LESSON 4

Compare and Order Fractions and Mixed Numbers

Quick Review

Find the LCM for each set of numbers.

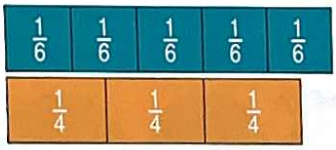
1. 3, 4
2. 2, 4
3. 2, 3, 6
4. 2, 3, 5
5. 6, 8

Learn

WET PAINT! Joe and Ricardo are painting the walls of their clubhouse. By noon Joe had painted $\frac{5}{6}$ of his wall and Ricardo had painted $\frac{3}{4}$ of his wall. Who had painted more of his wall?

Example 1

One Way You can use fraction bars to compare.



$\frac{5}{6} > \frac{3}{4}$

So, Joe had painted more of his wall.

Remember

To compare fractions with like denominators, compare the numerators.

Since $3 > 1$, $\frac{3}{4} > \frac{1}{4}$.

Example 2

Another Way You can rename fractions with unlike denominators, such as $\frac{5}{6}$ and $\frac{3}{4}$, so they have like denominators for easy comparison.

STEP 1

Find the least common multiple, or LCM, of the denominators.

6: 6, 12, 18, 24
4: 4, 8, 12, 16

So, the LCM is 12.

STEP 2

Rename as equivalent fractions with denominators of 12.

$\frac{5 \times 2}{6 \times 2} = \frac{10}{12}$

$\frac{3 \times 3}{4 \times 3} = \frac{9}{12}$

STEP 3

Compare the numerators of the new fractions.

Since $10 > 9$, $\frac{10}{12} > \frac{9}{12}$.

So, $\frac{5}{6} > \frac{3}{4}$.

- Explain how to compare $1\frac{4}{5}$ and $1\frac{2}{3}$.

Order Fractions

By noon Mr. Banak had painted $\frac{5}{8}$ of his wall. Order the fractions $\frac{5}{6}$, $\frac{3}{4}$, and $\frac{5}{8}$ from least to greatest to find who painted the least amount.

When you have three or more fractions to order, rename the fractions so they have like denominators. Then put them in order.

Example 1

STEP 1

Find the LCM of 6, 4, and 8.

6: 6, 12, 18, 24, 30, 36

4: 4, 8, 12, 16, 20, 24, 28

8: 8, 16, 24, 32, 40, 48

The LCM is 24.

STEP 2

Rename as equivalent fractions with denominators of 24.

$\frac{5 \times 4}{6 \times 4} = \frac{20}{24}$

$\frac{3 \times 6}{4 \times 6} = \frac{18}{24}$

$\frac{5 \times 3}{8 \times 3} = \frac{15}{24}$

STEP 3

Compare the numerators. Put them in order from least to greatest.

Since $15 < 18 < 20$,

$\frac{15}{24} < \frac{18}{24} < \frac{20}{24}$.

So, the order is $\frac{5}{8}$, $\frac{3}{4}$, and $\frac{5}{6}$.

So, Mr. Banak painted the least amount.

- Order the fractions above from greatest to least.

To order mixed numbers, compare the whole numbers. Then, compare the fractions.

Example 2

Order $3\frac{2}{3}$, $2\frac{7}{9}$, and $3\frac{5}{6}$ from least to greatest.

STEP 1

Compare the whole numbers.

$3\frac{2}{3}$ $2\frac{7}{9}$ $3\frac{5}{6}$

Since $2 < 3$, $2\frac{7}{9}$ is the least.

STEP 2

Compare the other two fractions. Use equivalent fractions.

$3\frac{2}{3} = 3\frac{8}{12}$ $3\frac{5}{6} = 3\frac{10}{12}$

Since $8 < 10$, $3\frac{8}{12} < 3\frac{10}{12}$.

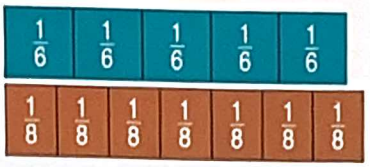
The order is $2\frac{7}{9}$, $3\frac{2}{3}$, and $3\frac{5}{6}$.

Check

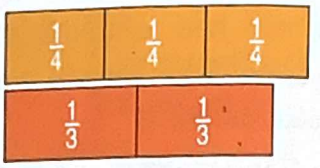
1. Describe a situation in which the LCM of two numbers is one of the numbers.

LESSON CONTINUES

Compare the fractions. Write <, >, or = for each ●.

2. 

$\frac{5}{6}$ ● $\frac{7}{8}$

3. 

$\frac{3}{4}$ ● $\frac{2}{3}$

Write in order from least to greatest.

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

5. $\frac{1}{4}, \frac{5}{6}, \frac{5}{12}$

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

7. $2\frac{1}{5}, 2\frac{1}{2}, 2\frac{3}{10}$

Practice and Problem Solving

Extra Practice, page 332, Set D

Compare. Write <, >, or = for each ●.

8. $\frac{3}{10}$ ● $\frac{1}{4}$

9. $\frac{2}{3}$ ● $\frac{3}{4}$

10. $\frac{4}{9}$ ● $\frac{2}{6}$

11. $\frac{1}{3}$ ● $\frac{3}{8}$

12. $\frac{4}{6}$ ● $\frac{8}{12}$

13. $\frac{7}{8}$ ● $\frac{3}{4}$

14. $3\frac{2}{7}$ ● $3\frac{5}{14}$

15. $6\frac{1}{4}$ ● $6\frac{2}{8}$

Write in order from least to greatest.

16. $\frac{1}{10}, \frac{3}{5}, \frac{1}{2}$

17. $\frac{2}{3}, \frac{3}{4}, \frac{7}{12}$

18. $2\frac{9}{14}, 3\frac{2}{4}, 2\frac{5}{7}$

19. $4\frac{4}{5}, 4\frac{7}{10}, 4\frac{1}{2}$

20. $\frac{2}{3}, \frac{5}{9}, \frac{1}{2}$

21. $\frac{1}{6}, 2\frac{1}{12}, 1\frac{1}{12}$

22. $5\frac{6}{10}, 5\frac{2}{5}, 5\frac{2}{7}$

23. $1\frac{2}{5}, \frac{3}{5}, 1\frac{1}{2}$

USE DATA For 24–25, use the table.

CLASSROOMS PAINTED	
Day	Fraction of Total
Monday	$\frac{1}{5}$
Tuesday	$\frac{1}{4}$
Wednesday	$\frac{1}{10}$

24. Order the fractions from greatest to least. On which day were the most rooms painted? On which day were the fewest rooms painted?

25. There are 20 classrooms in all, and 9 still need to be painted. What fraction of the total have been painted?

26. How can you compare fractions with *like* numerators and *unlike* denominators, such as $\frac{2}{3}$ and $\frac{2}{5}$, without renaming or using fraction strips?

27. Liza needs music for her gymnastics routine. The selection needs to be less than $3\frac{1}{2}$ min. *Changes* is $3\frac{2}{3}$ min, and *Dreaming* is $3\frac{2}{5}$ min. Which should she choose? Explain.

28. **VOCABULARY POWER** The word *order* comes from the Latin word *ordinem*, meaning "arrangement." List things other than numbers that you can order.