



Ratios (Multi-Day)

By: Lori McDonald
Elementary school teacher; Ed.D. in School Leadership/Administration

Math
Grades 6–8



Introduction

This is a 4 or 5-day unit on ratio skills. The summative assessment at the end of the unit can either be given on the 4th day or could be saved for the 5th day, giving extra time for review and re-teaching as needed.

Learning Objectives

- The learner will understand that a ratio is an ordered pair of numbers.
- The learner will understand that the order of numbers in the pair is important.
- The learner will understand real-world situations to match a given ratio.

Materials Needed

- *Lucky Charms cereal*
- [Survey forms](#)
- Exit ticket copies

Procedure

Day 1 - Introduction

Warm-up- Show students a box of Lucky Charms cereal. Tell students the exact number (have them counted ahead of time) of pieces in the cereal box. Ask students to write down how many marshmallows and oat pieces they think there are in the box. Reveal the amount of each and see which student came the closest. Give a prize to the student with the closest guess.

1. Start with the number of marshmallows and oat pieces and explain to the students how this is a ratio.
For example: There are 256 marshmallows to 2,485 oat pieces.
2. Explain that there are 3 different ways to write a ratio:
 - **As a fraction - 256 marshmallows/2,485 oats**
 - **The word "to" - 256 marshmallows to 2,485 oats**
 - **A colon - 256 marshmallows : 2,485 oats**
3. Give each student a handful of cereal from the box. Have each student count their pieces and write the ratio of marshmallows to oats in the 3 different ways. Call on various students to share their answers.
4. Next, work through some examples together.

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For example:

- **What is the ratio of boys to girls in the class?**
- **What is the ratio of desks to tables in this room?**

Also, show some pictures to determine ratio.

Example: (using animal pictures – real or animated)

- **What is the ratio of clown fish to sharks?**
- **What is the ratio of lions to zebras?**

Work through these examples together, making sure to emphasize the order in which the question is asked is the order the ratio should be presented in. Also, display all three ways to write each ratio, calling on students to demonstrate their knowledge when appropriate.

5. Guided practice – give students the following problems

- **Susie has 4 shirts and 1 hat. Write the ratio of Susie's shirts to hats in 3 different ways.**
- **Mike has 1 apple and 3 bananas in his lunchbox. Write the ratio of apples to bananas 3 different ways.**
- **Max has 5 dogs and 2 cats. Write the ratio of cats to dogs 3 different ways.**

Challenge: The debate team has 3 times as many girls as boys. Write the ratio of girls to boys 3 different ways.

Monitor as students work. Then demonstrate the answers (or have students do so when appropriate) on the board/projector to each of the questions.

Day 2 – More Ratios

Warm-up – Have students work in small groups to come up with two examples of ratio relationships. After a few minutes, allow each small group to share their ratios.

1. Allow students to continue working in small groups as you present the accompanying [PowerPoint ratio pictures](#). The PPT includes 17 pictures that students can use to create ratios. Next, have the groups complete the first 5 together. Then, go over the answers with the entire class.
2. For the next 5 picture slides, have students work individually, writing the ratio in the form they choose. Monitor students as they work and check for understanding.
3. Demonstrate for students that you can reduce ratios like they did with fractions. This is not a new concept for them. However, go over how to apply this same skill to ratios. Provide modeling and scaffolding as needed for this skill.



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Day 3 – Ratio Design Challenge ([link here](#))

This day is a group project day in which students will work on designing a baseball field, amusement park, and aquarium using ratios. This is an interactive program that can be used with an interactive white board, computer, or tablet.

The teacher will monitor as students work together to determine the necessary ratios of building materials.

At the end of class, students will share some of the ratios they used in one of their designs, reducing them to simplest form.

Day 4 – Student Survey

Warm-up – Ask students, “How many students went out of state on vacation in the summer?”

Tally the answers on the board/projector. Then, with guidance from students, create ratios from that question.

1. Tell students that today they will conduct surveys with questions much like the one just asked. Give students a [survey form](#) like the one attached.
2. Students will then be given time to walk around the room, asking each other these questions until they have interviewed every student in the class. This will take some time, but this is valuable learning time as students are gathering their own data that they will analyze and report on.
3. Then, have students go back to their seats and work individually on writing at least 1 ratio for each question they asked.
 - For example: The ratio of students that have siblings to the ones that do not. The ratio of students that have read all the Harry Potter books to ones that haven't.Students must write each ratio 3 different ways and each must be in simplest form.
4. Go over the students' findings together in class.

Evaluation

Day 1 - As a formative assessment, have students complete the following questions as an exit ticket.

- **For every 5 cups of flour in the recipe, there are 2 cups of milk. Write the ratio of flour to milk in 3 different ways.**
- **Ellie made 3 times as many goals as Livy. What is the ratio of Ellie's goals to Livy's goals? Write the ratio in 3 different ways.**



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Day 2 -For today's exit ticket, students will complete the following question while looking at the next 5 pictures (#11-15) on the PPT.

- For each picture, write the ratio in at least two different ways. All answers must be in simplest form.

Day 4 - Summative assessment on ratios

Note: The activity for Day 4 may take longer than just one class period. Therefore, you may choose to finish the Day 4 activity on Day 5 and then give the summative assessment.