

## Chapter 5 Lesson 3

# Performing Reflections on a Grid

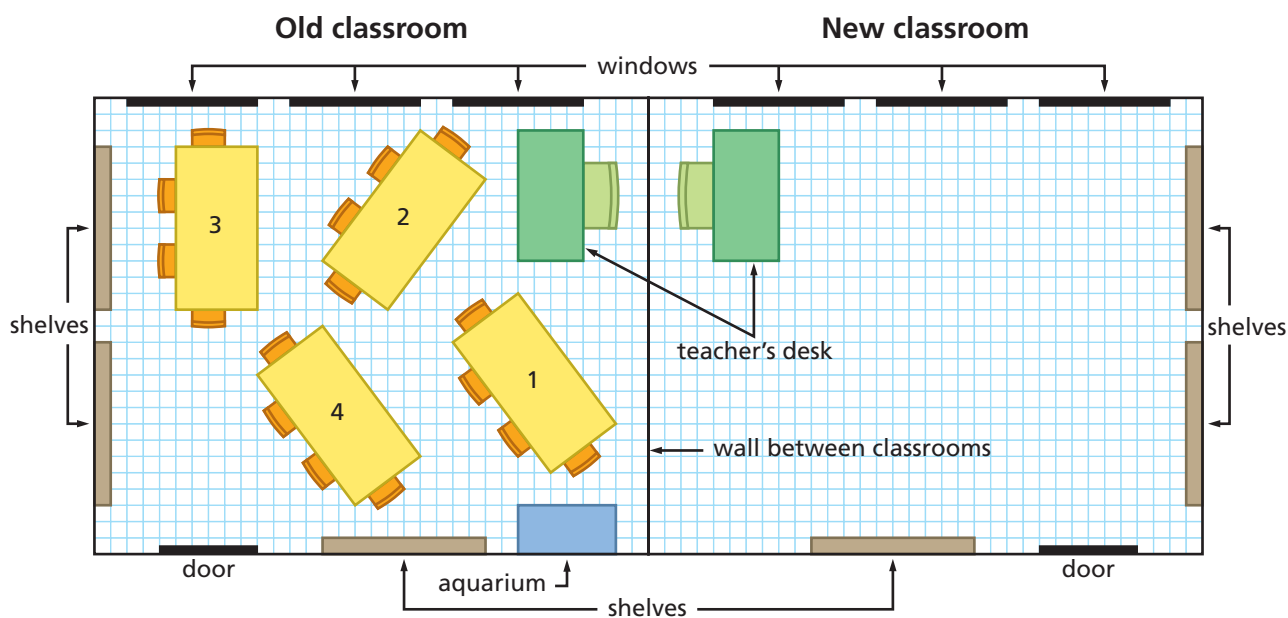
### You will need

- Classroom Floor Plan (blackline master)
- a transparent mirror
- a ruler
- grid paper
- red pattern block

### GOAL

Reflect shapes on a grid, and describe their positions and orientation.

Sam's class is moving to a new classroom next door. The new classroom is a reflection of the old classroom.



**Where will the students' tables be placed in the new classroom?**



### Sam's Reflections

I can use the wall between the classrooms as a line of reflection.



### clockwise (cw)

The direction a clock's hands move

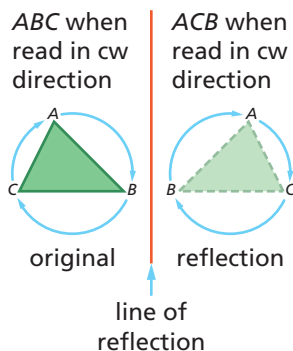
### counterclockwise (ccw)

The opposite direction to clockwise

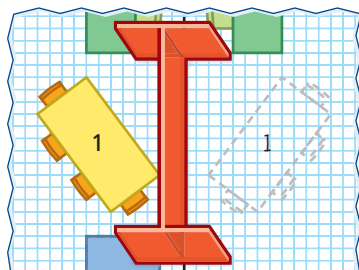


### orientation

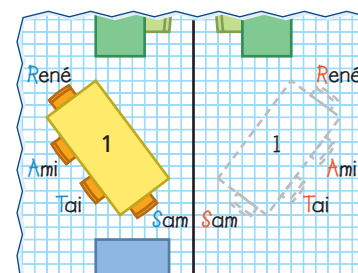
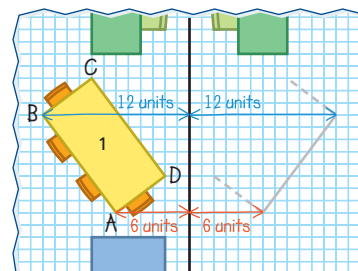
When the orientation of a shape changes, the vertices of the shape will be in a different order.



I can sketch the reflection of Table 1 using a mirror.



I can also use the distance of each **vertex** from the line of reflection. The line is 6 units from A and 12 units from B.



In the old classroom, our initials spelled STAR when read

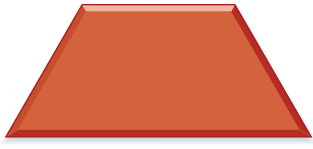
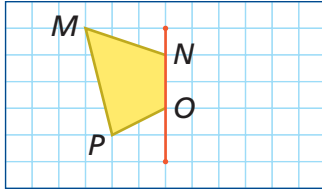
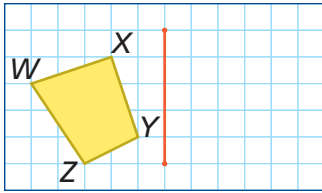
**clockwise (cw)**. In the new classroom, they spell STAR when read **counterclockwise (ccw)**.

Table 1 had a change in **orientation**.

- Sketch the new location of Table 2. Check your answer.
- Determine the new location of Table 3 using a different method from the one you used in Part A.
- Predict and sketch the new location of Table 4.

## Reflecting

- Check the distances from the vertices of the teacher's desk to the line of reflection in the old classroom. Compare these with the same distances in the new classroom. What do you notice?
- Did the orientation of Tables 2, 3, and 4 change after the reflections? How do you know?

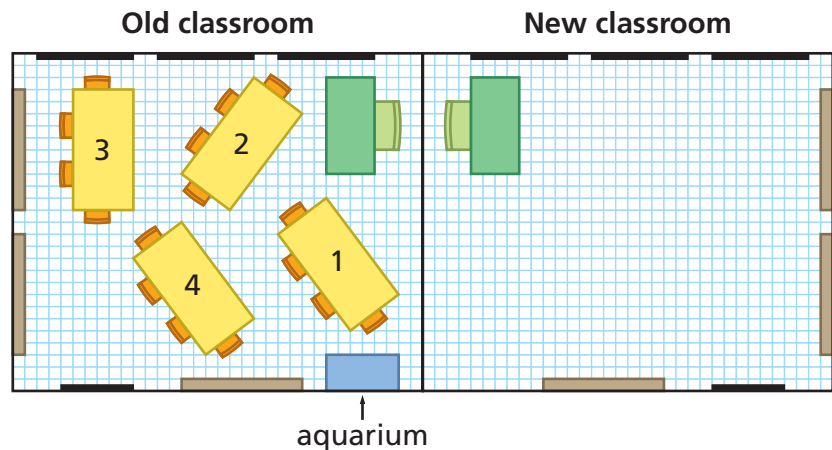


## Checking

1. **a)** Marie reflected shape  $WXYZ$  across the red line of reflection. Copy the shape onto grid paper and draw its new position and orientation.
- b)** Check your answer using a different method.

## Practising

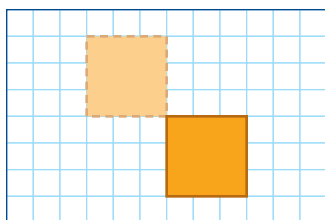
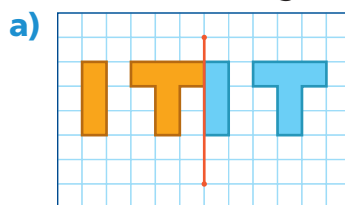
2. **a)** Copy shape  $MNOP$  onto grid paper. Reflect it across the red line of reflection. Sketch the reflection.
  - b)** Describe the position of the new shape.
  - c)** Does the new shape have the same orientation as shape  $MNOP$ ? Explain how you know.
3. **a)** Trace a red pattern block onto grid paper. Reflect it and sketch the reflection. Identify your line of reflection.
  - b)** What do you notice about the distances from the vertices of both shapes to the line of reflection?
4. Sam's old classroom has an aquarium.



5. Mike, Arthur, Rosie, and Tamara sat at Table 2 in the old classroom.
  - a) Put their names, going in a clockwise direction, at Table 2 in the old classroom.
  - b) Put their names at Table 2 in the new classroom.
  - c) Explain how you decided where to put their names in the new classroom.



6. Can you reflect each orange shape across the line to cover the matching blue shape? Explain your answers.



7. a) How can you reflect the orange square in the diagram at the left onto the dotted square? Copy the diagram, and draw the line of reflection.  
 b) Check your answer by comparing the distances from the vertices of both squares to the line of reflection.
8. a) Give an example of a reflection of a polygon in your classroom.  
 b) Describe how the polygon is reflected.
9. Which shapes are reflections of shape A? Explain how you know.

