

## Comparing Fractions

Comparing fractions becomes easy with two rules: *same denominator*, just compare numerators; *same numerator*, the bigger denominator makes *smaller* pieces.


If...	Compare by...
Same denominator	The bigger numerator wins ( $\frac{5}{8} > \frac{3}{8}$ )
Same numerator	The smaller denominator wins ( $\frac{1}{3} > \frac{1}{8}$ )
Different both	Compare to a benchmark like $\frac{1}{2}$ or use equivalents

### Key Concepts

1. When two fractions have the **same denominator**, just compare numerators — the bigger numerator is bigger.
2. When two fractions have the **same numerator**, the one with the *smaller* denominator is bigger. Bigger denominator = more, smaller pieces. ( $\frac{1}{4}$  is bigger than  $\frac{1}{8}$  because  $\frac{1}{4}$  is one slice of a pie cut into 4 pieces, while  $\frac{1}{8}$  is one slice of a pie cut into 8 pieces.)
3. When neither part matches, use a **benchmark** like  $\frac{1}{2}$ . If one is bigger than  $\frac{1}{2}$  and the other is smaller, the bigger one wins.
4. You can always make equivalent fractions with the same denominator and then just compare numerators.


### Worked Examples

① Compare  $\frac{2}{6}$  and  $\frac{4}{6}$ .

 Same denominator (6). Bigger numerator wins.  $4 > 2$ , so  $\frac{4}{6} > \frac{2}{6}$ .


 **Answer:**  $\frac{2}{6} < \frac{4}{6}$

② Compare  $\frac{1}{3}$  and  $\frac{1}{8}$ .

 Same numerator (1). Smaller denominator wins because the pieces are bigger. A pie split into 3 pieces gives larger slices than a pie split into 8 pieces. So  $\frac{1}{3} > \frac{1}{8}$ .

 **Answer:**  $\frac{1}{3} > \frac{1}{8}$

③ Compare  $\frac{3}{8}$  and  $\frac{2}{3}$  using the benchmark  $\frac{1}{2}$ .

 Test each against  $\frac{1}{2}$ . For  $\frac{3}{8}$ :  $\frac{1}{2}$  of eighths is  $\frac{4}{8}$ , and  $3 < 4$ , so  $\frac{3}{8} < \frac{1}{2}$ . For  $\frac{2}{3}$ :  $\frac{1}{2}$  of thirds is  $\frac{1.5}{3}$ , and  $2 > 1.5$ , so  $\frac{2}{3} > \frac{1}{2}$ . One is below half, the other is above, so  $\frac{3}{8} < \frac{2}{3}$ .

 **Answer:**  $\frac{3}{8} < \frac{2}{3}$

### Practice Problems

Compare with  $<$ ,  $>$ , or  $=$ .

1.  $\frac{3}{4} \bigcirc \frac{1}{4}$  \_\_\_\_\_

2.  $\frac{2}{6} \bigcirc \frac{5}{6}$  \_\_\_\_\_

3.  $\frac{1}{3} \bigcirc \frac{1}{6}$  \_\_\_\_\_

4.  $\frac{2}{4} \bigcirc \frac{2}{8}$  \_\_\_\_\_

5.  $\frac{4}{8} \bigcirc \frac{1}{2}$  \_\_\_\_\_

6.  $\frac{5}{6} \bigcirc \frac{3}{6}$  \_\_\_\_\_

7.  $\frac{1}{4} \bigcirc \frac{1}{2}$  \_\_\_\_\_

8.  $\frac{3}{8} \bigcirc \frac{7}{8}$  \_\_\_\_\_




9.  $\frac{2}{3} \bigcirc \frac{2}{4}$  \_\_\_\_\_

10.  $\frac{1}{8} \bigcirc \frac{1}{3}$  \_\_\_\_\_

11.  $\frac{6}{8} \bigcirc \frac{3}{4}$  \_\_\_\_\_

12.  $\frac{4}{6} \bigcirc \frac{1}{6}$  \_\_\_\_\_

### Study Tips

-  “Same numerator” is the tricky case. Remember that a bigger denominator makes *smaller* pieces. Think of cutting a pizza into more slices: each slice gets thinner.
-  Drawing fraction strips works every time. Two equal-length strips, divided into different numbers of pieces, let you see the comparison instantly.
-  The benchmark  $\frac{1}{2}$  is your best friend for comparisons with unlike denominators.

### Word Problems

1. Kim read  $\frac{2}{3}$  of her book and Ben read  $\frac{2}{6}$  of the same book. Who read more? Explain.  
Answer: \_\_\_\_\_
2. Two pies are the same size. One has  $\frac{5}{8}$  left and the other has  $\frac{3}{8}$  left. Which pie has more left? Use  $>$ ,  $<$ , or  $=$ .  
Answer: \_\_\_\_\_

### Answer Key — with Friendly Explanations

#### Practice Problems

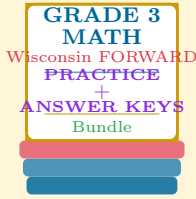
1. Same denominator:  $3 > 1$ .  **Answer:**  $>$
2. Same denominator:  $2 < 5$ .  **Answer:**  $<$
3. Same numerator. Smaller denominator wins.  $3 < 6$ , so  $\frac{1}{3}$  has bigger pieces.  **Answer:**  $>$
4. Same numerator.  $4 < 8$ , so  $\frac{2}{4}$  wins.  **Answer:**  $>$
5.  $\frac{4}{8} = \frac{1}{2}$  (divide both by 4).  **Answer:**  $=$
6. Same denominator:  $5 > 3$ .  **Answer:**  $>$
7. Same numerator.  $4 > 2$ , so  $\frac{1}{4}$  has smaller pieces.  **Answer:**  $<$
8. Same denominator:  $3 < 7$ .  **Answer:**  $<$
9. Same numerator.  $3 < 4$ , so thirds are bigger than fourths.  **Answer:**  $>$
10. Same numerator.  $8 > 3$ , so  $\frac{1}{8}$  has smaller pieces.  **Answer:**  $<$
11.  $\frac{6}{8} = \frac{3}{4}$  (divide both by 2).  **Answer:**  $=$
12. Same denominator:  $4 > 1$ .  **Answer:**  $>$

#### Word Problems

1. Same numerator. Thirds  $>$  sixths, so Kim read more.  **Answer:** *Kim*
2. Same denominator,  $5 > 3$ . First pie has more left.  **Answer:** *First pie ( $\frac{5}{8} > \frac{3}{8}$ )*

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