4–6 Comparing and Ordering Fractions

Main Idea

- Compare and order fractions.

Build Your Vocabulary (pages 86–87)

The **least common denominator (LCD)** of two _____ is the _____ of the denominators.

Key Concept

Compare Two Fractions
To compare two fractions,

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

Examples **Compare Fractions and Mixed Numbers**

Replace each ● with <, >, or = to make a true sentence.

1 $\frac{8}{21}$ ● $\frac{3}{7}$

Step 1 Find the LCD; that is, the LCM of the denominators.

multiples of 7:

_____

multiples of 21:

_____

The LCM of 21 and 7 is _____. So, the LCD is _____.

Step 2 Write an equivalent fraction with a denominator of _____ for each fraction.

$\frac{3}{7} = \frac{\square}{\square}$ (×3 above, ×3 below)

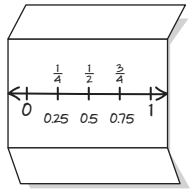
$\frac{8}{\square} = \frac{\square}{\square}$ (×1 above, ×1 below)

Step 3 $\frac{8}{21}$ _____ $\frac{9}{21}$ since $8 < 9$. So, $\frac{8}{21}$ _____ $\frac{3}{7}$.

FOLDABLES

ORGANIZE IT

Summarize ways you can order fractions under the fractions tab of your Foldable. Include some examples.



2 $2\frac{1}{3} \bullet 2\frac{2}{6}$

Since the whole numbers are the same, compare $\frac{1}{3}$ and $\frac{2}{6}$.

Step 1 The LCM of the denominators, 3 and 6, is 6. So, the LCD is ____.

Step 2 Write an equivalent fraction with a denominator of 6 for each fraction.

$\frac{1}{3} = \frac{\square}{6}$ (×2 above, ×2 below) $\qquad \frac{2}{6} = \frac{\square}{6}$ (×1 above, ×1 below)

Step 3 $\frac{2}{6}$ ____ $\frac{2}{6}$, since $2 = 2$. So, $2\frac{1}{3}$ ____ $2\frac{2}{6}$.

Check Your Progress **Replace each ● with <, >, or = to make a true sentence.**

a. $\frac{13}{18} \bullet \frac{5}{6}$

b. $4\frac{3}{4} \bullet 4\frac{2}{5}$

EXAMPLE **Order Fractions**

3 **Order the fractions $\frac{2}{3}$, $\frac{4}{5}$, $\frac{8}{15}$, and $\frac{3}{5}$ from least to greatest.**

The LCD of the fractions is ____. So, rewrite each fraction with a denominator of ____.

$\frac{2}{3} = \frac{\square}{15}$ (×5) $\qquad \frac{4}{5} = \frac{\square}{15}$ (×3) $\qquad \frac{8}{15} = \frac{\square}{15}$ (×1) $\qquad \frac{3}{5} = \frac{\square}{15}$ (×3)

Since $\frac{8}{15} < \frac{9}{15} < \frac{10}{15} < \frac{12}{15}$, the order of the original fractions from least to greatest is ____.

Check Your Progress Order the fractions $\frac{5}{6}$, $\frac{2}{3}$, $\frac{3}{4}$, and $\frac{11}{12}$ from least to greatest.

EXAMPLE

4 **TEST EXAMPLE** **According to the table, how is most land in the United States used?**

A as arable land

B as permanent pastures

C as forests and woodlands

D B and C are equal

Land Use in the United States	
arable (cropland)	$\frac{19}{100}$
permanent pastures	$\frac{1}{4}$
forests and woodland	$\frac{3}{10}$
other	$\frac{13}{50}$

Source: *CIA World Fact Book*

Read the Item You need to compare the fractions.

Solve the Item Rewrite the fractions with the LCD, 100.

$\frac{19}{100} = \frac{\square}{100}$ ($\times 1$ above, $\times 1$ below)

$\frac{1}{4} = \frac{\square}{100}$ ($\times 25$ above, $\times 25$ below)

$\frac{3}{10} = \frac{\square}{100}$ ($\times 10$ above, $\times 10$ below)

$\frac{13}{50} = \frac{\square}{100}$ ($\times 2$ above, $\times 2$ below)

So, $\square$ is the greatest fraction, and the answer is $\square$.

Check Your Progress

MULTIPLE CHOICE According to the survey data, what did most people say should be done with the length of the school year?

F lengthen the school year

G shorten the school year

H keep the length the same

J cannot tell from the data

How long should the school year be?	
lengthen the school year	$\frac{9}{25}$
shorten the school year	$\frac{7}{20}$
keep the length the same	$\frac{29}{100}$

HOMEWORK ASSIGNMENT

Page(s):

Exercises: