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. $\frac{3}{4}$ ◯ $\frac{1}{4}$ _____
2. $\frac{2}{6}$ ◯ $\frac{5}{6}$ _____
3. $\frac{1}{3}$ ◯ $\frac{1}{6}$ _____
4. $\frac{2}{4}$ ◯ $\frac{2}{8}$ _____
5. $\frac{4}{8}$ ◯ $\frac{1}{2}$ _____
6. $\frac{5}{6}$ ◯ $\frac{3}{6}$ _____
7. $\frac{1}{4}$ ◯ $\frac{1}{2}$ _____
8. $\frac{3}{8}$ ◯ $\frac{7}{8}$ _____
9. $\frac{2}{3}$ ◯ $\frac{2}{4}$ _____
10. $\frac{1}{8}$ ◯ $\frac{1}{3}$ _____
11. $\frac{6}{8}$ ◯ $\frac{3}{4}$ _____
12. $\frac{4}{6}$ ◯ $\frac{1}{6}$ _____

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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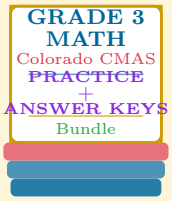

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