Lesson 103

Construct Meaning

While shopping at the fruit and vegetable stand, Carolyn and her mother found that pineapples cost $1 each. Carolyn selected one pineapple that weighed $\frac{3}{4}$ pound and another that was $\frac{5}{8}$ pound. She thought the pineapple weighing $\frac{3}{4}$ pound was a better buy. Was she correct?

Fractions with unlike denominators may require renaming only one fraction. Is $\frac{3}{4} >, <$ or $= \frac{5}{8}$? Find the **least common denominator (LCD)**.

Find the least common multiple (LCM) of the denominators.

4: 4, 8, 12, 16
8: 8, 12, 16, 24

The LCM of 4 and 8 is the least common denominator (LCD) for fourths and eighths.

Rename $\frac{3}{4}$ using the least common denominator.

$\frac{3 \times 2}{4 \times 2} = \frac{6}{8}$

Compare the fractions using the LCD.

$\frac{6}{8} > \frac{5}{8}$, so $\frac{3}{4} > \frac{5}{8}$

The pineapple weighing $\frac{3}{4}$ pound is the better buy. Why was only one fraction renamed to compare $\frac{3}{4}$ and $\frac{5}{8}$?

When you are working with fractions with unlike denominators, more than one fraction may require renaming. Compare $\frac{2}{3}$ and $\frac{3}{5}$. Find the least common denominator.

Multiples of 3: 3, 6, 9, 12, 15
Multiples of 5: 5, 10, 15

The LCM of 3 and 5 = 15.
15 is the least common denominator.

Rename both fractions, using 15 as the LCD.

$\frac{2}{3} = \frac{\quad}{15}$ $\quad \frac{2 \times 5}{3 \times 5} = \frac{10}{15}$

$\frac{3}{5} = \frac{\quad}{15}$ $\quad \frac{3 \times 3}{5 \times 3} = \frac{9}{15}$

Compare the renamed fractions.

$\frac{10}{15} > \frac{9}{15}$, so $\frac{2}{3} > \frac{3}{5}$

Check Understanding

Is it necessary to rename both fractions with the LCD? Write *yes* or *no*.

a. $\frac{1}{2}$ and $\frac{3}{4}$ **b.** $\frac{1}{3}$ and $\frac{3}{7}$ **c.** $\frac{1}{2}$ and $\frac{1}{9}$ **d.** $\frac{1}{3}$ and $\frac{5}{6}$

e. Rename $1\frac{3}{4}$ and $2\frac{5}{12}$ with the least common denominator.

Practice

Rename the fractions with the least common denominator.

1. $\frac{1}{2}$ and $\frac{1}{3}$
2. $\frac{2}{5}$ and $\frac{3}{10}$
3. $\frac{2}{3}$ and $\frac{3}{4}$
4. $\frac{3}{5}$ and $\frac{5}{8}$
5. $\frac{1}{2}$ and $\frac{1}{9}$
6. $\frac{2}{3}$ and $\frac{1}{8}$
7. $\frac{1}{4}$ and $\frac{3}{5}$
8. $\frac{1}{6}$ and $\frac{5}{9}$

Rename the mixed numbers using the least common denominator.

9. $4\frac{1}{2}$, $1\frac{2}{3}$
10. $10\frac{3}{4}$, $5\frac{5}{8}$
11. $2\frac{2}{3}$, $6\frac{5}{6}$
12. $1\frac{2}{5}$, $2\frac{1}{6}$

Write the fraction pair that requires renaming both fractions with the least common denominator.

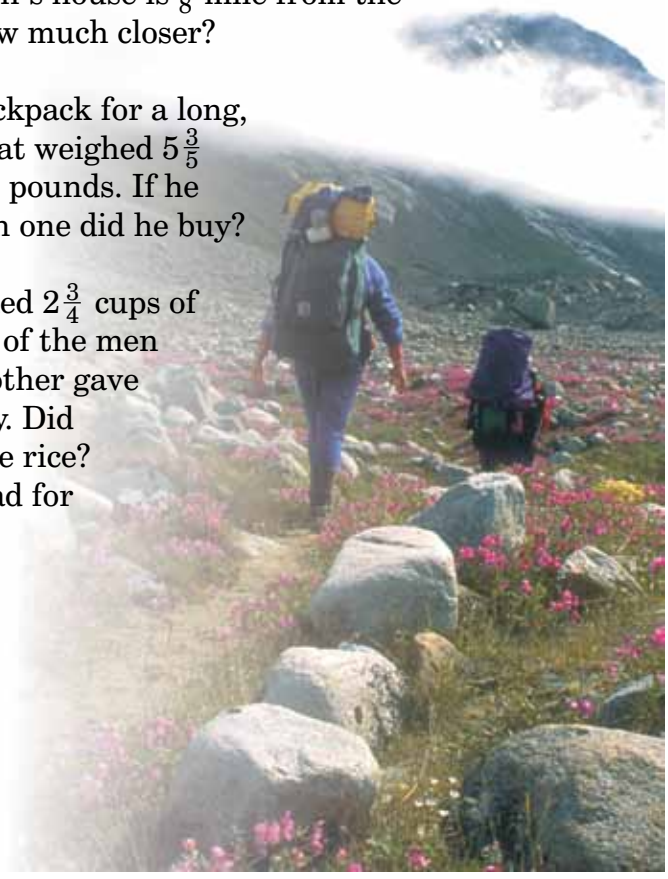
13. $\frac{1}{4}$ and $\frac{1}{12}$ or $\frac{1}{4}$ and $\frac{1}{9}$
14. $\frac{1}{16}$ and $\frac{1}{3}$ or $\frac{1}{5}$ and $\frac{1}{15}$

Apply

15. Betsy lives $\frac{5}{6}$ mile from school, and Ben's house is $\frac{7}{8}$ mile from the school. Who lives closer to school? How much closer?

16. Ben's father wanted to purchase a backpack for a long, difficult hiking trip. He saw a pack that weighed $5\frac{3}{5}$ pounds and another that weighed $5\frac{7}{10}$ pounds. If he purchased the lighter backpack, which one did he buy?

17. On the backpack trip, the hikers needed $2\frac{3}{4}$ cups of water to cook the rice for dinner. One of the men put 2 cups of water in the pot and another gave $\frac{5}{8}$ cup from the last of his water supply. Did they have enough water to prepare the rice? Compare the amount of water they had for the rice with the amount needed.



Math Reasoning

18. Do $\frac{3}{4}$ and $\frac{2}{3}$ have more than one common denominator? Why is it important to use the least common denominator with fractions?