## 4-6 Comparing and Ordering Fractions - Practice and Problem Solving

Replace each • with $<,>$, or $=$ to make a true statement.
7. $\frac{1}{3} \bullet \frac{3}{5}$

The LCD is 15 .
$\frac{1}{3}=\frac{5}{15}, \frac{3^{x}}{5}=\frac{9}{15}$
Since $5<9, \frac{5}{15}<\frac{9}{15}$ so $\frac{1}{3}<\frac{3}{5}$.
9. $5 \frac{6}{9} \cdot 5 \frac{2}{3}$

The whole numbers are the same, so compare $\frac{6}{9}$ and $\frac{2}{3}$
The LCD is 9 .
$\frac{2}{3}=\frac{6}{9}$
So, $5 \frac{6}{9}=5 \frac{2}{3}$.
11. $\frac{7}{12} \cdot \frac{1}{2}$

The LCD is 12 .


Since $7>6, \frac{7}{12}>\frac{6}{12}$ so $\frac{7}{12}>\frac{1}{2}$.
13. $2 \frac{4}{5} \cdot 2 \frac{13}{15}$

The whole numbers are the same, so compare $\frac{4}{5}$ and $\frac{13}{15}$.
The LCD is 15 .
$\frac{4}{5}=\frac{12}{15}$
Since $12<13, \frac{12}{15}<\frac{13}{15}$ so $\frac{4}{5}<\frac{13}{15}$.
So, $2 \frac{4}{5}<2 \frac{13}{15}$.
15. MEASUREMENT Which is shorter, $\frac{5}{8}$ of a foot or $\frac{3}{4}$ of a foot?

The LCD is 8 .

$$
\frac{3}{4}=\frac{6}{8}
$$

Since $5<6, \frac{5}{8}<\frac{6}{8}$ so $\frac{5}{8}<\frac{3}{4}$.
$\frac{5}{8}$ of a foot is shorter.

## Order the fractions from least to greatest.

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

The LCD is 12 .
$\frac{1}{2}=\frac{6}{12}, \frac{2}{3}_{x_{x 4}}^{\times 4}=\frac{8}{12}, \frac{1}{4}=\frac{3}{x^{x 3}}, \frac{5}{6}=\frac{10}{12}$
The order of the fractions from least to greatest is $\frac{1}{4}, \frac{1}{2}, \frac{2}{3}, \frac{5}{6}$.
19. $9 \frac{1}{6}, 9 \frac{2}{5}, 9 \frac{3}{7}, 9 \frac{3}{5}$

The whole numbers are the same, so compare and order $\frac{1}{6}, \frac{2}{5}, \frac{3}{7}$, and $\frac{3}{5}$.
The LCD is 210 .
$\frac{1}{6}=\frac{35}{210}, \frac{2}{5}=\frac{84}{210} \cdot \frac{3}{7}=\frac{90}{210} \cdot \frac{3}{5}=\frac{126}{210}$
The order of fractions from least to greatest is
$\frac{1}{6}, \frac{2}{5}, \frac{3}{7}, \frac{3}{5}$.
So, the order of the mixed numbers from least to greatest is $9 \frac{1}{6}, 9 \frac{2}{5}, 9 \frac{3}{7}$, and $9 \frac{3}{5}$.
21. INSECTS Ling collected four small insects for his science class. The insects measured $\frac{3}{8}$ inch, $\frac{5}{16}$ inch, $\frac{3}{4}$ inch, and $\frac{1}{2}$ inch. What insect is the longest?

The LCD is 16 .
$\frac{3}{8}=\frac{6}{16}, \frac{5}{16}, \frac{3}{4}=\frac{12}{16}, \frac{1}{2}=\frac{8}{16}$,
Since $12>8>6>5, \frac{12}{16}>\frac{8}{16}>\frac{6}{16}>\frac{5}{16}$. So, the longest insect is $\frac{3}{4}$ inch.
Replace each • with $<,>$, or $=$ to make a true statement.
23. $\frac{3}{5} \bullet \frac{3}{20}$

The LCD is 20 .
$\frac{3}{5}=\frac{12}{20}$
Since $12>3, \frac{12}{20}>\frac{3}{20}$ so $\frac{3}{5}>\frac{3}{20}$.
25. $\frac{15}{24} \bullet 1 \frac{5}{8}$

Since $\frac{15}{24}$ is less than 1 , there is no need to compare the fractions using the LCD.
So, $\frac{15}{24}<1 \frac{5}{8}$.

Name: School: Grade: Class:
27. ANALYZE TABLES The world's five largest deserts are shown in the table. Order the areas from least to greatest.

| Desert | Area (millions of square miles) |
| :--- | :---: |
| Sahara | $\frac{7}{2}$ |
| Kalahari | $\frac{2}{10}$ |
| Gobi | $\frac{2}{5}$ |
| Australian | $1 \frac{4}{10}$ |
| Arabian | $\frac{1}{2}$ |

Source: Scholastic Book of World Records 2005
First, write $\frac{7}{2}$ as a mixed number.
$3 \frac{1}{2}$
2 $\longdiv { 7 }$
-6
1
The greatest area is $3 \frac{1}{2}$ or $\frac{7}{2}$. Next, is $1 \frac{4}{10}$.
Compare the remaining three fractions.
The LCD is 20 .
$\frac{2}{10}=\frac{4}{20}$
$\stackrel{\overbrace{2}^{2}}{\frac{8}{5}=\frac{8}{20}}$
$\frac{1}{2}=\frac{10}{20}$
$\times 10$
The order of the remaining fractions from least to greatest are $\frac{2}{10}, \frac{2}{5}$, and $\frac{1}{2}$.
So, the area of the deserts from least to greatest are $\frac{2}{10}, \frac{2}{5}, \frac{1}{2}, 1 \frac{4}{10}$, and $\frac{7}{2}$.
29. FIND THE DATA Refer to the Data File on pages 16-19. Choose some data and write a real-world problem in which you would compare two fractions.

See students' work.
31. CHALLENGE Order $\frac{3}{8}, \frac{3}{7}$, and $\frac{3}{9}$ from least to greatest without writing equivalent fractions with a common denominator. Explain your strategy.
$\frac{3}{9}, \frac{3}{8}$, and $\frac{3}{7}$; Since the numerators are the same, the larger the denominator, the smaller the fraction.
33. Which statement about the mixed number $2 \frac{3}{4}$ is true?

A $2 \frac{3}{4}>2 \frac{2}{3}$
B $3<2 \frac{3}{4}$
C $2 \frac{3}{4}<2 \frac{2}{3}$
D $2 \frac{1}{4}>2 \frac{3}{4}$
A; $2 \frac{3}{4}>2 \frac{2}{3}$
Since the whole numbers are the same, compare the fractions.
The LCD is 12 .
$\stackrel{3}{4}=\frac{9}{12}$
$\frac{2}{3}=\frac{8}{8}$
Since $9>12, \frac{9}{12}>\frac{8}{12}$. So, $2 \frac{3}{4}>2 \frac{2}{3}$.
35. The table shows the fraction of Internet users that have done each activity online.

| Activity | Fraction of <br> Internet Users |
| :--- | :---: |
| Search for information | $\frac{9}{10}$ |
| Check the weather | $\frac{19}{25}$ |
| Download music | $\frac{1}{4}$ |
| Write or read a blog | $\frac{9}{25}$ |
| Source: Pew Internet and American Life Project |  |

Which activity was reported most often?
A downloading music
B checking the weather
C searching for information
D writing or reading a blog
C; The LCD is 100 .
Searching for information: $\frac{9}{10}=\frac{90}{100}$
Check the weather: $\frac{19}{25}=\frac{76}{100}$
Download music: $\frac{1}{4}=\frac{25}{100}$
Writing or read or blog: $\frac{9}{25}=\frac{36}{100}$
Since $25>36>76>90$, Searching for information was the activity done most often.
37.

Express $5 \frac{3}{8}$ as an improper fraction.
$5 \times 8=40+3=43$
43
8
PREREQUISITE SKILL Write each decimal in standard form.
39. seven tenths
seven-tenths $=0.7$
41. eighty-nine hundredths
eighty-nine hundredths $=0.89$

