

Reflections

STRAND: Measurement and Geometry

STRAND CONCEPT: Coordinates Planes and Transformations

SOL 5.14a, 7.7, 8.7a

Remediation Plan Summary

Students draw a polygon on a coordinate plane and use patty paper or tracing paper to perform reflections across the x -axis or y -axis.

Common Misconceptions

- Students may incorrectly reflect the preimage over the wrong axis. The x -axis is the horizontal axis, but students may reflect horizontally instead of vertically. The y -axis is the vertical axis, but students may reflect vertically instead of horizontally.
- Students may confuse the x - and y -coordinates when recording the ordered pair for the new point.
- Students may confuse the terms *image* and *preimage*.

Materials

- 5 x 5 inch squares of patty or tracing paper
- Rulers
- Tape
- Reflections recording sheet
- Reflecting on Reflections exit slip

Introductory Activity

Distribute patty paper or tracing paper, and instruct students to fold it in half and draw a picture or write their name on one side of the folded paper. Then, have them then flip the paper over and trace what they drew. Finally, have them unfold the paper. Lead students in describing what happened to their picture. (The second picture is a “backwards” or “flipped” version of the first. It “mirrors” the first on the fold line.

Plan for Instruction

1. Distribute the “Reflections” worksheet. Ask students to enter the coordinates of the figure, as directed in step 1.
2. Explain the procedure for reflecting the image across the x -axis—that the x -axis will be the line of reflection or mirror line. Ask students to predict what the image will look like.
3. Distribute patty paper. Ask students to trace the x -axis, the y -axis, and the figure, including the points and the letters.
4. Have students perform a reflection across the x -axis by flipping the patty paper over in a downward direction, making sure to keep the x -axis and y -axis aligned. Have them tape the patty paper in place.
5. Tell students to enter in the second row of the table the coordinates of the reflected image and then to write down what they notice about these coordinates. (They should see that

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the x -coordinates stay the same, but the y -coordinates change signs. Discourage them from saying the y -coordinates “go negative,” because if the coordinates had been negative to begin with, they would change to positive.)

6. Have the students complete steps 3 and 4 of Part 1.
7. Have the students complete Part 2, this time reflecting the figure across the y -axis; the patty paper will flip to the left.
8. Have students perform a reflection across the x -axis by flipping the patty paper over in a horizontal direction, making sure to keep the x -axis and y -axis aligned. Have them tape the patty paper in place.
9. Tell students to enter in the second row of the table the coordinates of the reflected image and then to write down what they notice about these coordinates. (They should see that the y -coordinates stay the same, but the x -coordinates change signs. Discourage them from saying the x -coordinates “go negative,” because if the coordinates had been negative to begin with, they would change to positive.)
10. Have the students complete steps 3 and 4 of Part 2.
11. Discuss the completed activity sheet with the class and ask students what they learned from the activity.

Pulling It All Together (Reflection)

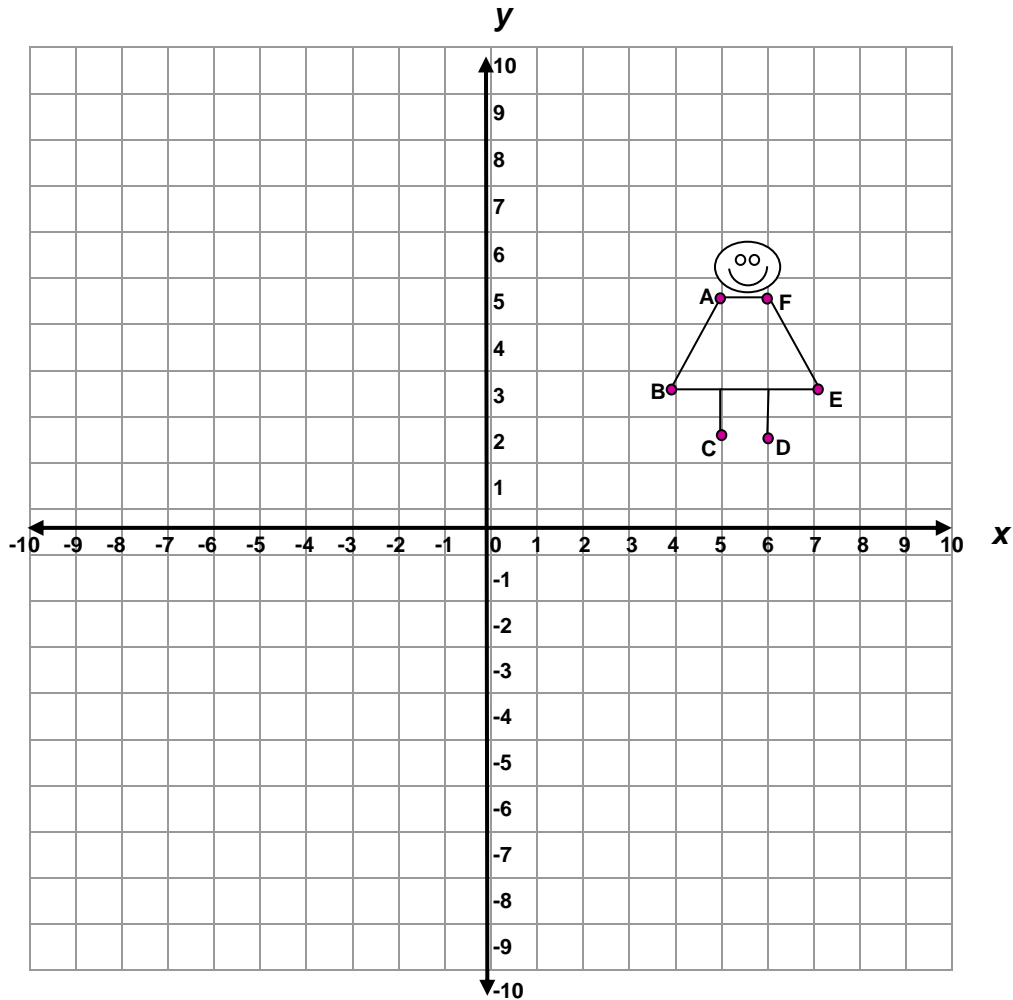
Have students complete the “Reflecting on Reflections” exit ticket.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

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Name: _____

Reflections, Part 1



1. In the table below, write the coordinates of the figure above and its image after reflecting it across the x-axis.

A ()	B ()	C ()	D ()	E ()	F ()
A' ()	B' ()	C' ()	D' ()	E' ()	F' ()

2. Compare the sets of coordinates. What do you notice about these pairs?

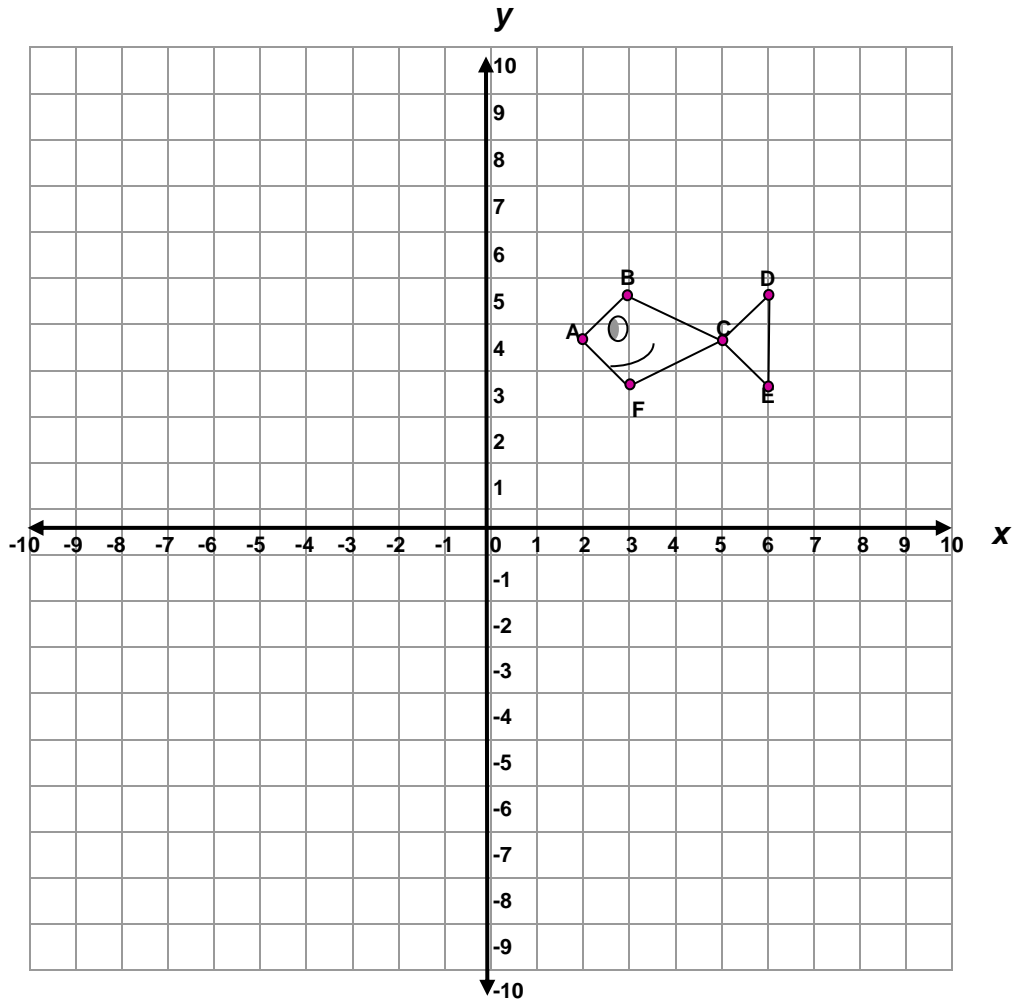
3. Count how many blocks each point is from the x-axis, and list them below:

A 5 B C D E F
 A' B' C' D' E' F'

4. The distance from the mirror line to any point on the figure is _____ the distance from the mirror line to its *reflected image*.
(greater than, less than, or equal to)

Name: _____

Reflections, Part 2



1. In the table below, write the coordinates of the figure above and its image after reflecting it across the y -axis.

A ()	B ()	C ()	D ()	E ()	F ()
A' ()	B' ()	C' ()	D' ()	E' ()	F' ()

2. Compare the sets of coordinates. What do you notice about these pairs?

3. Count how many blocks each point is from the y -axis, and list them below:

A 2 B C D E F
 A' B' C' D' E' F'

4. The distance from the mirror line to any point on the figure is _____ the distance from the mirror line to its *reflected image*.
(greater than, less than, or equal to)

Name: _____

Reflecting on Reflections

1. How do the coordinates change when an object is reflected across the x -axis?

2. How do the coordinates change when an object is reflected across the y -axis?
