

Flipping Over the Coordinate Plane

6685

Introduction

In this activity, students review basic geometry vocabulary while investigating reflections on a coordinate grid.

Grades 6-8

NCTM Geometry Standards

- Apply transformations and use symmetry to analyze mathematical situations
- Describe sizes, positions, and orientations of shapes under informal transformations such as flips, turns, slides, and scaling

Files/Materials Needed

Form Shape.act, Reflect Shape.act

1

Set up a roster that will allow you to group students:

- a. Create a new class and copy the students from the existing class to the new class.
- b. Change the *Display Name* to include a letter at the beginning of the display name to identify the group assignment. For example, Joe, Marty, Tom and Marge can be assigned to Group A by modifying their display names to be A-Joe, A-Marty, A-Tom, and A-Marge. This will allow you to sort by *Display Name* in the *List-Graph* tab of Activity Center. It will also allow for a comparison across groups, and is an easy way to hide, show, and highlight group work.

PART 1 CREATING FIGURES

2

- a. Launch TI-Navigator™ on the computer and start the session.
- b. Have each student log into NavNet on their calculator.

3

- a. Load *Form Shape.act* into Activity Center. This sets up the Activity Center so that the students will have two lists: **X** and **Y**.
- b. Have each group create a shape with as many vertices as group members. Give restrictions such as: this shape must be regular, or this shape must have a right angle.

- c. Have each group member enter the coordinates of one vertex in the **X** and **Y** lists and submit them to Activity Center.
- d. Once the data is submitted, hide all the data. Then display the points of one group at a time by highlighting the names of members in a specific group.
- e. Discuss each group's results with the entire class, giving specific emphasis to any patterns within the points themselves.

PART 2 REFLECTING FIGURES

4

- a. Load *Reflect Shape.act* into Activity Center. This sets up Activity Center so that students will have four lists: the original **X**, and **Y** that they entered, plus an additional **RX** and **RY**, which will be where the students will enter the coordinates of the point after it has been reflected.
- b. Tell students to write the points of the vertices so that the new shape is the reflection of the old shape. Tell them which axis to reflect across.
- c. Display individual group results as you did in Part I.
- d. Discuss each group's results with the entire class, giving specific emphasis to any patterns within the points themselves. For example, students should recognize that $(x, -y)$ is the reflection of (x, y) over the x -axis.