

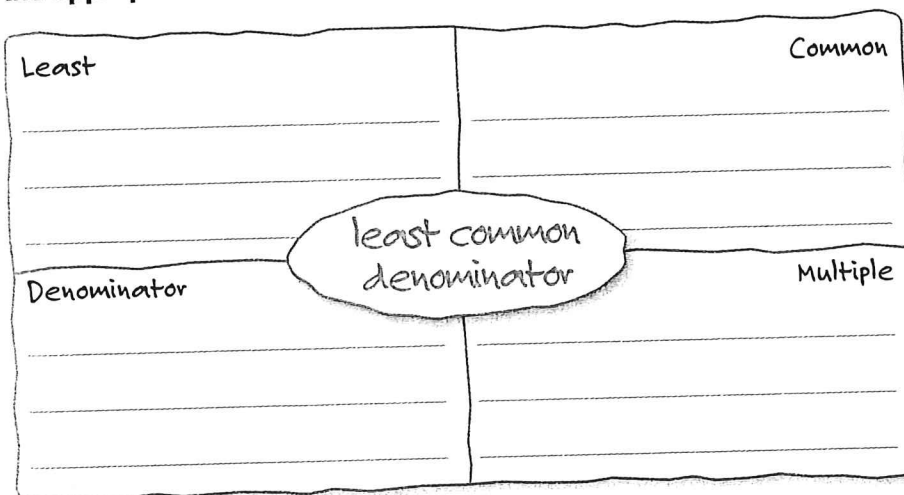
Compare and Order Fractions, Decimals, and Percents

Vocabulary Start-Up



The **least common denominator**, or LCD, is the least common multiple of the denominators of two or more fractions.

Complete the graphic organizer. Write the meaning of each word in the appropriate box. Provide examples.



Essential Question

WHEN is it better to use a fraction, a decimal, or a percent?



Vocabulary

least common denominator (LCD)

I Indiana Academic Standards Preparation for 6.NS.10

PS Process Standards 1, 2, 3, 4, 5, 6



Real-World Link

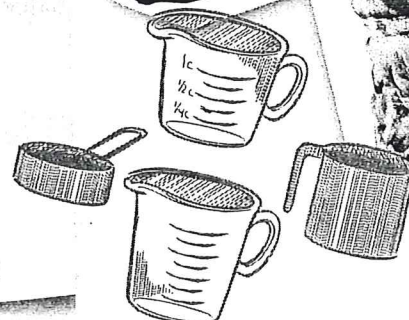
- Earnest is baking, but he wants to use only one measuring cup. He needs $\frac{1}{2}$ cup of sugar and $\frac{3}{4}$ cup of flour. What is the least common multiple of the denominators? 4
- What size measuring cup should he use: $\frac{1}{2}$ cup, $\frac{1}{3}$ cup, or $\frac{1}{4}$ cup? Explain. $\frac{1}{4}$ because you can use 3 for $\frac{3}{4}$ and 2 for $\frac{2}{4}$ ($\frac{1}{2} \cdot 2 = \frac{2}{4}$)



Which **PS** Process Standards did you use?

Shade the circle(s) that applies.

- | | |
|--|---|
| <input type="checkbox"/> ① Persevere with Problems | <input type="checkbox"/> ⑤ Use Math Tools |
| <input type="checkbox"/> ② Reason Abstractly | <input type="checkbox"/> ⑥ Attend to Precision |
| <input type="checkbox"/> ③ Construct an Argument | <input type="checkbox"/> ⑦ Make Use of Structure |
| <input type="checkbox"/> ④ Model with Mathematics | <input type="checkbox"/> ⑧ Use Repeated Reasoning |



Compare and Order Fractions

To compare fractions, you can follow these steps.

1. Find the least common denominator (LCD) of the fractions. That is, find the least common multiple of the denominators.
2. Write an equivalent fraction for each fraction using the LCD.
3. Compare the numerators.

Example



Fill in each \bigcirc with $<$, $>$, or $=$ to make a true statement.

1. $\frac{5}{8} \bigcirc \frac{7}{12}$

The LCM of the denominators, 8 and 12, is 24. So, the LCD is 24. Write an equivalent fraction with a denominator of 24 for each fraction.

$$\frac{5}{8} = \frac{15}{24}$$

$$\frac{7}{12} = \frac{14}{24}$$

$\frac{15}{24} > \frac{14}{24}$, since $15 > 14$. So, $\frac{5}{8} > \frac{7}{12}$.

Got it? Do these problems to find out.

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

b. $\frac{5}{12} \bigcirc \frac{7}{8}$

c. $\frac{1}{6} \bigcirc \frac{5}{18}$

Example



2. Order the fractions $\frac{1}{2}$, $\frac{9}{14}$, $\frac{3}{4}$, and $\frac{5}{7}$ from least to greatest.

Rewrite each fraction using the LCD of 28.

$$\frac{1}{2} = \frac{14}{28}$$

$$\frac{9}{14} = \frac{18}{28}$$

$$\frac{3}{4} = \frac{21}{28}$$

$$\frac{5}{7} = \frac{20}{28}$$

Since $\frac{14}{28} < \frac{18}{28} < \frac{20}{28} < \frac{21}{28}$, the order of the original fractions from least to greatest is $\frac{1}{2}, \frac{9}{14}, \frac{5}{7}, \frac{3}{4}$.

What number do 2, 4, 7, and 14 all go into?

Got it? Do this problem to find out.

- d. Order $\frac{1}{2}$, $\frac{5}{6}$, $\frac{2}{3}$, and $\frac{3}{5}$ from least to greatest.

Least Common Multiple

$$\begin{array}{l} 2 = 2 \\ 4 = 2 \times 2 \\ 7 = 7 \end{array} \times \begin{array}{l} 7 \\ 7 \\ 7 \end{array}$$

The LCM is $2 \times 2 \times 7$ or 28.

compare these!

When ordering fractions, first identify what number is a multiple of all the denominators.



d. _____

Compare Fractions, Decimals, and Percents

It may be easier to compare fractions, decimals, and percents when they are all written as decimals.

| | | | |
|--------------------------------|--------------------------------|--|--|
| $\frac{1}{5} = 0.2 = 20\%$ | $\frac{2}{5} = 0.4 = 40\%$ | $\frac{3}{5} = 0.6 = 60\%$ | $\frac{4}{5} = 0.8 = 80\%$ |
| $\frac{1}{8} = 0.125 = 12.5\%$ | $\frac{3}{8} = 0.375 = 37.5\%$ | $\frac{1}{3} = 0.\bar{3} = 33.\bar{3}\%$ | $\frac{2}{3} = 0.\bar{6} = 66.\bar{6}\%$ |

Examples



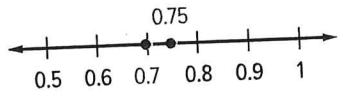
Fill in each \bigcirc with $<$, $>$, or $=$ to make a true statement.

3. $\frac{3}{4} \bigcirc 0.7$
 $\frac{3}{4} \bigcirc 0.7$
 $0.75 \bigcirc 0.70$
 $0.75 > 0.70$

Write the sentence.

Write $\frac{3}{4}$ as a decimal. Annex a zero to 0.7.

Compare the hundredths place. $5 > 0$



Since 0.75 is to the right of 0.7 on the number line, $\frac{3}{4} > 0.7$.

$$\begin{array}{r} .75 \\ 4 \overline{) 3.00} \\ \underline{-28} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

4. Lucita made 85% of her free throws. Henri made $\frac{7}{8}$ of his free throws. Who has the better average? Explain.

85% $\bigcirc \frac{7}{8}$
 $0.850 \bigcirc 0.875$
 $0.850 < 0.875$

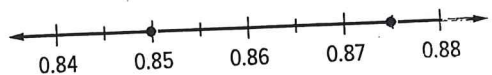
Write the sentence.

Write each number as a decimal. Annex a zero to 0.85.

Compare the hundredths place. $5 < 7$

Since $0.850 < 0.875$, Henri has the better average.

Check



Since 0.85 is to the left of 0.875, the answer is correct. ✓

$$\begin{array}{r} .875 \\ 8 \overline{) 7.000} \\ \underline{64} \\ 60 \\ \underline{56} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

Got it? Do these problems to find out.

- e. $\frac{2}{3} \bigcirc 0.6$
- f. $0.7 \bigcirc \frac{8}{11}$
- g. $\frac{1}{5} \bigcirc 0.2$
- h. $42\% \bigcirc 0.44$
- i. $7\% \bigcirc \frac{7}{10}$
- j. $6.5 \bigcirc 650\%$

Use the cowboy method to turn fractions into decimals.

Use decimal movement to turn % into decimals.

$85\% = .85$



Example

Tutor



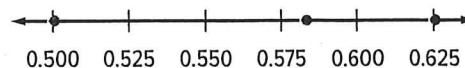
5. The table shows the school carnival attendance. Which grade has the greatest part of the class attending the carnival?

| Grade | Attendance |
|-------|---------------|
| 6 | $\frac{5}{8}$ |
| 7 | 0.5 |
| 8 | 58.3% |

Order the numbers from least to greatest. Express each number as a decimal with the same number of places.

$$\frac{5}{8} = 0.625 \quad 0.5 = 0.500 \quad 58.3\% = 0.583$$

Graph the numbers on a number line.



From least to greatest, the numbers are 0.5, 58.3%, and $\frac{5}{8}$.

Since $\frac{5}{8}$ represents Grade 6, Grade 6 has the greatest part of the class attending the school carnival.

Got it? Do this problem to find out.

- k. Hiroshi found that $\frac{3}{5}$ of his class prefers vanilla ice cream, 26% prefers chocolate, and 0.14 prefers strawberry. Which kind of ice cream do students prefer the least?

Show your work.

k. _____

Guided Practice

Check



1. Order the fractions $\frac{4}{5}$, $\frac{1}{2}$, $\frac{9}{10}$, and $\frac{3}{4}$ from least to greatest. (Examples 1 and 2)

Show your work.

2. Cora spends $\frac{2}{3}$ of her free time blogging on the Internet. Leah spends 60% of her free time blogging on the Internet. Who spends more of her free time blogging?

(Examples 3 and 4) _____

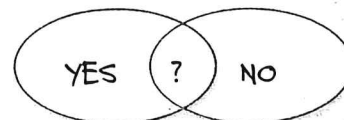
3. The table shows the wins for some middle school football teams. Which team has the greatest fraction of wins? (Example 5)

| Team | Wins |
|----------|----------------|
| Eagles | 95% |
| Wolves | $\frac{9}{10}$ |
| Mustangs | 0.89 |

4. **Building on the Essential Question** How do you compare fractions, decimals, and percents?

Rate Yourself!

Are you ready to move on?
Shade the section that applies.



For more help, go online to access a Personal Tutor.

Tutor



Independent Practice

Go online for Step-by-Step Solutions



Fill in each \bigcirc with $<$, $>$, or $=$ to make a true statement. (Examples 1 and 3)

1. $\frac{1}{3} \bigcirc \frac{3}{5}$

2. $\frac{7}{12} \bigcirc \frac{1}{2}$

3. $\frac{1}{4} \bigcirc 0.4$

4. $0.7 \bigcirc \frac{7}{9}$

Show your work.

Order the fractions from least to greatest. (Example 2)

5. $\frac{1}{2}, \frac{2}{3}, \frac{1}{4}, \frac{5}{6}$

6. $\frac{2}{3}, \frac{2}{9}, \frac{5}{6}, \frac{11}{18}$

7. Darius spends 35% of his time doing math homework. Alex spends $\frac{2}{5}$ of his time doing math homework. Who spends more homework time on math? Explain. (Example 4)

8. Three snack bars contain $\frac{1}{5}$, 0.22, and 19% of their Calories from fat. Which snack bar contains the least amount of Calories from fat? (Example 5)

9. **PS Model with Mathematics** Use the graphic novel frame below for Exercises a–b.

| | |
|----------|------------------------|
| Daniella | $\frac{1}{5}$ of shots |
| Dwayne | 25% |
| Angel | 4 out of 20 |

How can I compare these scores?

a. Write each score as a decimal. _____

b. Compare the three scores. _____