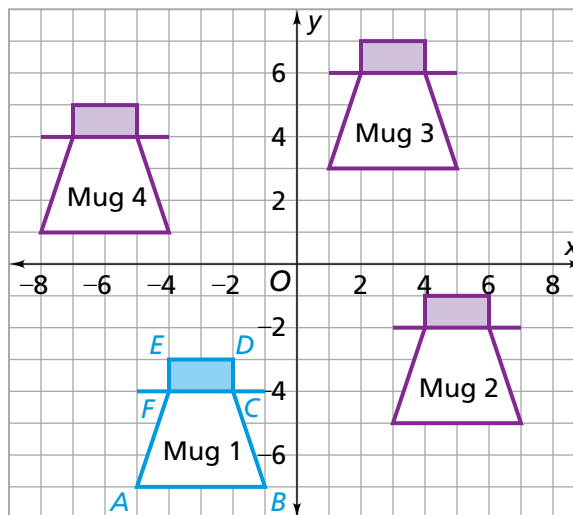


3.2 Sliding on a Grid

Coordinate Rules for Translations

The diagram at the right shows four figures that look like Mug Wump with a hat. You can slide or translate Mug 1 to get the other three Mugs.



What coordinate rules for translations would “move” Mug 1 to the positions of the other Mugs?

Problem 3.2

Make a table of the coordinates of key points for Mug 1 and his images under the translations. Look for patterns.

Point	A	B	C	D	E	F
Coordinates of Mug 1	(-5, -7)	(-1, -7)	■	■	■	■
Coordinates of Mug 2	(3, -5)	■	■	■	■	■
Coordinates of Mug 3	■	■	■	■	■	■
Coordinates of Mug 4	■	■	■	■	■	■

- A** Write a rule showing how coordinates of key points on Mug 1 relate to their images after a translation to Mug 2: $(x, y) \rightarrow (\square, \square)$.
- B** Write a rule showing how coordinates of key points on Mug 2 relate to their images after a translation to Mug 3: $(x, y) \rightarrow (\square, \square)$.

continued on the next page >

Problem 3.2 *continued*

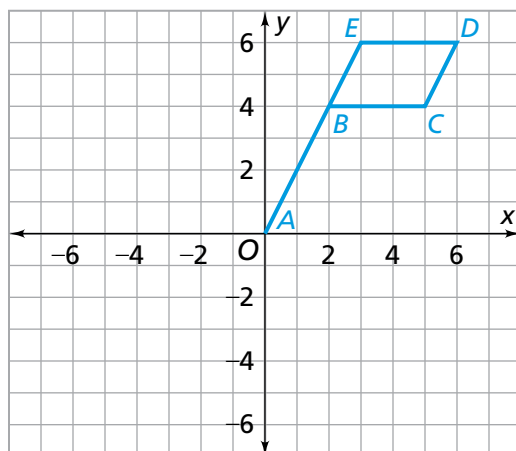
- C** Write a rule showing how coordinates of key points on Mug 3 relate to their images after a translation to Mug 4: $(x, y) \rightarrow (\square, \square)$.
- D** In Investigation 1, you learned that a translation of a segment, such as \overline{AF} , “moved” the segment to a *parallel* image segment.
1. Find the image of \overline{AF} on Mug 2, Mug 3, or Mug 4. Show that the image is parallel to \overline{AF} .
 2. How does the coordinate rule for any translation guarantee that a segment and its image will be parallel?
- E** Suppose a translation moves a figure a units horizontally and b units vertically on a coordinate grid. What rule describes the coordinates of each image point?

A C E Homework starts on page 61.

3.3 Spinning on a Grid

Coordinate Rules for Rotations

Look again at the flag in the first quadrant.



- ?** What coordinate rules for rotations would rotate the flag 90° or 180° counterclockwise about point A?

