3rd Grade Math: Comparing Fractions

What Are Fractions?

A **fraction** represents a part of a whole. It is made up of two parts:

- **Numerator**: The top number, representing how many parts you have.
- **Denominator**: The bottom number, representing how many total equal parts the whole is divided into.

For example, in the fraction $\frac{3}{4}$:

- The numerator (3) tells you that you have 3 parts.
- The denominator (4) tells you that the whole is divided into 4 equal parts.

How to Compare Fractions

When comparing fractions, there are a few methods you can use to determine which is greater or if they are equal.

Method 1: Compare Fractions with the Same Denominator

If two fractions have the **same denominator**, you can simply compare the numerators.

For example, compare $\frac{3}{8}$ and $\frac{5}{8}$:

- Both fractions have the same denominator (8).
- Compare the numerators: 3 is less than 5.

So, $\frac{3}{8}$ is **less than** $\frac{5}{8}$.

$$\frac{3}{8} < \frac{5}{8}$$

Method 2: Compare Fractions with the Same Numerator

If two fractions have the **same numerator**, the fraction with the smaller denominator is the larger fraction.

For example, compare $\frac{2}{3}$ and $\frac{2}{5}$:

- Both fractions have the same numerator (2).
- Compare the denominators: 3 is less than 5, so thirds are bigger pieces than fifths.

Thus, $\frac{2}{3}$ is **greater than** $\frac{2}{5}$.

$$\frac{2}{3} > \frac{2}{5}$$

Method 3: Make Denominators the Same (Finding a Common Denominator)

If two fractions have **different denominators**, you can compare them by finding a **common denominator**. This means finding a number that both denominators can divide into evenly.

For example, compare $\frac{1}{2}$ and $\frac{2}{3}$:

1. The smallest number both 2 and 3 divide into is 6, so let's change both fractions to have a denominator of 6.
   - $\frac{1}{2} = \frac{3}{6}$ (because $1 \times 3 = 3$ and $2 \times 3 = 6$).
   - $\frac{2}{3} = \frac{4}{6}$ (because $2 \times 2 = 4$ and $3 \times 2 = 6$).
2. Now compare $\frac{3}{6}$ and $\frac{4}{6}$.
   - 3 is less than 4.

So, $\frac{1}{2}$ is **less than** $\frac{2}{3}$.

$$\frac{1}{2} < \frac{2}{3}$$

Example 1: Comparing Fractions

Problem: Compare $\frac{5}{6}$ and $\frac{3}{4}$.

Steps:

1. Find a common denominator. The least common denominator (LCD) of 6 and 4 is 12.
   - $\frac{5}{6} = \frac{10}{12}$ (multiply the numerator and denominator by 2).
   - $\frac{3}{4} = \frac{9}{12}$ (multiply the numerator and denominator by 3).
2. Now compare $\frac{10}{12}$ and $\frac{9}{12}$:
   - 10 is greater than 9.

Answer: $\frac{5}{6}$ is **greater than** $\frac{3}{4}$.

$$\frac{5}{6} > \frac{3}{4}$$

Example 2: Comparing Fractions with Same Denominators

Problem: Compare $\frac{4}{7}$ and $\frac{5}{7}$.

Steps:

1. Since the denominators are the same, compare the numerators.
   - 4 is less than 5.

Answer: $\frac{4}{7}$ is **less than** $\frac{5}{7}$.

$$\frac{4}{7} < \frac{5}{7}$$

Conclusion:

- When comparing fractions, always look at the numerators and denominators.
- Fractions with the same denominator are easy to compare by checking the numerator.
- For fractions with different denominators, finding a common denominator helps compare them.

With practice, comparing fractions becomes much easier!