



GREATER BANNER ELK HERITAGE FOUNDATION
Banner House Museum

Heritage Trunks Classroom Tools

GEOMETRY HOLD AND FOLD MAKING SHAPES

 Public Schools of North Carolina
State Board of Education | Department of Public Instruction

Geometry	
Standard	
Reason with shapes and their attributes.	
NC.2.G.1	Indicate the names of shapes (circle, square, rectangle, and triangle).
NC.2.G.3	Use manipulatives to partition shapes into equal parts.

<http://www.dpi.state.nc.us/docs/curriculum/mathematics/scos/extended-2.pdf>

MATERIALS (FOR EACH STUDENT):

- For the Copy Book (*Optional-may use Math notebook, etc.*):
 - Three or four sheets of light to medium weight paper for each book.
 - One sheet of heavier paper for each book.
 - String or yarn
 - Broad winged paper punch
- For the Hold and Fold Activity:
 - Origami Paper

HISTORY STORY:

In 1870 when the Banner House was built, school was much different than it is today. First of all, it was only 3 months out of the year—in winter so that children could help their parents do chores on the farm when everything was growing. Of course, there was snow then also, so school was still cancelled for snow days and some students who wanted to go to school weren't allowed to because they needed to help out at home or take care of their brothers and sisters, or maybe they lived too far away to get there.

There weren't very many books, and usually children were expected to provide their own. Often this resulted in students using different "textbooks" as we would call them now and the teacher would have the students recite from their books to see how everyone was progressing with their homework and probably to make sure they were learning close to the same thing!

The students' "copybook," pen, and ink were reserved for more permanent work that the student could look back at later. The teacher would write something like spelling words or math problems in the student's copybook, and the student would then copy that repeatedly until the work was committed to memory. Often copybooks were made by hand using penknife, darning needle, linen thread, and cut paper.¹

If the class did an activity lesson, often the materials would be something inexpensive that could be re-used over and over. There were no worksheets to turn in at the end of the lesson! In this lesson, we will use a piece of paper to fold as many shapes as we can and write them down in our copybook (or notebook).

¹ This activity is adapted from 2ndGradeProgram-one room school lesson plan
Tallgrass Prairie National Preserve, Strong City, KS

ACTIVITY 1: MAKE A COPY BOOK (OPTIONAL)

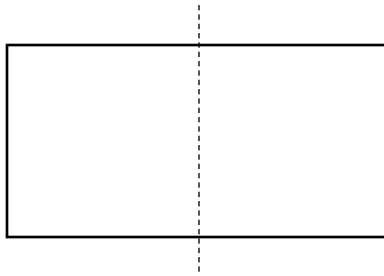
Note: This is an optional activity for this lesson. It would also work for students to do the hold-and-fold lesson and write their answers in their regular math notebook.

MATERIALS (FOR EACH STUDENT):

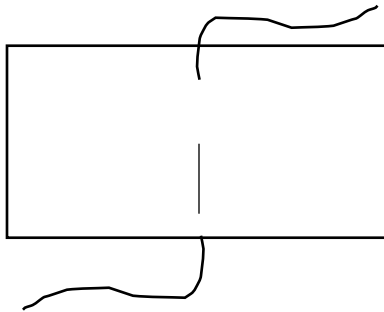
- Three or four sheets of light to medium weight paper for each book.
- One sheet of heavier paper for each book.
- String or yarn
- Broad winged paper punch

Procedure:

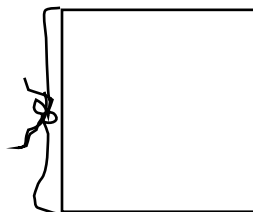
1. Fold all of the sheets in half along the long side of the rectangle of the paper



2. Stack the papers with the thicker paper on the bottom and the lighter weight papers on top
3. Punch holes along the fold
4. Weave the string through the holes leaving a long section on each end



5. Fold the papers in half along the fold forming your copybook
6. Tie the long ends of the string together on the outside of the book fold



7. Make a cover for your copybook. You may want to include your name, grade, teacher and the date.

ACTIVITY 2: HOLD AND FOLD-MAKING SHAPES

By folding a square of paper in several predetermined ways, children investigate and record the different shapes they can make. This activity gives children valuable experience with learning about how shapes relate to one another.

MATERIALS (FOR EACH STUDENT):

- 4" x 4" paper square
- Copybook (*or regular Math Notebook, etc.*)
- pencil

Procedure:

Beginning Introduction

1. Distribute the 4" x 4" squares to each student.
2. Fold the paper once to form a rectangle and go over the characteristics of a rectangle.
3. Fold the paper in the other direction, forming another rectangle.
4. Unfold the paper to its full square shape and then fold the first two corners of the square down as if folding a paper airplane. Go over the characteristics of a pentagon.
5. Fold the remaining two corners to make a square smaller than the first one. Go over how a square is still a square, no matter how it's turned.

Independent Experiment (in pairs)

1. Ask the students to break into pairs to investigate the shapes you can make by folding your paper different ways. Also be sure both partner's names are on the copybooks.
2. They can fold their paper on one, two, or more folds, but only on the folds that have already been made—meaning no new creases. (There are 9 shapes possible, counting the original square.)
3. Trace the different shapes you find into your copybooks. One partner will hold the shape onto the book and the other will trace around it. Be sure to trace the shapes into both books.
4. Once the shape is traced into your copybook, write down what the shape is called and list the characteristics that let you know it is that shape and not another.