

## Geometry Flip Book

### Strand C: Geometry and Spatial Sense

**Benchmark MA.C.1.2.1:** The student, given a verbal description, draws and/or models two- and three-dimensional shapes and uses appropriate geometric vocabulary to write a description of a figure or a picture composed of geometric figures.

**Grade Level Expectations:** The student:

- uses appropriate geometric vocabulary to describe two- and three-dimensional figures (for example, parallel and perpendicular lines, a quadrilateral, right angles).
- draws and classifies two-dimensional figures having up to six or more sides.
- uses appropriate vocabulary to describe properties of two-dimensional figures.

### Overview:

In this activity students will create a *Geometry Flip Book*. Students will write about two- and three-dimensional shapes. In geometry, a plane is a 2-dimensional surface that is flat and infinitely large. Even though they are flat, planes and plane figures are useful in our 3-dimensional world. Because we live in a 3-dimensional world, not a flat one, solid figures are important. When we say solid figure, we don't mean solid all around, but we mean the figure is not flat; it's 3-dimensional. A net is a two-dimensional pattern that can be folded to create a 3-dimensional shape.

### Materials:

- White Paper, 3 Sheets per Student (construction or colored paper can also be used)
- Stapler
- Glue
- *Geometric Shapes Handout*

### Procedures:

1. Distribute three sheets of paper to each student. Explain that they are going to be making a flip book.

2. Layer the pages so that they are in a staircase-like sequence. Three steps should be visible (see figure 1). Then have them fold the papers over so that the staircase sequence continues and they have a total of six steps (see figure 2).

Figure 1

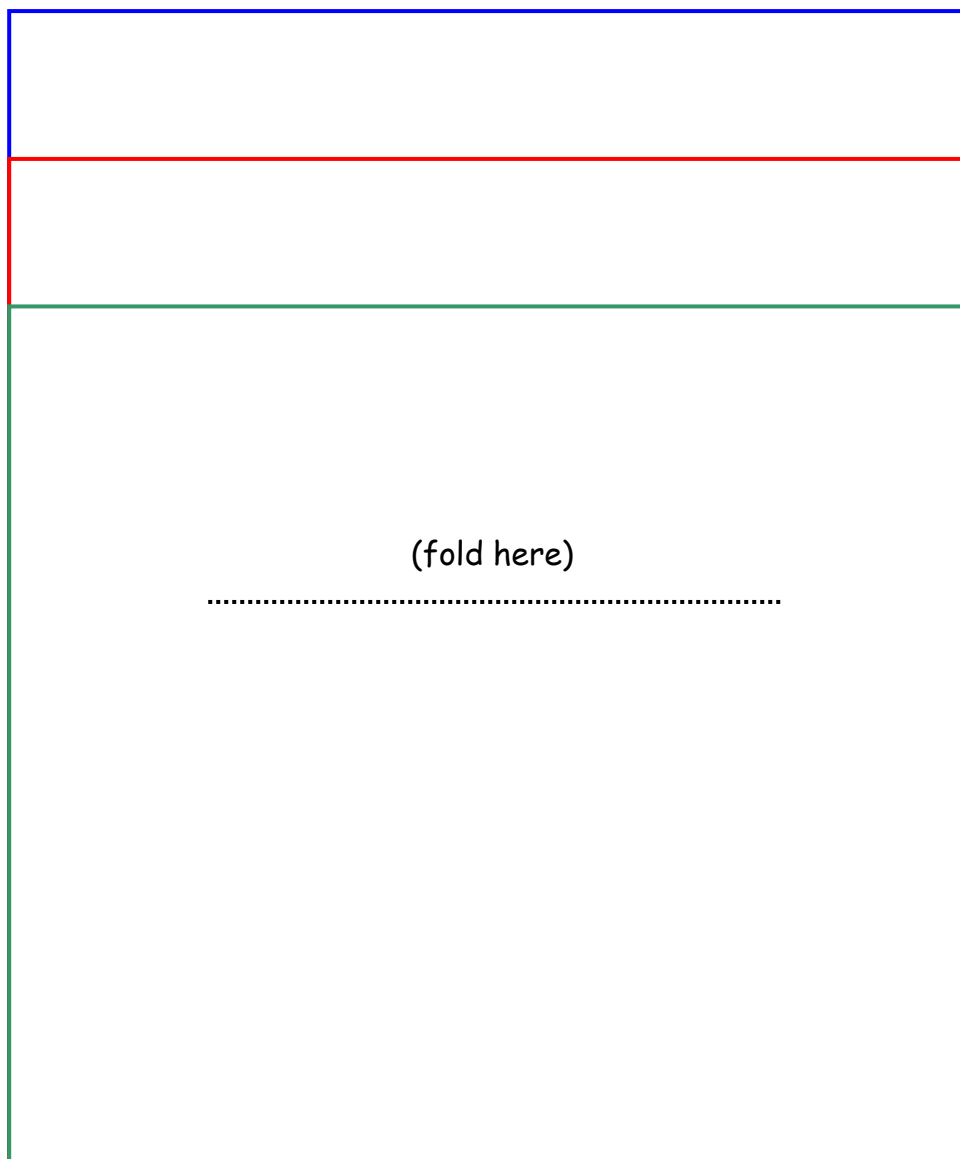


Figure 2

<b>My Book of Shapes</b> by:
Triangle
Quadrilateral
Pentagon
Hexagon
Have students draw a picture here using all the shapes.

3. Review the basic shapes. Have students look at the diagrams of the different shapes on the handout or draw them on the board. Tell students that they will be looking at polygons. A polygon is a closed plane figure that is made of line segments. Explain that a plane figure is a figure that lies on a flat surface.
4. Have students look first at the triangle. The teacher will initiate a discussion with the following questions:
  - Is this shape closed?
  - Is this figure a polygon?
  - How many sides and how many vertices does the triangle have?
5. What would happen if you added one more side and one more vertex? The answer is that it would be a quadrilateral. If students answer that it's a square or a rectangle, inform them that both of those shapes are types of quadrilaterals.

6. Continue with the same pattern for all of the shapes (triangle, quadrilateral, pentagon, and hexagon). The teacher will record the responses in a table like the one that follows. Make sure to note that a circle has no sides or corners and it is not a polygon.

SHAPE	NUMBER OF SIDES	NUMBER OF VERTICES
Triangle	3	3
Quadrilateral	4	4
Pentagon	5	5

7. Ask students to write their names on the front flap and title the book *My Book of Shapes*.
8. Direct the students to open their flip books to the first page. On the flap that is showing, students are to write the name of the shape (look back at figure 2).
9. As they open the flap, on the top sheet they are to draw the shape. On the bottom sheet they are to write a riddle describing the shape (For example, it has four equal sides; it's a quadrilateral; it also has four vertices. What is it?).
10. Have students follow the same procedure for each of the pages in their flip book. The students will create a page for a triangle, a quadrilateral, a pentagon, and a hexagon.

**Literature Connection:** *Math Fair Blues* by Sue Kassirer (ISBN: 1-57565- 104-1)

**Assessment:**

- The teacher will evaluate the flip book to see if students understand the different geometric shapes. Guiding questions for the teacher to keep in mind during the assessment are: Did the students draw the shape correctly? Do the students show an understanding of the geometric shapes and their properties?

**Extension:**

- Have students design nets for different 3-dimensional shapes and identify the 2-dimensional figures.

