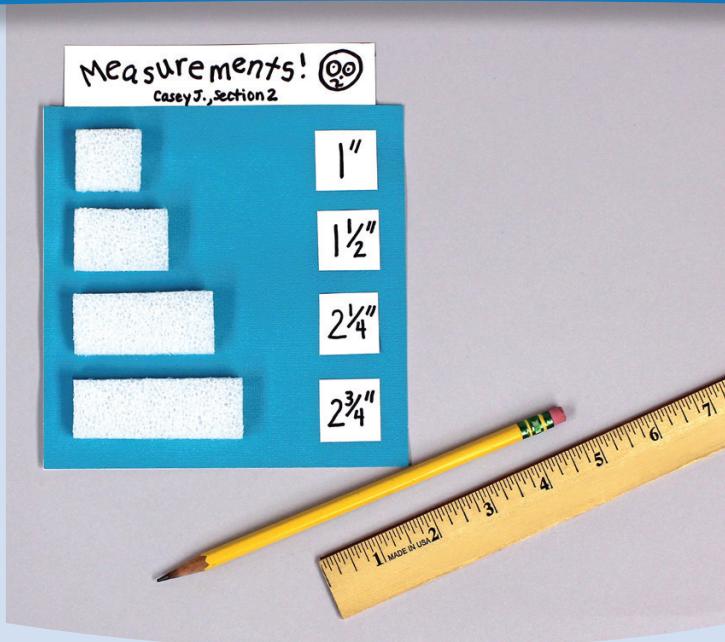


Third Grade Rules

MATERIALS

FOR STUDENT:
(one per student unless otherwise noted)

- FloraCraft® Make It: Fun®
Foam 1" x 7 1/2" x 7/16" thick
(see FOR TEACHER)
- Cardstock, 6" square, choice of colors (can get four per 12" square cardstock sheet)
- Cardstock, 3" x 5", white (can get eight per 12" square cardstock sheet)
- Washable black felt tip marker
- Glue stick
- Plastic knife
- Ruler
- Pencil
- Ziploc bag



FOR TEACHER:

- FloraCraft® Make It: Fun® Foam Block, 7/16" x 11 7/8" x 11 7/8" (can get eleven - fifteen 7 1/2" lengths per block)
- Cutting mat or stack of newspapers
- Serrated knife
- Paper cutter
- Glue stick
- Ruler
- Pencil
- Glue gun (for teacher only)
- Paper towels
- White board or chalk board or large paper

TEACHER PREPARATION

Note: Read through all the instructions first and check out the TIPS! Have a glue gun plugged in and ready to use (ideally set on low temperature) but out of student reach. This can give you immediate adhesion when you're in a hurry to help students. Be sure that the glue has cooled before returning the projects to students (takes a minute or so.) It is also recommended that you make a sample first, before preparing the materials for any others, since knowing how the parts fit, might affect how you prepare the rest of them.

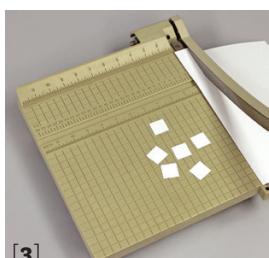
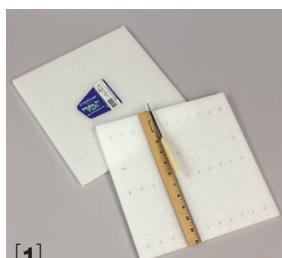
[1] Use a ruler and pencil to measure and make small marks as ruler guides for 1" x 7 1/2" strips. (Pencil will show on foam if you go over the mark a couple of times. However it's not necessary to draw the entire line – just measure and mark in a couple of places as a guide for placing the ruler.) Then, on a cutting mat or stack of newspapers, use a serrated knife against the edge of a ruler to cut the foam block with several passes of the knife for each cut. (Cut extras in case of errors.)

[2] Use a paper cutter to cut one 6" square of

cardstock per student. Cut various colors to allow for choice.

[3] Use a paper cutter to cut four 1" squares of white cardstock for measurements and one 2" x 5" length for the title, per student.

[4] In a plastic bag for each student, put the white cardstock papers, foam strips, ruler, plastic knife, pencil, marker, and a glue stick. Set materials in student work areas. Also set out the 6" squares of paper for students to choose.



MATH
GRADE LEVEL
SECOND – THIRD

COMPLETION TIME

- 30 minute session



OBJECTIVES

Students learn to:

- Identify the marks on a ruler: inch, 1/2" and 1/4" increments
- Recognize the written numerals and fractions
- Measure the length of something and connect it with the written measurement

STANDARDS

- Develop understanding of fractions as numbers
- Use appropriate tools strategically and attend to precision
- Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch

LESSON INTRODUCTION

- Explain that length can be measured in inches, feet, and yards. Go through the 12 inches in a foot, 3 feet or 36 inches in a yard. Then explain that inches can be broken down into parts of an inch and for that the measurements are written in fractions. Show the ruler and talk about the little lines or marks, explaining that each one represents the distance from the beginning of the ruler to that mark. Show them that the longest lines with the numbers beside them are the inch marks. Halfway between those, and the next longest lines, are the 1/2" marks. Halfway between those, and the next longest lines, are the 1/4" marks. (Decide if you'll continue with 1/8" and 1/16" and just mentioning 1/32")



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INSTRUCTIONS

[1] On a white board/ chalkboard or large poster, draw an enlarged ruler. Ask the students to remove just the ruler from their bag and review the various measurements along with you, starting with 1", and half of that is $\frac{1}{2}$ ", and half of that is $\frac{1}{4}$ " (and... as far down as you intend to go).

Explain that these same measurements are marked in between the other inch marks, too. Practice finding 2", $2\frac{1}{2}$ ", $3\frac{1}{2}$ ", etc.



[2] Ask students to select the color of 6" cardstock they want and return to their desks. Have them use pencils to write their names on the backs of the cardstock.

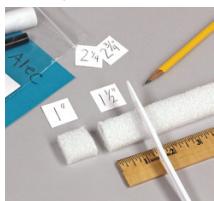


[3] Decide if you want students to follow along with you, one measurement at a time, or if you want to do the first one together as a group, and then let them cut the others on their own.

Ask them to use pencil to write the four lengths on their white cardstock squares as you verbally direct (or have them copy the measurements from the board, depending on where they are in their understanding of fractions. (Mention that the cardstock pieces are all the same 1" size, and that their size does not relate to the measurements of the foam – just the numbers they are writing on them.)

Demonstrate and have students horizontally set their ruler on the foam, with the ends aligned. Explain that they should find the 1" mark on their ruler. Ask them to use their pencil to make a vertical mark that goes up from the ruler onto the foam. Then have them set the plastic knife on that mark and carefully saw back and forth to cut the foam, making the cut as straight as possible.

Repeat with the $1\frac{1}{2}$ " mark; then the $2\frac{1}{2}$ " mark; and last, the $2\frac{3}{4}$ " mark. Have students take their foam pieces to your master sample and check to be sure that their lengths are correct. Place extra foam nearby for any do-overs.



[4] When the foam lengths are checked and correct, have students lay out their charts going from shortest to longest, top down, with the foam on the left and the corresponding label on the right. When they are aligned and approved, they may go over their pencil numbers with marker.

Direct students to use their glue sticks to attach both the foam and the paper.

Have students write in pencil on their title, leaving the bottom 1" blank for attaching to the chart. Then have them go over the title in marker, use glue stick along the bottom 1" and attach the title to the top back of the chart.



MODIFICATIONS

To simplify project:

- Cover the rulers with masking tape and mark only the increments you want used, minimizing the confusion caused by eighths and sixteenths.
- Have students work in pairs to help each other.

To expand project:

- Increase the number of measurements from four to eight. (Increase the size of the cardstock background, number of white squares and length of the foam strip.)
- Have students use their rulers to measure other things around the room.

For multiple ages:

- Younger and older students can work side-by-side with the older students measuring amounts that use eights and sixteenths.
- Younger students can come up with their own list of measurements and write them down, while the older students measure and cut the foam.

ADDITIONAL IDEAS

- Give students different measurements and ask them to work with partners, having each partner checking the other one's marks before any cutting is done.
- Instead of having students attach cut foam pieces to the cardstock, let them work together to build something from the foam (house, vehicle, furniture, etc.)
- Have small groups of students build something from the foam, such as a miniature fort or tree house, keeping track of their measurements as they go along. Then, they can write instructions on how to build it. In the next class session, they can trade papers with another group and each can build the project the other one made – with or without seeing the original model.
- When students are applying glue to the back of their foam lengths, have them apply a generous amount of glue and press hard enough to push the glue into the porous foam. Let it build up a bit on the surface, for best adhesion.
- Have paper towels ready to distribute to any messy fingers.



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TIPS

- When you cut the foam, keep the serrated knife blade perpendicular to the table so that the foam edges are straight. Score lightly first and then press more firmly to cut deeper with several passes of the knife.

- If you want to get fifteen strips from the foam, cut apart the block at $1\frac{1}{2}$ " first and cut those eleven 1'' wide strips. Then, turn the remaining piece and get four more $7\frac{1}{2}\text{''}$ strips from that section. If you prefer to challenge the students a bit, don't cut the lengths down to $7\frac{1}{2}\text{''}$ lengths. Have them work with longer lengths so that there is extra foam and the last length isn't obvious.

- Point out that some rulers do not start right at "0" – they have a little extra wood or metal so that the first mark isn't worn off by use. Explain that in this case, students should line up the first line with the edge of what they're measuring, not the end of the ruler.
- When students are applying glue to the back of their foam lengths, have them apply a generous amount of glue and press hard enough to push the glue into the porous foam. Let it build up a bit on the surface, for best adhesion.
- Have paper towels ready to distribute to any messy fingers.

REFERENCES

- How Long or How Wide?: A Measuring Guide by Brian P. Cleary
Me and the Measure of Things by Joan Sweeney
How Tall, How Short, How Far Away by David A. Adler
Measuring Penny by Loreen Leedy