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Mississippi Mathematics Manipulatives Manual Featured Activity



“Rainbow Ratios”

6.RP.1

Spring 2021

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As we continue our efforts to develop high-quality instructional materials (HQIM) and resources, the Mississippi Department of Education (MDE), through the Academic Education Office, would like to showcase instructional practices and activities that foster conceptual understanding through the use of manipulatives in the mathematics classroom.

The **Mississippi Mathematics Manipulatives Manual** features activities meant to serve as short, hands-on procedures that may be implemented before, during, or after a lesson to support the teaching and learning process of the Mississippi College- and Career-Readiness Standards (MCCRS) for Mathematics. Alignment with the MCCRS Scaffolding Document has been included for additional support. Teachers may contact staff at the MDE if they would like to borrow manipulatives for classroom use.

Teachers may modify these activities to meet the needs of the students they serve and their instructional delivery model (virtual, in-person, or hybrid).

Special Thanks:
Elise Brown
University of Mississippi/Mississippi Department of Education

Rainbow Ratios



MANIPULATIVE(S):

- Color Tiles (or any food/candy that comes in assorted colors, e.g., Skittles, Froot Loops, M&Ms, Starbursts, etc.)
 - or Didax Color Tiles Virtual Manipulatives (See the **Resources** section below)
- Chart Paper/Poster Board
- Marker(s)

GRADE LEVEL OR COURSE

TITLE:

CCRS Mathematics Grade 6

DOMAIN AND CLUSTER HEADING:

Ratios and Proportional Relationships (RP):

Understand ratio concepts and use ratio reasoning to solve problems.

STANDARD(S):

6.RP.1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*

PREREQUISITE SKILLS:

1. Know a ratio is a pair of nonnegative numbers, A:B, where both are not zero, and are used to indicate a relationship between two quantities.
2. Know that for the ratio A:B, the value is the quotient of A/B.
3. Know the order of the numbers is important to the meaning of the ratio. Switching the numbers changes the relationship.
4. Know descriptions of a ratio relationship include words such as "to", "for each", and "for every".
5. Know how to reason abstractly and quantitatively.

ACTIVITY:

1. Ensure students have a minimum of eight colored tiles. **Note:** Based on the availability of tools, students may be grouped in pairs or in groups no greater than four. If preferred, students can also access the Didax Color Tiles Virtual Manipulatives located at <https://www.didax.com/apps/color-tiles/>.
2. Based on the colors of the tiles the group received, have each student select a color. This will be their designated color throughout the activity. Assign each team member a color. *Ex: red, blue, yellow, and green tiles are given; therefore, student A is red, student B is blue, student C is yellow, and student D is green.*

3. Once tiles have been sorted and counted, have students compare their color to the others in the group by writing a description of the ratio relationship to include the words such as "to", "for each", and "for every" (e.g., for every 2 red tiles, there was 1 blue tile).
4. Once students have completed writing a comparison for their color in comparison to everyone else's color in their group, have teams display their work. *(If you are completing this activity in the classroom, students will write their ratio relationships on chart paper and post it on the classroom walls.)*
5. Students will then separate in groups by colors and will go on a Gallery Walk to write a numerical ratio using **to**, **:**, and **/** to model the given ratio relationship beginning with their groups color only. (e.g., all students that had red will become the "red" group and move about the room writing a ratio for relationships beginning with the color red such as "for every 3 red tiles, there were 5 blue tiles" and write the numerical comparison 3 to 5, 3:5, or 3/5.
6. Following the Gallery Walk, review all group answers.

QUESTIONS TO CONSIDER:

- Does the order of the ratio matter? Justify your response.
- What words can you use to help you write a description of a ratio relationship?

RESOURCES:

- [Mississippi Mathematics Scaffolding Document](#) (Grade 6, Page 2)
- [2016 MCCRS for Mathematics](#)
- [Didax Color Tiles Virtual Manipulatives](#)

Optional: The University of Mississippi's Center for Mathematics and Science Education has an extensive inventory of math (and science and technology) tools and manipulatives that teachers may borrow for classroom use at no charge. Click the link below to access the inventory list and complete a check-out request.

- [CMSE Manipulatives](#)

BEYOND THE ACTIVITY:

- **Accommodation(s):** Lower performing students may need to create a frequency table to visualize the comparison. Provide students with a marker that reflects their assigned color so they can visualize the ratio as they read and write it.
- **Misconception(s):** When writing ratios, students may confuse the order of the comparison.