

Name: _____ Date: _____ Class: _____

RATIOS

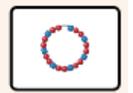
WARM-UP

1. How does the pattern including the shapes and colors in the bunting flags repeat?
2. How can you explain the rule in the pattern?
3. In what ways, patterns might be useful?

A ratio is _____.

EXPLORATION PHASE

Go to the **Explore screen** in the *Proportional Playground* sim. Play with the sim for 5 minutes. Write down 3 discoveries that you make or questions that you have.



1. 1)
2. 2)
3. 3)

TASK 1

1. I used to have a necklace having 2 red beads and 6 blue beads when I was I child. Now, it is too small for my neck. I want to have a larger one with the same pattern.
 - a. What is the ratio red beads to blue beads in the small necklace?

 - b. How many red and blue beads can you use to make a necklace with the same pattern?

2. In the table below, you have some blanks to fill in based on the given ratio between the number of red and blue beads.

Number of Red Beads	3	6		18	
Number of Blue Beads	1	2	4		

- a. What do you notice about the numbers in the table that show a matching?
- b. Find the biggest necklaces you can make with the same pattern. How many different ratios can you write with the number of blue beads, red beads, or the total number of beads you use?
- c. What are the three different ways to write a ratio?
3. Here you have another necklace with a different pattern! In this necklace, there are 3 red beads for every 5 blue beads. Based on this information find other matching patterns and fill in the table. You may / may not be able to use the sim to find the missing numbers in the table.

Number of Red Beads	3		12		36
Number of Blue Beads	5	10		40	

Explain your strategy (or strategies) you used to find the missing numbers in the table.

EXPLORATION PHASE

Go to the **Explore screen** in the *Proportional Playground* sim. Play with the sim for 2 minutes. Write down the differences or similarities you see with the necklace screen you worked previously.



4. 1)

5. 2)

6. 3)

TASK 2

1. I mix 3 gallons of blue paint and 2 gallons of yellow paint to make my favorite color. But I need to have more of this color to paint the fences. I want to keep mixing my favorite color.

a. Use the sim and fill in the blanks of the following table to make the same color.

Blue Color (gal)	3	6	12		36
Yellow Color (gal)	2			10	

b. What do you notice about the numbers in the table that show a match?

2. What if we want to have different color tones as given below and we do not have the sim? How can we find the amount of each color missing in the following equations?

$$\begin{array}{c}
 \text{blue paint} \\
 \text{blue paint} \\
 \text{blue paint} \\
 \hline
 \text{yellow paint} \\
 \hline
 \end{array}
 =
 \begin{array}{c}
 27 \\
 \text{balloons of} \\
 \text{blue paint} \\
 \hline
 \text{.....} \\
 \text{balloons of} \\
 \text{yellow paint} \\
 \hline
 \end{array}$$

Explain your thinking:

$$\begin{array}{c}
 \text{yellow paint} \\
 \hline
 \text{red paint} \\
 \text{red paint} \\
 \text{red paint} \\
 \hline
 \end{array}
 =
 \begin{array}{c}
 \text{.....} \\
 \text{balloons of} \\
 \text{yellow paint} \\
 \hline
 24 \\
 \text{balloons of} \\
 \text{red paint} \\
 \hline
 \end{array}$$

DISCUSSION

1. When do we use ratio?
2. Why are ratios good tools to use for comparing quantities?
3. Why do we use multiplication and division while working on ratios?
4. How can you relate fractions and ratio? In what ways are they similar or different?