

Ratios with Color Tiles

STRAND: Number and Number Sense

STRAND CONCEPT: Rational Numbers Equivalencies

SOL 6.1

Remediation Plan Summary

Students use color tiles (or construction paper squares) to describe and compare two sets of data, using ratios and appropriate notations.

Common Errors and Misconceptions

- Students may put the number in the ratio in the wrong order. For example, the ratio of boys to girls being written as girls to boys.
- Students may try to write the ratio of part to part as a fraction when only a ratio of part to whole can be written as a fraction.

Materials

- Sets of 20 red and 30 yellow color tiles or construction paper squares
- Red and yellow colored pencils
- Understanding Ratios recording sheet
- Grid handout
- Understanding Ratios, Extension handout

Introductory Activity

- Ask students to compare the number of boys in the class to the number of girls. Then, ask them to compare the number of girls to the number of boys. *Are these the same ratios? What makes them different?* Students can work in groups first so that group members can confer before the whole class discussion.
- Next, ask the students to write the ratio of boys to all students in the class and the ratio of girls to all students. Ask the students to describe the relationship between the way the question is asked and the way the ratio is written. (The set named first usually goes first in the ratio.) Discuss this concept as a group.

Plan for Instruction

1. Distribute the sets of red and yellow color tiles or squares, colored pencils, sheets of grid paper, and the “Understanding Ratios” worksheet. Give students a few minutes to experiment with putting together various sets of red and yellow tiles or squares. Ask a student to share their set of tiles or squares with the class. Model how to write the

ratios made by this set the three different ways. (a to b, a:b, $\frac{a}{b}$) Explain that $\frac{a}{b}$ is only used when comparing part to whole.

2. Have students do number 1 on the worksheet. Make sure they color the set on the grid paper and number the picture, as well as write the ratios requested. It is very important that students model first with the squares or tiles, then color the grid and write the ratio. Review answers with the students.
3. Have students complete the worksheet. Monitor their work during the activity to make sure they are focusing on the relationships between the identified sets. Some students may begin to notice similarities in the sets: for example, when the red tiles double in number, so do the yellow tiles, as well as the total tiles in the set. These relationships will be discussed at the end of the lesson. When students are finished, discuss the answers.
4. Distribute the “Understanding Ratios, Extension” worksheet. Make sure students write complete answers to the statements. If students had noticed the relationships when doing the problems on the previous worksheet, ask them to explain how they “figured it out.” Several explanations are valid, including, for example, “separating set 4 into two groups, each of which looks like set 1,” or “the numbers were doubled.”
5. Let students share their answer to number 4 with a partner and the whole group.

Pulling It All Together (Reflection)

Exit Slip: Have students write a definition of *ratio* in their own words and explain why the order of the numbers matter.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Name: _____

Understanding Ratios

Use a set of color tiles or construction paper squares to model each of the following ratios. After you have modeled a set, use colored pencils to draw a picture of the set by coloring it on a sheet of grid paper. Write each ratio three different ways.

1. Color 2 red tiles and 3 yellow tiles on a sheet of grid paper.
The ratio of red tiles to yellow tiles is _____.
The ratio of yellow tiles to red tiles is _____.
The ratio of red tiles to all the tiles is _____.
The ratio of all the tiles to yellow tiles is _____.

2. Color 5 red tiles and 4 yellow tiles on a second sheet of grid paper.
The ratio of red tiles to yellow tiles is _____.
The ratio of yellow tiles to red tiles is _____.
The ratio of yellow tiles to all the tiles is _____.
The ratio of all the tiles to red tiles is _____.

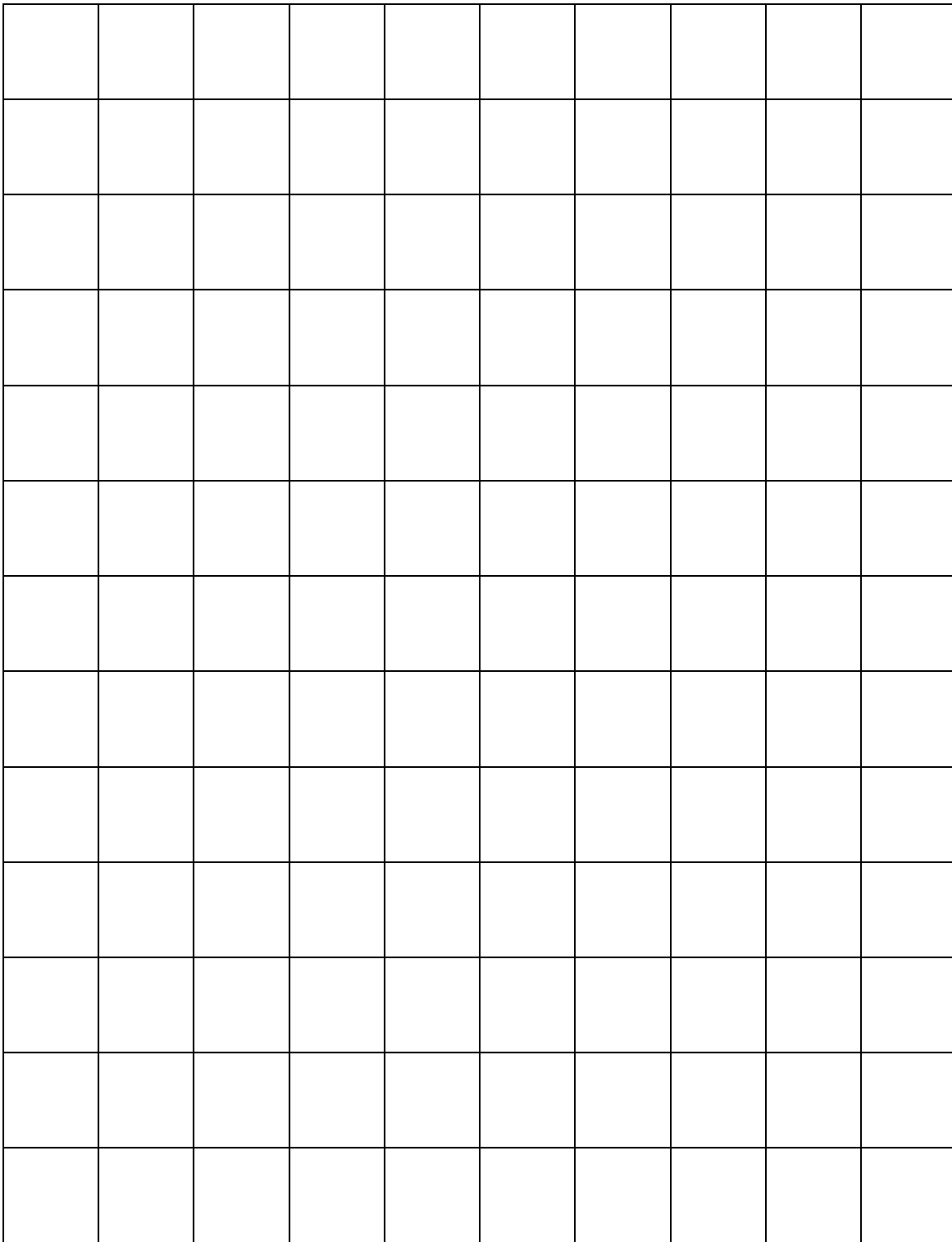
3. Color 7 red tiles and 10 yellow tiles on a third sheet of grid paper.
The ratio of red tiles to yellow tiles is _____.
The ratio of yellow tiles to red tiles is _____.
The ratio of red tiles to all the tiles is _____.
The ratio of all the tiles to yellow tiles is _____.

4. Color 4 red tiles and 6 yellow tiles on a fourth sheet of grid paper.
The ratio of red tiles to yellow tiles is _____.
The ratio of yellow tiles to red tiles is _____.
The ratio of yellow tiles to all the tiles is _____.
The ratio of all the tiles to red tiles is _____.

5. Color 15 red tiles and 12 yellow tiles on a fifth sheet of grid paper.
The ratio of red tiles to yellow tiles is _____.
The ratio of yellow tiles to red tiles is _____.
The ratio of red tiles to all the tiles is _____.
The ratio of all the tiles to yellow tiles is _____.

6. Color 14 red tiles and 20 yellow tiles on a sixth sheet of grid paper.
The ratio of red tiles to yellow tiles is _____.
The ratio of yellow tiles to red tiles is _____.
The ratio of yellow tiles to all the tiles is _____.
The ratio of all the tiles to red tiles is _____.

Grid



Name: _____

Understanding Ratios, Extension

1. Compare the pictures of the sets in number 1 and number 4. Look closely at the ratios you wrote for number 1 and number 4 on the worksheet. What relationship do you notice between the ratios for the two sets?

2. Compare the pictures of the sets in number 2 and number 5. Look closely at the ratios you wrote for number 2 and number 5 on the worksheet. What relationship do you notice between the ratios for the two sets?

3. Compare the pictures of the sets in number 3 and number 6. Look closely at the ratios you wrote for number 3 and number 6 on the worksheet. What relationship do you notice between the ratios for the two sets?

4. Create your own problem using the red and yellow tiles. Exchange your problem with someone in your group, and have him/her identify the ratios for each set and relationship between the ratios for the two sets.
