

Comparing Ratios

Lesson Plan

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Goal: The goal of this lesson is for students to learn a method for comparing ratios in order to solve a real-world problem.

Grade and Course: 7th grade math

KY Standards:

MA-07-1.4.1

Students will apply ratios and proportional reasoning to solve real-world problems (e.g., percents, sales tax, discounts, rate).

Objectives:

After this lesson, students will be able to compare ratios by converting the same side of each ratio to the same number. (That is, to compare the ratio 3 to 9 with the ratio 2 to 10, students convert the ratios to 1 to 3 and 1 to 5. The left side of each ratio is 1.)

Resources/materials needed:

- o Worksheet (1 per student)
- o Large sheet of paper
- o Blue paint
- o Yellow paint
- o Eye dropper
- o 6 Paint brushes
- o 6 Small paper cups for mixing

Description of Plan:

Previous Knowledge

Students know what a ratio is.

Introduction

When students enter the room, they will see paint supplies, which will pique their curiosity. Tell them you are painting your house green, and you need their help determining which paint recipe to use. You like shades of green that are more blue and less yellow, and you have three recipes from which to choose.

Procedure

Pass out the “Let’s Paint!” worksheet attached at the end of this document, which lists the three paint recipes in terms of drops, although you will use gallons when you paint your house. Ask the students which recipe they think will be the bluest and which will be the yellowest and why.

While the students work on the worksheet, turn your back to them and mix up all three recipes in three paper cups using a separate paint brush for each color. You may want to wear a magician or witch hat. You can use an eye dropper to measure out the paint, or you can use a teaspoon. Paint a large circle for each color on the large sheet of paper. Do not put the circles of paint in the same order in which their recipes are listed on the worksheet because students will have to guess which recipe produced each color. When you are finished painting, turn back around to face the class. The students should be finished answering the questions on the worksheet, but more than likely they have been watching you the whole time. Allow them time to complete the worksheet. When the students are done, hold up the large sheet of paper, point to the bluest shade of green, and ask the students which recipe this is: Color A, Color B, or Color C. Have them explain why. Label it on the large sheet of paper. Do the same thing for the other two colors.

Now ask for volunteers to explain their answers to the three parts of Problem 1. Have one student per color mix up the recipe he/she found in Problem 1 in front of the class using a new paper cup and paint brush. Once the paint is mixed, have him/her paint a circle under the corresponding circle you painted on the large sheet of paper for the whole class to see. The purpose of this part of the activity is to see that the color is still the same because the proportions of blue and yellow are the same, even though the quantities in the recipe changed.

Closing

Remind the students of two things:

- 1) The circle of paint that you made for each color using the original recipe was the same color as the circle of paint that the students made using the reduced recipe. That's because the proportions of blue and yellow paint stayed the same, even though the quantities changed.
- 2) Before the students could compare the three ratios for blue to yellow, they converted all three ratios to have one drop of blue. This made it possible to see how much yellow there was in comparison to one drop of blue, which in turn made it possible to see which color had the most and the least yellow. Transition into scale factors by dividing the number of blue drops by the number of yellow drops for each recipe. Try to lead the students to discover that the bluest color has the largest quotient of blue divided by yellow, and the yellowest color has the smallest quotient.

Important Note

Experiment with these recipes and paint before class because the differences in color may not be noticeable depending on the type of paint you use. Also, you could try putting paint on a transparency on the overhead to see the colors better. No matter what, make sure you are very precise when mixing the recipes.

Lesson Source: Original

Instructional Mode: Question is posed, individual activity, class experiment

Date Given: 10/18/2006

Estimated Time: 30 minutes

Date Submitted to Algebra³: 04/15/2007

Name: _____

Let's Paint!

COLOR A	3 drops blue
	9 drops yellow

COLOR B	2 drop blue
	10 drops yellow

COLOR C	2 drops blue
	3 drops yellow

1) Write the equivalent ratio for each color so that it has one drop of blue. (Example: 2 blue to 4 yellow = 1 blue to 2 yellow)

Color A: 3 blue to 9 yellow = 1 blue to _____

Color B: 2 blue to 10 yellow = 1 blue to _____

Color C: 2 blue to 3 yellow = 1 blue to _____

2) Which color will be the bluest? Explain.

3) Which color will be the yellowest? Explain.