# Flag Fractions

## Unit 5: Fractions and Decimals

### Grade Level

4th Grade

### Overview

Students create a flag by coloring fractional pieces of the flag and then name and write the fractional parts created on their flag. While exploring the fractional parts created, students add fractions with like denominators, write decimal fractions as decimals, order two digit decimals, and add two digit decimals.

### Key Standards

**M4N5.** Students will further develop their understanding of the meaning of decimal fractions and use them in computations.

- a. Understand decimal fractions are a part of the base-ten system.
- b. Understand the relative size of numbers and order two digit decimal fractions.
- c. Add and subtract both one and two digit decimal fractions.
- d. Model multiplication and division of decimal fractions by whole numbers.
- e. Multiply and divide both one and two digit decimal fractions by whole numbers.

**M4N6.** Students will further develop their understanding of the meaning of common fractions and use them in computations.

- a. Understand representations of simple equivalent fractions.
- b. Add and subtract fractions and mixed numbers with common denominators. (Denominators should not exceed twelve.)
- c. Convert and use mixed numbers and improper fractions interchangeably.

### Possible Materials

- Copy of the following Recording Sheets for each student
  - “Design a Flag”
  - “Country Flag: Naming Fractions and Decimals”
  - “Country Flag: Comparing Fractions and Decimals”
- Crayons
- Poster paper
- Markers
- Note cards for each student
Task

This can be a three-day task.

Day 1

Students create a name for their country and design a flag for their country.

Day 2

1. Students are placed into groups of four based on a common color on their flags.
2. Each student fills out a chart for common fractions and decimals based on their flag.
3. Once everyone has their chart filled out, students discuss what they notice.
4. On an index card, each student writes the fraction on one side and the corresponding decimal on the other side for their group’s color.
5. Working with a partner in their group, students compare their fractions.
6. Students then order the fractions for their group from least to greatest.
7. Students list their fractions in order on the recording sheet and share their ordered fractions with the class.
8. The class creates a rule for comparing common fractions with like denominators.
9. Closing: The class discusses how a common fraction is part of a whole and how all of the fractions add up to one whole flag (numerator and denominator are equal).

Day 3

- Discuss the homework, asking students to prove their answers and review the rule from the previous day regarding fractions equal to 1.
- In the groups from the previous day, students create a new country name. Their individual countries are combined into one. They then add up their fractions for only their group’s color and decide if their new flag is (a) less than 1 (b) greater than 1 (c) equal to 1
- Students design a new country flag using the fraction for the group color as one color on the flag. (If the new fraction was 121/100 students will ask for 2 flags and shade 121 boxes.)
- Groups share their new country name and flag with the class, focusing on the fraction created by adding the fractions representing the group’s color.

Sample Questions

1. What do you notice about the denominators?
2. What is going to happen when you add your fractions for all the colors? Why?
3. What happens when the numerator and denominator are the same? One whole what?
4. How did you write your fraction for each color?
5. How did you decide to compare your fractions?
6. Why do you not compare the denominators?
7. What is our rule for comparing fractions with like denominators? Why is that true?
8. What is a fraction and how can it be represented?
### Sample Questions – Solutions

1. They are the same
2. They will add up to 100/100 because there are a total of 100 boxes on the flag.
3. It equals one whole, specifically one whole flag.
4. The numerator is the total for that color and the denominator is always 100 because there are one hundred boxes on a flag.
5. We looked at the numerators.
6. The denominators are the same because each flag has 100 boxes.
7. If the denominators are the same, just look at the numerators to compare. Denominator means the total number of parts so if that’s the same simply compare the numerators.
8. A fraction is a whole that is divided into equal-sized pieces. The denominator is the total number of pieces and the numerator is the number pieces being considered.

### Assessment Ideas

- Teacher observation and questioning
- Use student recording sheets to determine students’ ability to write common fractions and decimals fractions and to add common fractions and decimals fractions.