

Grade 4 Mathematics

Geometry: Lesson 3

Read aloud to the students the material that is printed in **boldface type** inside the boxes. Information in regular type inside the boxes and all information outside the boxes should **not** be read to students. Possible student responses are included in parentheses after the questions.

NOTE: The directions read to students may depend on the available materials. Read only those parts of the lesson that apply to the materials you are using.

Any directions that ask you to do something, such as to turn to a page or to hand out materials to students will have an arrow symbol (\Rightarrow) by them.

Purpose of Lesson 3:

- In this lesson, the tutor and the students will
 - ✓ understand the terms *clockwise* and *counterclockwise*; and
 - ✓ given a figure, identify the flipped or turned (rotated) figure.

Equipment/Materials Needed:

- A few pieces of a jigsaw puzzle (optional)
- Copies of Student Sheet 52 and 53

Preparations before beginning Lesson 3:

- Run off 1 copy of Student Sheet 52. Cut out the letters. (You do not have to cut out the interiors of the letters.)
- Run off 1 copy of Student Sheet 53 for each student.
- Have paper and pencils available.

Lesson 3: Geometry

After your introductory remarks, say:

Have any of you ever worked on a jigsaw puzzle? Pause. If you dropped the pieces, some would flip over, some would turn upside down, and some would be turned to the right or to the left. Would the pieces change? (No.) In geometry, in art, and on computers, we sometimes turn figures or flip them over; but the figures themselves do not change.

⇒ Place the “A” from Student Sheet 52 on the desk in front of the students. Place a copy of “A” on top of it.

Say:

If we turned “A” upside down, what would it look like? Draw a picture on your paper. Pause. Allow the students to draw the A. Would one of you turn the top “A” upside down so that you can check your drawings? Place the upside A next to the other A. (Response: A→”)

You are turning or rotating the A upside down, not flipping it. This turn is also called a 180° turn.

⇒ Replace the “A” on top of the other “A.”

Say:

Remember in the last lesson, we talked about right angles. They are also called 90° angles. They looked like the one I am drawing. Draw a 90° angle on the board.  or  What if we turn or rotate the “A” 90° ? What would it look like?

A  or  A

How do we know which is right? If you are microwaving a meal, and the instructions tell you to turn or rotate the meal 90° , either is correct; but sometimes, we want to know which way to turn the meal. We can use the words *clockwise* or *counterclockwise* to describe the turn. *Clockwise* is the direction that the hands move on a clock. *Counterclockwise* would mean moving the hands the opposite way on a clock.

⇒ Put the “A’s” away and use the two “P’s.” Place the “P” in front of you and place the second “P” on top.

Say:

If we turned the “P” upside down, what would it look like? Draw a picture on your paper. Pause. Allow them to draw the P. **Would one of you turn the top “P” upside down so that you can check your answers?**

Place the upside down P below the other P.

P

d

⇒ Replace the “P” on the top of the other “P.”

Say:

What if we turned the “P” clockwise 90°? What would it look like? Draw a picture of what you think the turned “P” would look like.

(Response: P ↷) **Would one of you take the top “P” and turn it**

clockwise 90°. Place the top P next to the other P. Were you correct?

⇒ Replace the “P” on top of the other “P”.

Say:

What if we turned the “P” counterclockwise? What would it look like? Draw a picture of what you think the turned “P” would look like.

(Response: P ↶) **Would one of you take the top “P” and turn it counterclockwise 90°. Place the top P next to the other P. Were you correct?**

⇒ Replace the “P” on top of the other “P”.

Say:

What if we flipped the “P” over to the right? What would it look like? Draw a picture of what you think the flipped “P” would look like.

(Response: P ↵) **Would one of you take the top “P” and flip it. Place the top P next to the other P. Were you correct? What if we flipped the P upside down? What would it look like?**

P

b

Say:

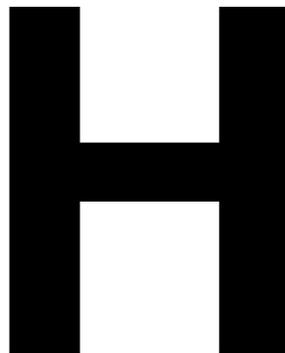
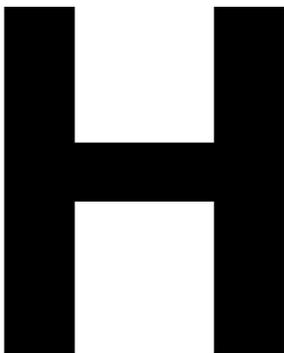
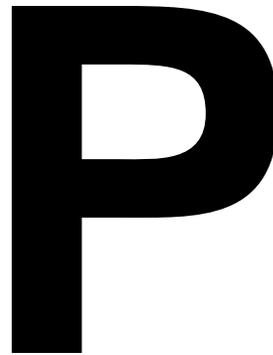
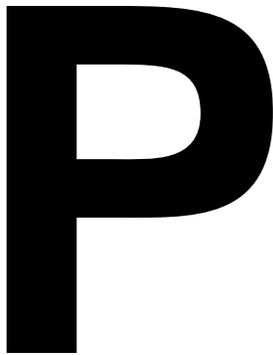
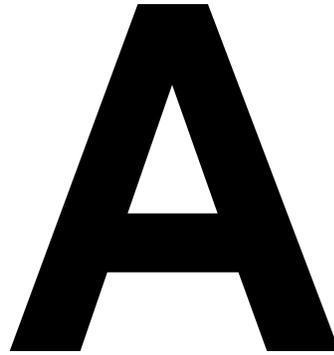
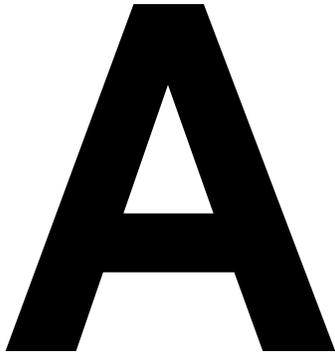
We have been turning and flipping letters or figures. Remember, these figures have moved, but have not changed.

⇒ Give Student Sheet 53 to the students. Answers:

1. C 2. A 3. D 4. B

⇒ Have one student summarize today's lesson.

Student Sheet 52 (Geometry: Lesson 3)

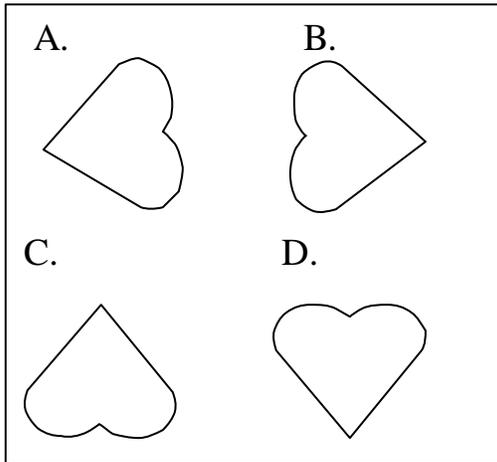


Student Sheet 53 (Geometry: Lesson 3)

1. Look at the shape below.



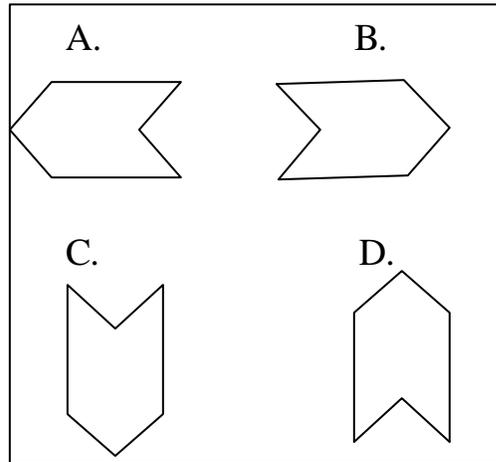
Which one below shows the shape turned upside down?



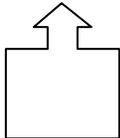
2. Look at the shape below.



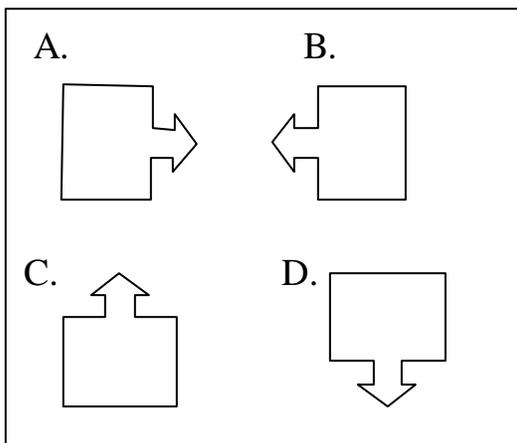
Which one below shows the shape turned clockwise 90° ?



3. Look at the shape below.



Which one below shows the shape turned upside down?



4. Look at the shape below.



Which one below shows the shape turned counterclockwise 90° ?

