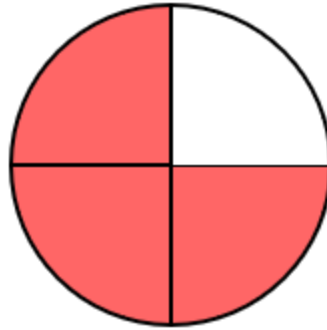


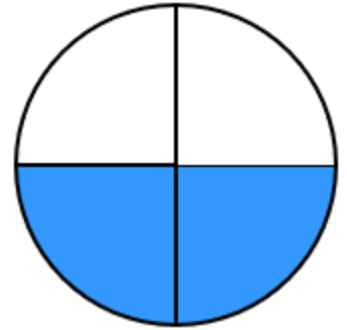
# How to Compare Fractions

Introducing:

- common denominator
- least common denominator
- like fractions
- unlike fractions.

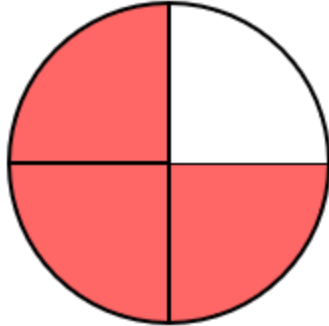


$$\frac{3}{4}$$

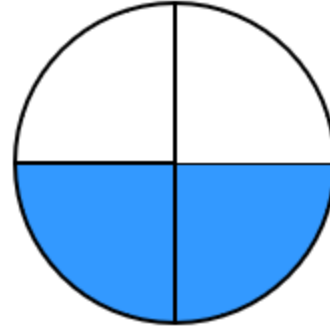


$$\frac{2}{4}$$

# Compare Fractions 1



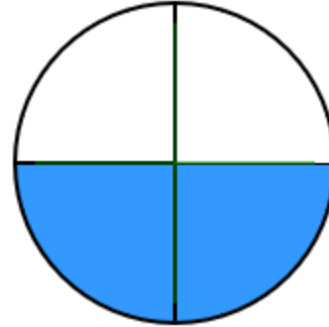
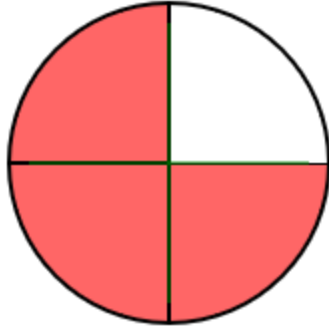
$$\frac{3}{4}$$



$$\frac{2}{4}$$

The fractions  $\frac{3}{4}$  and  $\frac{2}{4}$  have the same denominator. Fractions with the same denominators are *like fractions*.

# Compare Fractions 2

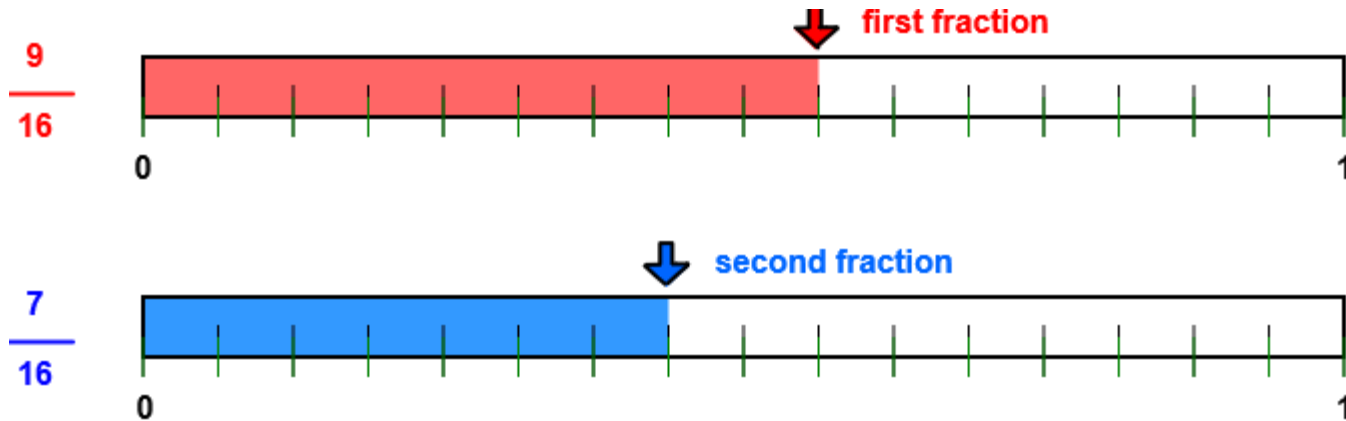


$\frac{3}{4}$  is larger than  $\frac{2}{4}$

$$\frac{3}{4} > \frac{2}{4}$$

If denominators are the same, the fraction with the larger numerator is larger. So  $\frac{3}{4}$  is larger than  $\frac{2}{4}$ .

# Compare Fractions 3

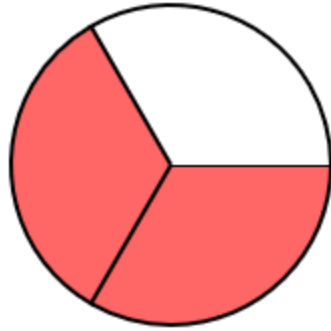


9/16 is larger than 7/16

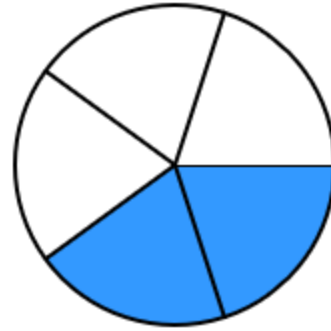
$$\frac{9}{16} > \frac{7}{16}$$

$\frac{9}{16}$  and  $\frac{7}{16}$  are *like fractions*. The numerator 9 in  $\frac{9}{16}$  is larger than the numerator 7 in  $\frac{7}{16}$ , so  $\frac{9}{16}$  larger than  $\frac{7}{16}$ .

# Compare Fractions 4



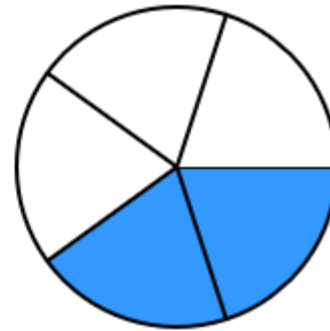
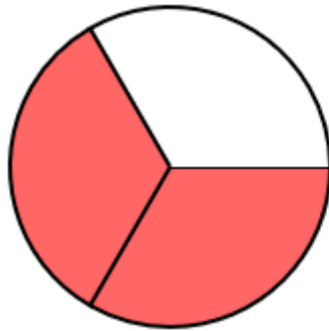
$$\frac{2}{3}$$



$$\frac{2}{5}$$

The fractions  $\frac{2}{3}$  and  $\frac{2}{5}$  have the same numerator. The denominator 3 in the fraction  $\frac{2}{3}$  means that the unit has less parts, making the parts larger. Therefore,  $\frac{2}{3}$  is larger than  $\frac{2}{5}$ .

# Compare Fractions 5

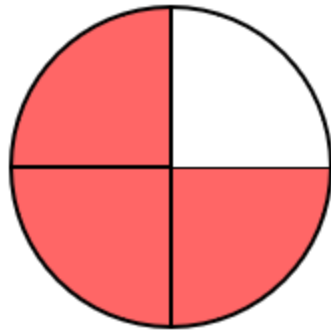


2/3 is larger than 2/5

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

The larger the denominator the smaller the fraction.

# Compare Fractions 6



$$\frac{3}{4}$$



$$\frac{5}{8}$$

The fractions  $\frac{3}{4}$  and  $\frac{5}{8}$  have unlike denominators and unlike numerators. Fractions that have unlike denominators are *unlike fractions*.

# Compare Fractions 7



$\frac{3}{4}$  is larger than  $\frac{5}{8}$

$$\frac{3}{4} > \frac{5}{8}$$

To compare  $\frac{3}{4}$  and  $\frac{5}{8}$ , rename one or both fractions so they will have the same denominators making them *like fractions*. Then compare the numerators. In this case,  $\frac{3}{4}$  is renamed as  $\frac{6}{8}$  so that we can compare the numerators of  $\frac{6}{8}$  and  $\frac{5}{8}$ .



# Compare Fractions 8

To compare fractions with unlike denominators rename the fractions so that they will have with like or common denominators, making them *like fractions*.

To find a common denominator:

Think of the denominators 4 and 8 in  $\frac{3}{4}$  and  $\frac{5}{8}$ . Does the smaller denominator 4 divide evenly into the larger 8? Yes, then the larger denominator 8 is the common denominator.

If the smaller denominator does not divide evenly into the larger, Multiply the larger denominator by 2, 3, and then 4, etc. Each time check for division by the smaller denominator.

# Compare Fractions 9

In the fractions  $\frac{3}{4}$  and  $\frac{2}{3}$ :

1. Multiply the larger denominator 4 by 2 to get 8. Does 3 divide evenly into 8? No.
2. Multiply the larger denominator 4 by 3 to get 12. Does 3 divide evenly into 12? Yes. So 12 is a common denominator of the denominators 4 and 3.

# Compare Fractions 10

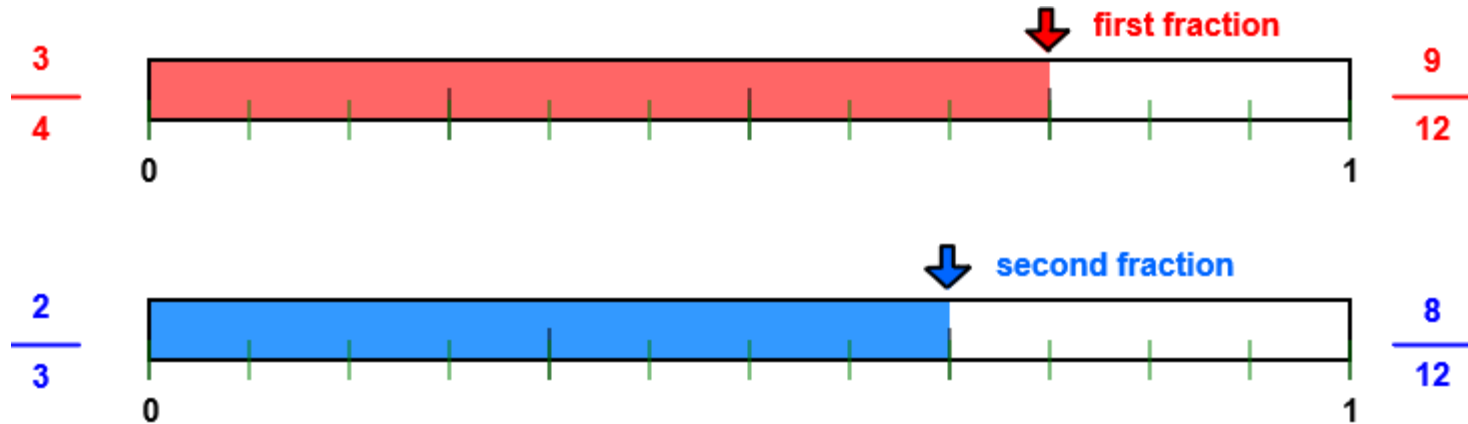
Now that we know that 12 is the *least common denominator* for the fractions  $\frac{3}{4}$  and  $\frac{2}{3}$ , we can write each fraction with a denominator of 12 using the procedure in **Rename Fractions To Higher Terms**.

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

$$\frac{2}{3} = \frac{8}{12}$$

$\frac{9}{12}$  and  $\frac{8}{12}$  are *like fractions* so now all we have to do is compare the numerators. Since 9 is greater than 8 the fraction  $\frac{9}{12}$  is greater than  $\frac{8}{12}$ .

# Compare Fractions 11



$\frac{3}{4}$  is larger than  $\frac{2}{3}$

$$\frac{3}{4} > \frac{2}{3}$$

Here is the picture of  $\frac{3}{4}$  and  $\frac{2}{3}$ . The picture shows that  $\frac{3}{4}$  is larger than  $\frac{2}{3}$ . Notice that each fraction has been renamed to  $\frac{9}{12}$  and  $\frac{8}{12}$ .

# Compare Fractions 12



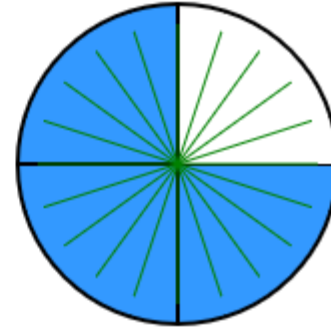
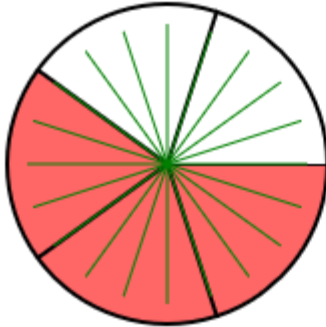
$\frac{3}{5}$  is smaller than  $\frac{3}{4}$

$$\frac{3}{5} < \frac{3}{4}$$

The *common denominator* of 5 and 4 is 20 because both 5 and 4 divide evenly into 20.

# Compare Fractions 13

$$\frac{12}{20}$$



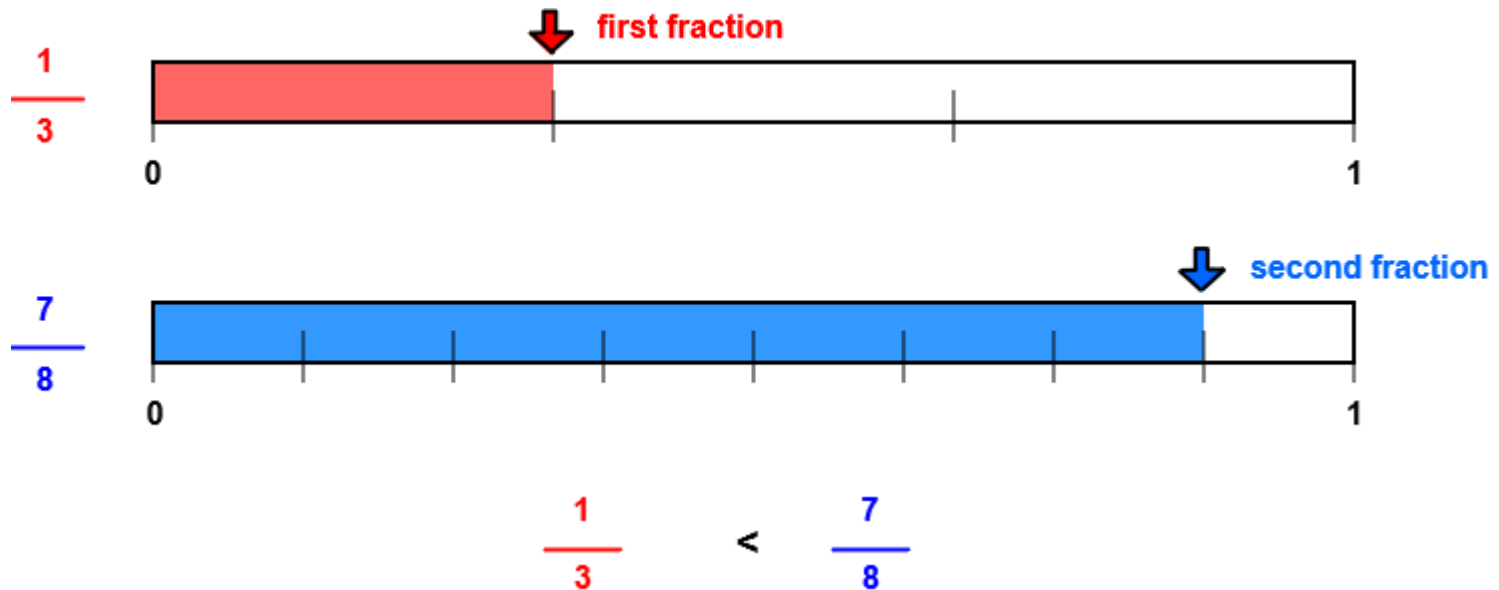
$$\frac{15}{20}$$

$\frac{3}{5}$  is smaller than  $\frac{3}{4}$

$$\frac{3}{5} < \frac{3}{4}$$

The numerators are the same in  $\frac{3}{5}$  and  $\frac{3}{4}$ . The smaller denominator will give a larger fraction.

# Compare Fractions 14



Another method for comparing is to think of the fractions. In this example it is obvious that  $\frac{1}{3}$  is smaller than  $\frac{7}{8}$ . For one thing,  $\frac{1}{3}$  is smaller than  $\frac{1}{2}$  and  $\frac{7}{8}$  is larger than  $\frac{1}{2}$ .

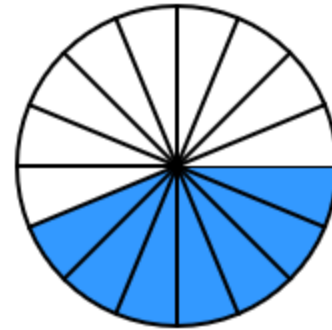
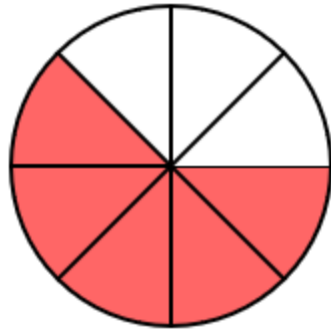
# Compare Fractions 15

Being able to compare fractions by picturing them in your mind will help you arrive at an answer more quickly than with calculation. As mentioned before, as the numerator increases it means that you have selected more parts. As the denominator increases it means that the parts are smaller.

Which is larger,  $\frac{5}{8}$  or  $\frac{7}{16}$ ?



# Compare Fractions 16



$$\frac{5}{8} > \frac{7}{16}$$

$\frac{5}{8}$  is larger. It takes practice, but being able to estimate by visualizing the fraction (number sense) will help you to understand fractions better.