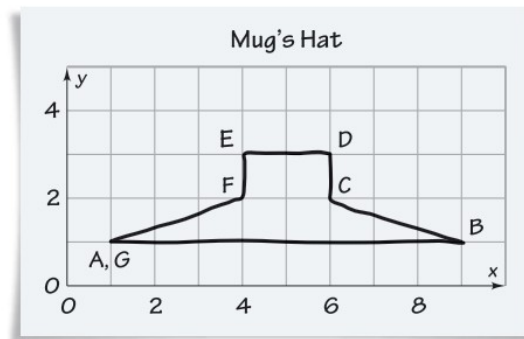


2.2 Hats Off to the Wumps

Changing a Figure's Size and Location

Zack experiments with multiplying Mug's coordinates by different whole numbers to make other characters. Marta asks her uncle how multiplying the coordinates by a decimal or adding numbers to or subtracting numbers from each coordinate will affect Mug's shape. He gives her a sketch for a new shape (a hat for Mug) and some rules to try.



- Which rules will produce similar hats?
- How can you use a rule to predict side lengths of the image?

Problem 2.2

- A** Look at the rules for Hats 1 to 5 in the table. Before you find any coordinates, predict how each rule will change Mug's hat.

Rules for Mug's Hat

	Mug's Hat	Hat 1	Hat 2	Hat 3	Hat 4	Hat 5
Point	(x, y)	$(x + 2, y + 3)$	$(x - 1, y + 4)$	$(x + 2, 3y)$	$(0.5x, 0.5y)$	$(2x, 3y)$
A	(1, 1)	■	■	■	■	■
B	(9, 1)	■	■	■	■	■
C	■	■	■	■	■	■
D	■	■	■	■	■	■
E	■	■	■	■	■	■
F	■	■	■	■	■	■
G	■	■	■	■	■	■

- B** Copy and complete the table.
- Give the coordinates of Mug's hat and the five other hats.
 - Plot each new hat on a separate coordinate grid and connect each point as you go.
- C**
- Compare the angles and side lengths of the hats.
 - Which hats are similar to Mug's hat? Explain why.
- D** Write rules that will make hats similar to Mug's in each of these ways.
- The side lengths are one third as long as Mug's.
 - The side lengths are 1.5 times as long as Mug's.
 - The hat is the same size as Mug's, but has moved right 1 unit and up 5 units.
- E** Write a rule that makes a hat that is *not* similar to Mug's.

A C E Homework starts on page 36.