

Welcome Back MYP Math 9!

	Assignment Effort Grade (Circle One)	Comments (What was interesting or challenging?)
Monday Date: <u>1 - 8</u> Topic: <u>No homework over break :)</u>	0 1 2	Please have your homework out on your desk for Ms. Paulson to check.
Tuesday Date: <u>1 - 9</u> Topic: <u>16B Translations</u>	0 1 2	
Wednesday Date: _____ Topic: _____	0 1 2	
Thursday Date: _____ Topic: _____	0 1 2	
Friday Date: _____ Topic: _____	0 1 2	

Chapter 16 Transformations

Class Plan:

1. Warm-up - Review
Translation
2. 16B Reflections
3. Practice Reflecting
4. Where do we see reflections?

Warm-up:

The point $(4,5)$ was moved 3 units to the right and 1 unit down.

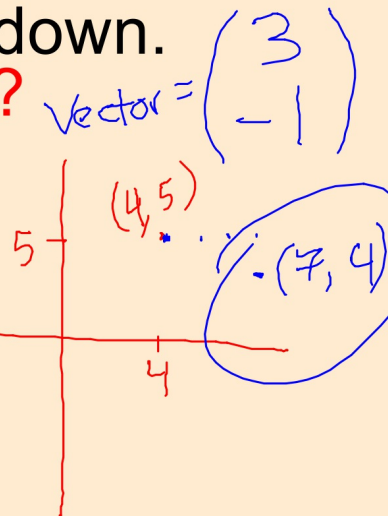
What is the new point?

How do you know?

$(4,5) \rightarrow$ 3 right
1 down

$$4 + 3 = 7$$

$$5 - 1 = 4$$

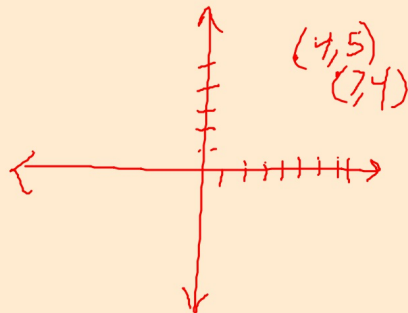


Warm-up: Reflections

The point $(4,5)$ was moved 3 units to the right and 1 unit down.

What is the new point? -1

How do you know?



new x:
 $4 + 3 = 7$

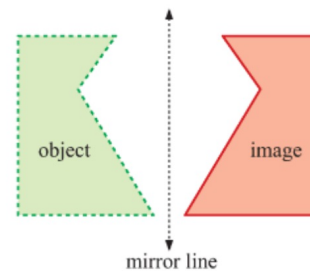
new y:
 $5 - 1 = 4$

B**REFLECTIONS***Where do we see reflections in our lives?*

We encounter reflections every day as we look in a bathroom mirror, peer into a pond of water, or glance at the traffic in a car rear-view mirror.



The object alongside has been **reflected** in the **mirror line** to form its image. In this case we might call it the **mirror image**.

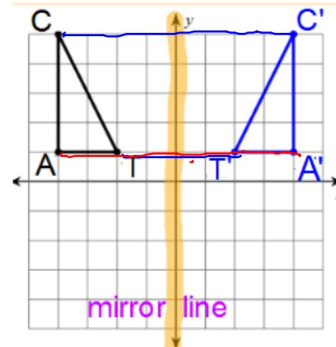


Investigation: Reflections

~5 minutes with your table!

1. Draw a line connecting C to C', A to A', and T to T'.
2. Record the distance to the mirror line.

From C	
From C'	
From A	
From A'	
From T	
From T'	



3. What did you notice?

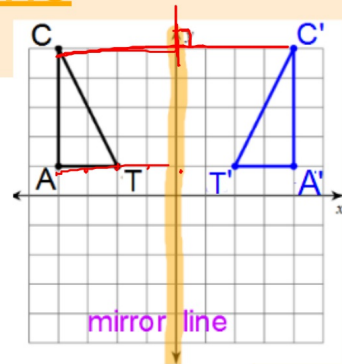
4. What type of angle is formed between the line connecting the original point to the image point, and the mirror line?

Investigation: Reflections

~5 minutes with your table!

1. Draw a line connecting C to C', A to A', and T to T'.
2. Record the distance to the mirror line.

From C	4 units
From C'	4 units
From A	4 units
From A'	4 units
From T	2 units
From T'	2 units



3. What did you notice?

points of object are same distance from mirror line as pts of image

4. What type of angle is formed between the line connecting the original point to the image point, and the mirror line?

90°, right angle

Done? Help others

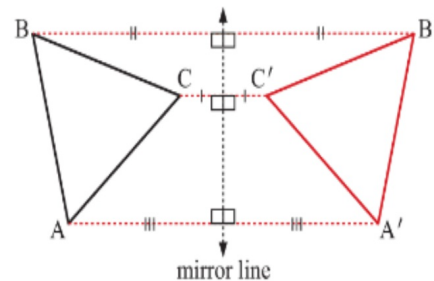
Investigation: Reflections

From the **Investigation**, you should have found:

For any reflection:

- the image is as far behind the mirror line as the object is in front of it
- the line joining any image point to the corresponding point on the object is at right angles to the mirror line
- all lengths and angles are the same size in the image as they were in the object
- points on the mirror line are **invariant**, which means they do not move.

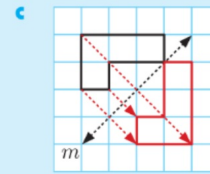
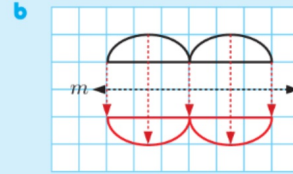
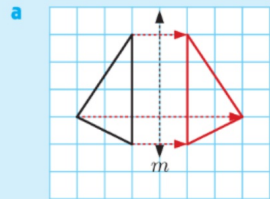
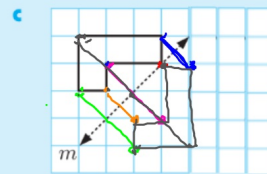
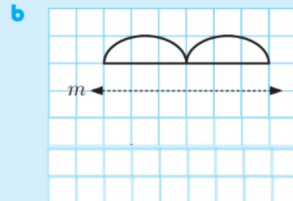
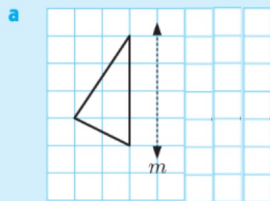
The mirror line is the **perpendicular bisector** of the line segment from any point on the object to its corresponding point on the image.



Example 4

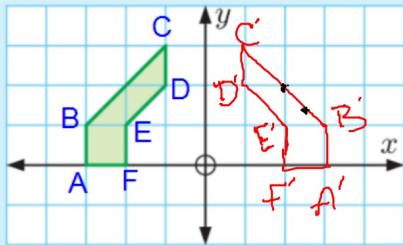
Self Tutor

Reflect each figure in the given mirror line:



Example 5

Reflect this figure in the y -axis.



<u>Object</u>	<u>Image</u>
---------------	--------------

$A(-3,0)$	$A'(3,0)$
-----------	-----------

$B(-3,1)$	$B'(3,1)$
-----------	-----------

$C(-1,3)$	$C'(1,3)$
-----------	-----------

$D(-1,2)$	$D'(1,2)$
-----------	-----------

$E(-2,1)$	$E'(2,1)$
-----------	-----------

$F(-2,0)$	$F'(2,0)$
-----------	-----------

& Write the
ordered pairs

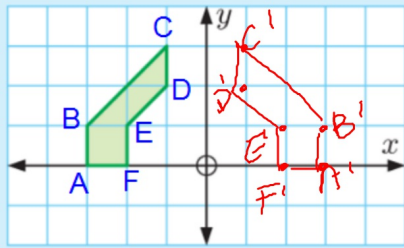
What do you
notice?

Reflection
over y -axis

$$(X, Y) \rightarrow (-X, Y)$$

Example 5

Reflect this figure in the y -axis.



& Write the ordered pairs
What do you notice?

x-values are opposite in image.

Object

Image

$$A(-3,0) \quad A'(3,0)$$

$$B(-3,1) \quad B'(3,1)$$

$$C(-1,3) \quad C'(1,3)$$

$$D(-1,2) \quad D'(1,2)$$

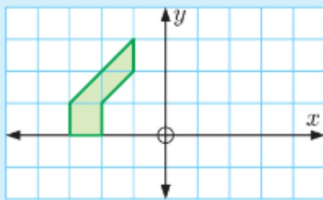
$$E(-2,1) \quad E'(2,1)$$

$$F(-2,0) \quad F'(2,0)$$

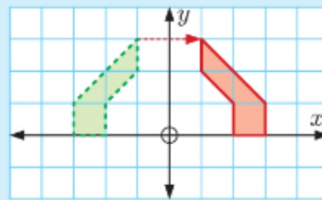
SOLUTION

Example 5

Reflect this figure in the y -axis.



Self Tutor



The x -coordinates turn positive and the y -coordinates stay the same.

Summary of Reflections (1:31)



<https://www.youtube.com/watch?v=A8fX2Drlpng>

Discuss: Where do you see reflections?

Symmetry (5+)



<https://www.youtube.com/watch?v=3drtbPZF9yc>

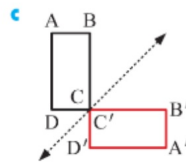
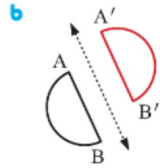
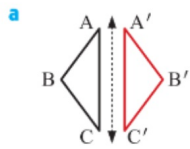
Discuss: Where do you see symmetry?

Exercises...

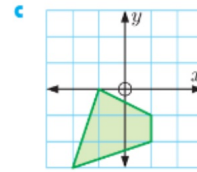
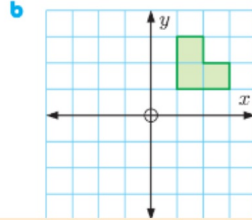
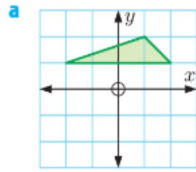
16B Reflections (p. 328)

The image displays six exercises, labeled a through f, each on a 5x5 grid. Each exercise shows a shape and a line of reflection labeled 'm'.
- **a**: A right-angled triangle with its hypotenuse on the line 'm'. The reflection is a mirror image across 'm'.
- **b**: A vertical, three-lobed shape. The line 'm' is a vertical dashed line. The reflection is a mirror image across 'm'.
- **c**: A pentagon. The line 'm' is a diagonal dashed line. The reflection is a mirror image across 'm'.
- **d**: A pentagon. The line 'm' is a diagonal dashed line. The reflection is a mirror image across 'm'.
- **e**: A triangle. The line 'm' is a horizontal dashed line. The reflection is a mirror image across 'm'.
- **f**: The word 'TOP' in blue capital letters. The line 'm' is a horizontal dashed line. The reflection is a mirror image across 'm'.

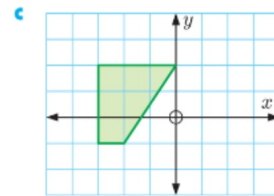
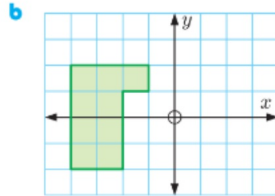
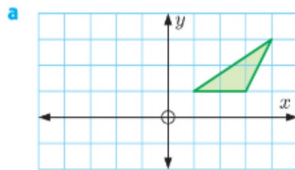
2 Which of the following transformations represent reflections?



3 Reflect each figure in the x -axis:

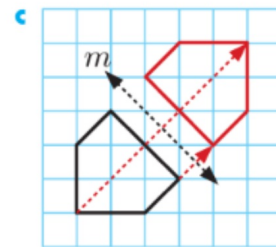
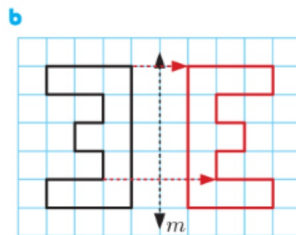
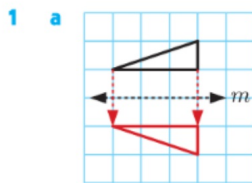


4 Reflect each figure in the y -axis:



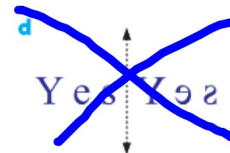
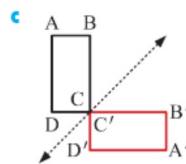
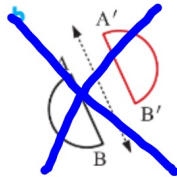
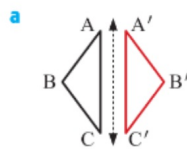
Exercise Solutions

EXERCISE 16B.1

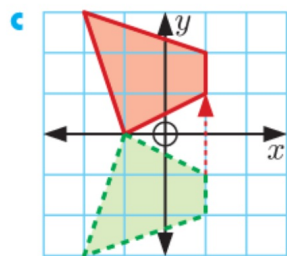
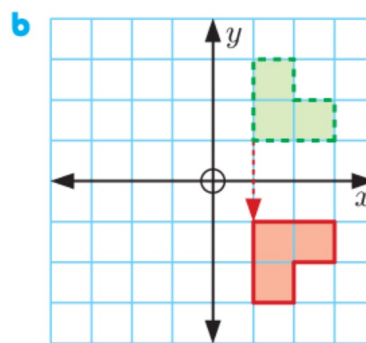
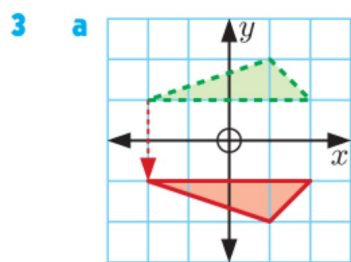


2 a and c represent reflections.

2 Which of the following transformations represent reflections?



Exercise Solutions



Exercise Solutions

