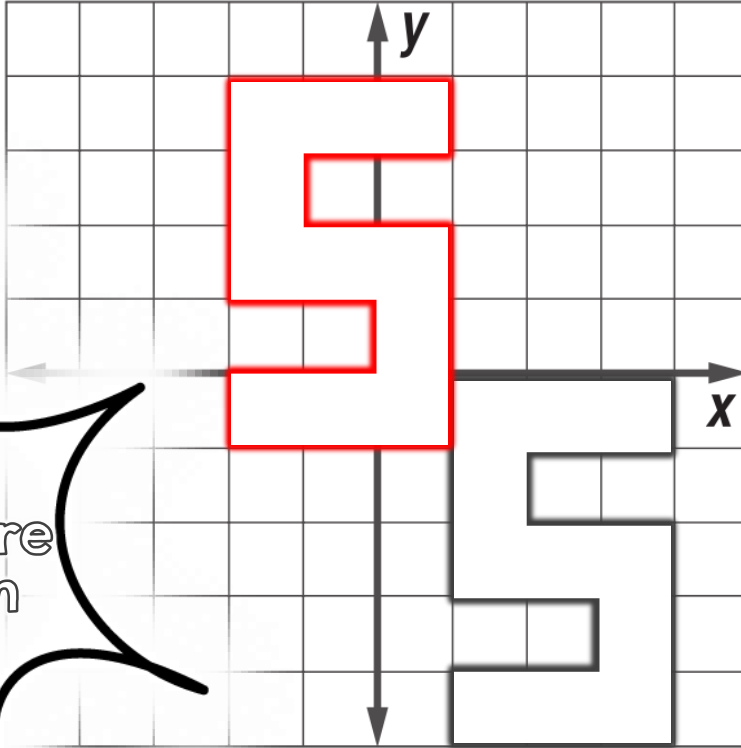


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n

Name: **Answer Key / Teacher Guide**

Name: **Answer Key / Teacher Guide**

Translate the figure up 4 units and left 3 units.



An image and its pre-image before a translation are... **congruent.**

1

Identify key points in the preimage.

2

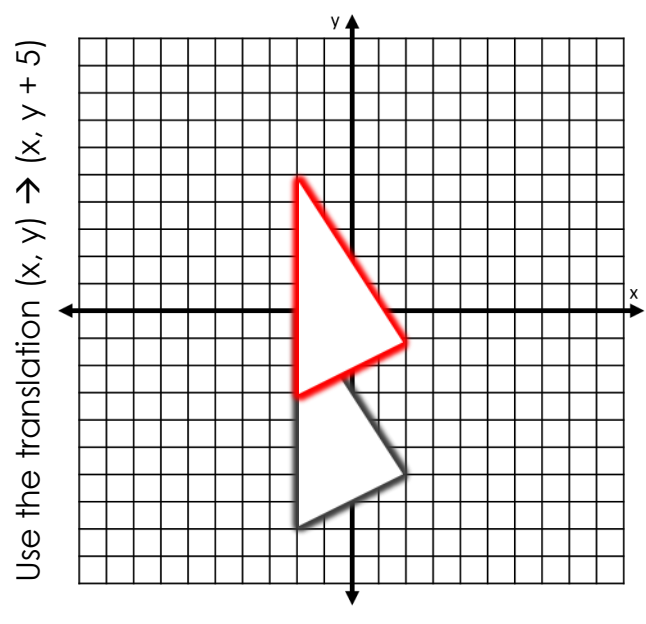
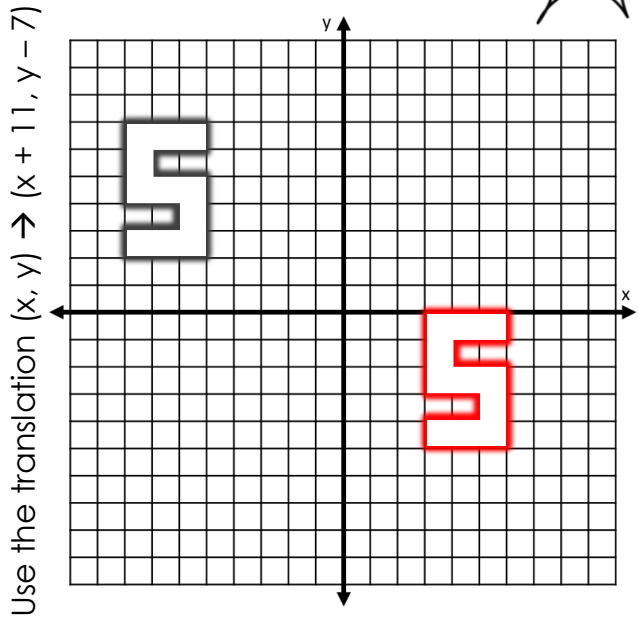
Add or subtract from each coordinate as directed to get the resulting image.

notation

Each point in the preimage  $(x, y)$  translates to a point in the preimage  $(x \pm a, y \pm b)$ .

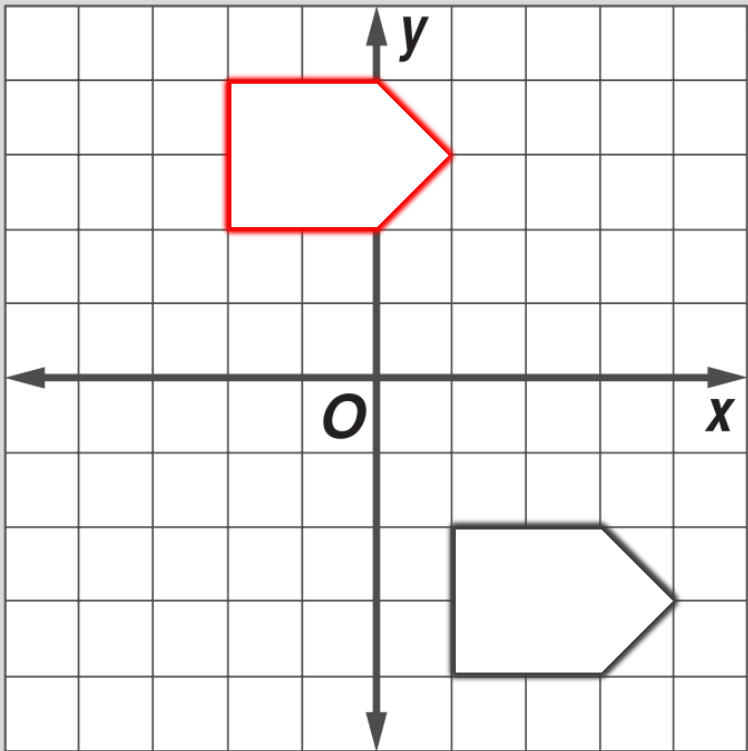
**SLIDE**

**TRANSLATION**



Translations for T

Name: Answer Key / Teacher Guide



Perform a translation using  $(x, y) \rightarrow (x - 3, y)$ , then reflect the figure across the x-axis.

\*(Note that sometimes, composite isometric transformations result in an image that could have been obtained with just a single transformation or a different sequence of transformations. Have students identify a few different ways to get from the preimage to the image.)

A TRANSFORMATION is...

a manipulation of a shape or figure.

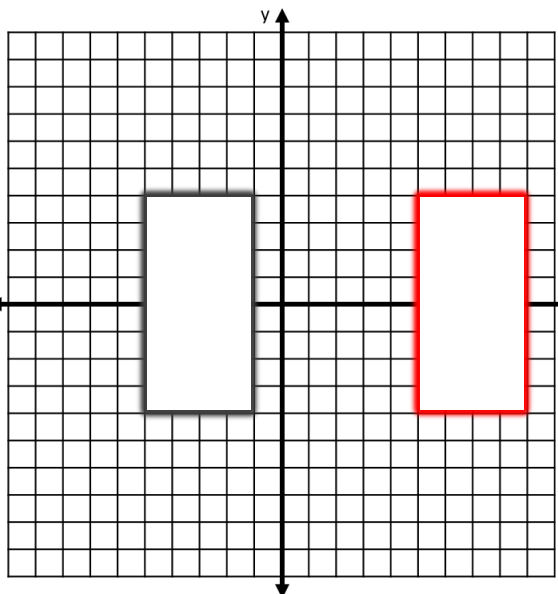
It can change the orientation, position, or even size of the original figure.

ISOMETRY:

a transformation that does NOT change the dimensions of the figure (the image and its preimage are congruent).

TRY IT !!

Rotate the figure 180° around the origin, then reflect it across the line  $x = 5$ .



Describe TWO DIFFERENT single transformations that each could have achieved the same image in one step?

Reflect over the line  $x = 2$

OR

Translate:  $(x, y) \rightarrow (x + 10, y)$

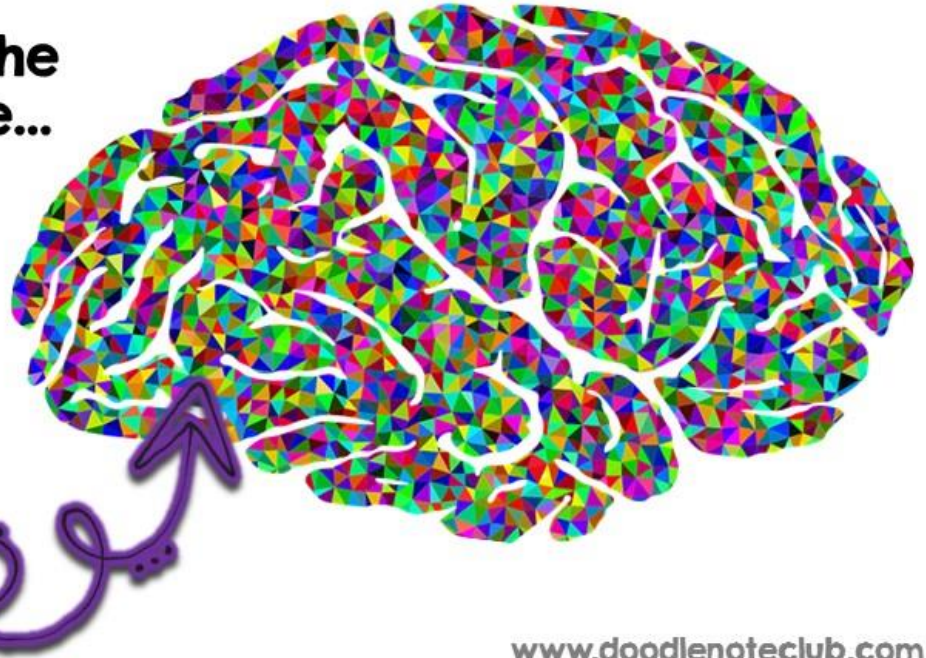
\*(Note that Reflections, rotations, and translations are ISOMETRIC TRANSFORMATIONS.)

Any combination of  
 \_\_\_ rotations, \_\_\_  
 \_\_\_ translations, \_\_\_  
 and \_\_\_ reflections \_\_\_  
 will always maintain  
 the \_\_\_ shape \_\_\_ &  
 \_\_\_ size \_\_\_ of the  
 original figure.

# DOODLE NOTES

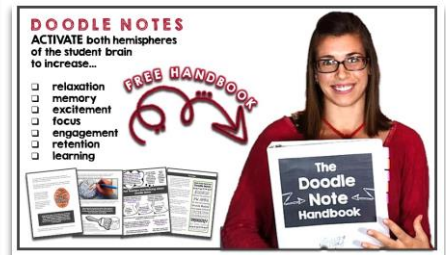
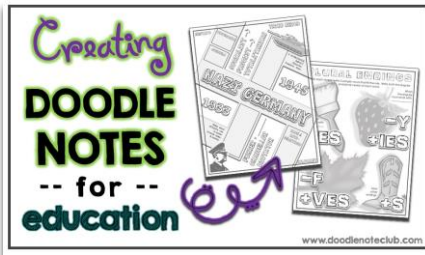
ACTIVATE both hemispheres of the brain to increase...

- relaxation
- memory
- excitement
- focus
- engagement
- retention
- learning



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