

Warm Up Problem of the Day Lesson Presentation

Course 2

Warm Up Write each mixed number as an improper fraction.

1. $1\frac{3}{4}$ $\frac{7}{4}$ **2.** $2\frac{7}{8}$ $\frac{23}{8}$ **3.** $1\frac{5}{6}$ $\frac{11}{6}$ **4.** $8\frac{1}{12}$ $\frac{97}{12}$

Problem of the Day

Hot dogs are sold in packs of 6. Buns are sold in bags of 8. What is the least number of hot dog packages and the least number of bun packages you would need to buy in order to have the same number of hot dogs and buns?

4 packages of hot dogs and 3 packages of buns



Learn to compare and order fractions and decimals.

Vocabulary

rational number

Which is greater,
$$\frac{7}{9}$$
 or $\frac{2}{9}$?

When two fractions have the same denominator, just compare the numerators.

$$\frac{7}{9} > \frac{2}{9}$$
 because 7 > 2.



Additional Example 1A: Comparing Fractions

Compare the fractions. Write < or >.

 $\frac{7}{9}$ $\frac{5}{8}$

The LCM of the denominators 9 and 8 is 72.

$$\frac{7}{9} = \frac{7 \cdot 8}{9 \cdot 8} = \frac{56}{72}$$
$$\frac{5}{8} = \frac{5 \cdot 9}{8 \cdot 9} = \frac{45}{72}$$
$$\frac{56}{72} > \frac{45}{72}, \text{ and so } \frac{7}{9} > \frac{5}{8}.$$

Write equivalent fractions with 72 as the denominator.

Compare the numerators.

Additional Example 1B: Comparing Fractions

Compare the fractions. Write < or >.

$$-\frac{2}{5}$$
 $-\frac{3}{7}$

Both fractions can be written with a denominator of 35.

$$-\frac{2}{5} = \frac{-2 \cdot 7}{5 \cdot 7} = \frac{-14}{35}$$
 Write equivalent fractions
with 35 as the denominator.
$$-\frac{3}{7} = \frac{-3 \cdot 5}{7 \cdot 5} = \frac{-15}{35}$$
 Put the negative signs
in the numerators.

$$-\frac{14}{35} > -\frac{15}{35}$$
, and so $-\frac{2}{5} > -\frac{3}{7}$.



Check It Out: Example 1A

Compare the fractions. Write < or >.

 $\frac{5}{6}$ $\frac{7}{8}$

The LCM of the denominators 6 and 8 is 48.

$$\frac{5}{6} = \frac{5 \cdot 8}{6 \cdot 8} = \frac{40}{48}$$

$$\frac{7}{8} = \frac{7 \cdot 6}{8 \cdot 6} = \frac{42}{48}$$

$$\frac{40}{48} < \frac{42}{48}$$
, and so $\frac{5}{6} < \frac{7}{8}$.
Write equivalent fractions with 48 as the denominator.
Compare the numerators.



Check It Out: Example 1B

Compare the fractions. Write < or >.

$$-\frac{6}{8}$$
 $-\frac{5}{7}$

Both fractions can be written with a denominator of 56.

$$-\frac{6}{8} = \frac{-6 \cdot 7}{8 \cdot 7} = \frac{-42}{56}$$
 Write equivalent fractions
with common denominators.
$$-\frac{5}{7} = \frac{-5 \cdot 8}{7 \cdot 8} = \frac{-40}{56}$$
 Put the negative signs
in the numerators.

$$-\frac{42}{56} < -\frac{40}{56}$$
, and so $-\frac{6}{8} < -\frac{5}{7}$.

To compare decimals, line up the decimal points and compare digits from left to right until you find the place where the digits are different.

Additional Example 2A: Comparing Decimals

Compare the decimals. Write < or >.

0.427 0.425

0.427 0.425 Line up the decimal points. The tenths and hundredths are the same. Compare the thousandths: 7 > 5.

Since 0.007 > 0.005, 0.427 > 0.425.

Additional Example 2B: Comparing Decimals

Compare the decimals. Write < or >.

 $\begin{array}{ll} 0.7\overline{3} = 0.733... & Line up the decimal points. \\ & \uparrow & The tenths and hundredths are \\ & the same. \\ & 0.734 & Compare the thousandths: \\ & 3 < 4. \end{array}$

Since 0.003 is < 0.004, $0.7\overline{3}$ < 0.734.



Check It Out: Example 2A

Compare the decimals. Write < or >.



Since 0.005 < 0.008, 0.535 < 0.538.



Check It Out: Example 2B

Compare the decimals. Write < or >.

0.3 0.334

 $0.\overline{3} = 0.3333...$ $0.\overline{3}$ is a repeating decimal. 0.334 Line up the decimal points. The tenths and hundredths are the same. Compare the thousandths: 3 < 4.

Since 0.003 is < 0.004, $0.\overline{3}$ < 0.334.

A rational number is a number that can be written as a fraction with integers for its numerator and denominator. When rational numbers are written in a variety of forms, you can compare the numbers by writing them all in the same form.

Remember!

The values on a number line increase as you move from left to right.

Course 2

Additional Example 3: Ordering Fractions and Decimals

Order $\frac{4}{5}$, 0.93, and 0.9 from least to greatest.

Write as decimals with the same number of places.

 $\frac{4}{5} = 0.80$ 0.93 = 0.93 0.9 = 0.90

Graph the numbers on a number line.



0.80 < 0.90 < 0.93 *Compare the decimals in order.*

From least to greatest, the numbers are $\frac{4}{5}$, 0.9, 0.93.

Check It Out: Example 3

Order $\frac{3}{5}$, 0.84, and 0.7 from least to greatest.

Write as decimals with the same number of places.

$$\frac{3}{5} = 0.60$$
 $0.84 = 0.84$ $0.7 = 0.70$

Graph the numbers on a number line.



0.60 < 0.70 < 0.84 *Compare the decimals in order.*

From least to greatest, the numbers are $\frac{3}{5}$, 0.7, 0.84.

Lesson Quiz

- **Compare the fractions. Write > or <.**
- **1.** $\frac{3}{7}$ and $\frac{4}{10}$ > **2.** $\frac{5}{8}$ and $\frac{2}{3}$ <
- **Compare the decimals. Write < or >.**
- **3.** 0.32 and 0.312 >
- 4. Order $\frac{5}{6}$, 0.8, 0.826 from least to greatest. 0.8, 0.826, $\frac{5}{6}$