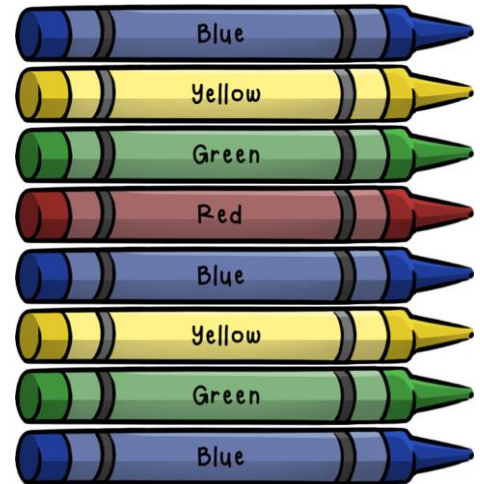


Ratios

Write a ratio for each comparison in three ways. Simplify the ratio if possible.

1. blue crayons to yellow crayons
2. green crayons to all crayons
3. red crayons to blue crayons
4. yellow crayons to green crayons



Write three ratios that are equal to each ratio.

5. 4 to 5

6. 14:28

7. $\frac{10}{5}$

Tell whether each pair of ratios are equal.

8. 4:6 and 20:30

9. 14 to 7 and 15 to 5

10. $\frac{3}{6}$ and $\frac{10}{20}$

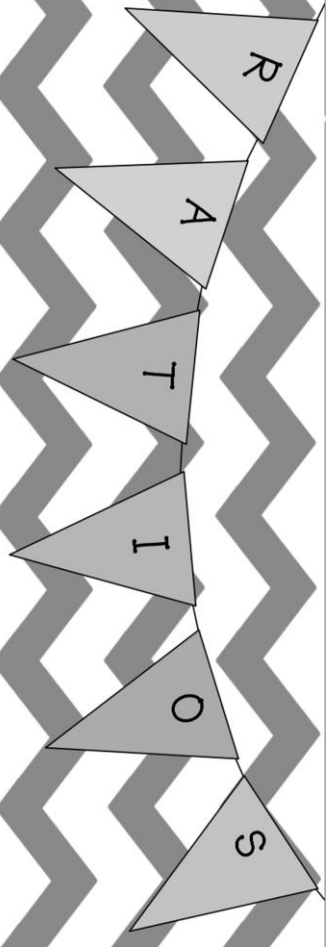
Problem Solving with Ratios

1. What is the ratio of 'B's to 'C's in Mrs. Satterfield's math class?
2. What is the ratio of students to teachers?
3. If three students bring their 'B's to an A what would the ratio of 'A's to 'B's be?

A	8
B	10
C	3
D	1
F	0

A recipe for biscuits requires 2 cups of flour, 1 cup of shortening, and 1 cup of milk and makes 1 dozen biscuits.

4. How much flour will you need to make 48 biscuits?
5. How many biscuits can you make if you triple the recipe?
6. If you have 5 cups of milk, how many biscuits can you make? (assuming you have all of the other ingredients in the amounts you would need)



Objective: Compare two amounts using ratios & create equal ratios by using multiplication and division.

Look around the classroom and count the number of girls and boys. Write the answers below:

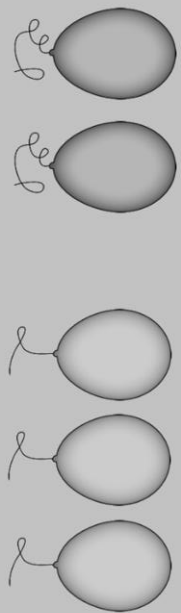
BOYS: GIRLS:

If we wanted to write a fraction for the number of boys in class it would look something like this:

$$\frac{\# \text{ of boys}}{\text{total \# of students}}$$

We could do the same thing for the girls. But, what if we wanted to compare the number of boys to girls? Today's lesson is the answer...RATIOS!

A ratio is a comparison of two amounts.



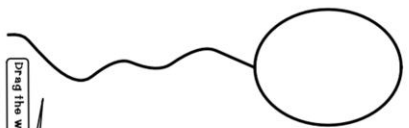
Ratios can be written three ways:

2:3 2 to 3 $\frac{2}{3}$

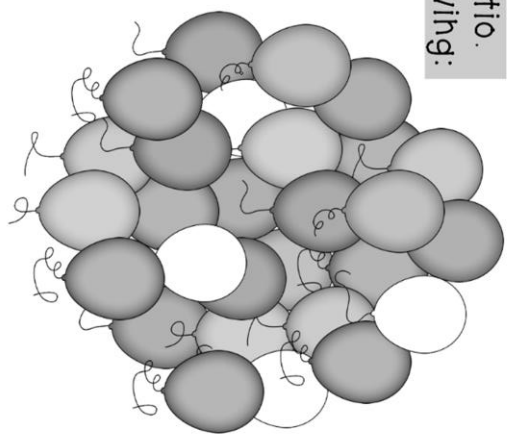
The quantities in the ratio are called terms. In the example above, the first term is 2 and the second term is 3.

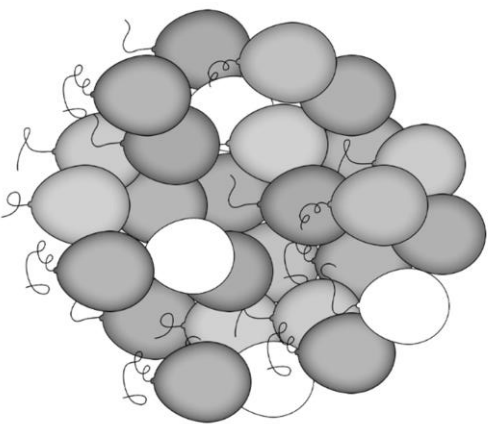
Now it is your turn to write a ratio. Try writing ratios for the following:

- blue to pink
- green to orange
- yellow to purple



Drag the white balloon over the words to check your answers!





The ratios you just wrote compared one part to another part. Ratios can also compare a part to the whole, just like a fraction does. For example, the ratio of yellow balloons to all balloons is 3 to 25. Notice that the whole number, 25, included all colors—even yellow.

Now that you can write a ratio, let's learn how to create equal ratios. Creating an equal ratio is much like creating equivalent fractions.

There are two ways: **MULTIPLY** or **DIVIDE**

Remember, multiplying or dividing by 0 or 1 will not work; in the first case your answer will be 0; in the latter, your answer will not change. Other than those two numbers, anything goes. As for division, you will want to choose compatible numbers that are factors of the terms in the ratio. You can use divisibility rules to help you pick a number that will be compatible.

Discussion Break

How do you know which number to write as the first term?

Do all ratios compare a part to a part?

How many different ways can we write ratios? What are they?

Can you think of an example of a ratio in real life?

Example using Multiplication

The ratio in our example before of green balloons to pink balloons was 2 to 3. What if we wanted to keep the ratio the same but needed more balloons for a party? We could multiply to find an equal ratio.

$$\frac{2 \times 25}{3 \times 25} = \frac{50}{75}$$

Examples using Division

$$12 \div 2 = \frac{6}{36 \div 2} = \frac{6}{18}$$

$$12 \div 4 = \frac{3}{36 \div 4} = \frac{3}{9}$$

$$12 \div 12 = \frac{1}{36 \div 12} = \frac{1}{3}$$

When we simplify a ratio, we write it in lowest terms just like when we simplify a fraction. You can use the GCF of the two terms of a ratio to write it in simplest form. Which ratio above is in simplest form?

How can we determine whether two ratios are equal?

1. Simplify each ratio
2. Compare the results; if the simplified ratios are the same, they are equal.

Example

Determine if 12:48 and 5:25 are equal.

$$12 \div 12 = \frac{1}{48 \div 12} = \frac{1}{4}$$

$$5 \div 5 = \frac{1}{25 \div 5} = \frac{1}{5}$$

Since $\frac{1}{4} \neq \frac{1}{5}$, 12:28 does not equal 5:25

THINK * PAIR * SHARE

It's time for you to try a couple of problems on your own. When you have finished, pair up with a buddy sitting next to you and share your answers.

1. Give three equal ratios. 6 to 10
2. Determine whether the ratios are equal.
3 to 5 and 18 to 30

Discussion Break

If you got a different answer than your buddy on the first think pair share problem, does that mean one of you were wrong? Why or why not?

Can you find an equal ratio by adding the same number (except zero) to each term? Why or why not?

Can you think of a real life example in which you would need to find an equal ratio?