

2-5**Study Guide and Intervention****Adding and Subtracting Like Fractions**

Fractions that have the same denominator are called **like fractions**. To add like fractions, add the numerators of the fractions and write the sum over the denominator.

EXAMPLE 1 Find $\frac{1}{5} + \left(-\frac{4}{5}\right)$. Write in simplest form.

$$\begin{aligned}\frac{1}{5} + \left(-\frac{4}{5}\right) &= \frac{1 + (-4)}{5} && \text{Add the numerators. The denominators are the same.} \\ &= \frac{-3}{5} \text{ or } -\frac{3}{5} && \text{Simplify.}\end{aligned}$$

To subtract like fractions, subtract the numerators of the fractions and write the sum over the denominator.

EXAMPLE 2 Find $-\frac{4}{9} - \frac{7}{9}$. Write in simplest form.

$$\begin{aligned}-\frac{4}{9} - \frac{7}{9} &= \frac{-4 - 7}{9} && \text{Subtract the numerators. The denominators are the same.} \\ &= \frac{-11}{9} \text{ or } -1\frac{2}{9} && \text{Rename } \frac{-11}{9} \text{ as } -1\frac{2}{9}.\end{aligned}$$

To add or subtract mixed numbers, first write the mixed numbers as improper fractions. Then add or subtract the improper fractions and simplify the result.

EXAMPLE 3 Find $2\frac{3}{7} + 6\frac{5}{7}$. Write in simplest form.

$$\begin{aligned}2\frac{3}{7} + 6\frac{5}{7} &= \frac{17}{7} + \frac{47}{7} && \text{Write the mixed numbers as improper fractions.} \\ &= \frac{17 + 47}{7} && \text{Add the numerators. The denominators are the same.} \\ &= \frac{64}{7} \text{ or } 9\frac{1}{7} && \text{Rewrite } \frac{64}{7} \text{ as } 9\frac{1}{7}.\end{aligned}$$

EXERCISES

Add or subtract. Write in simplest form.

1. $\frac{4}{7} + \frac{2}{7}$

2. $\frac{1}{10} + \frac{5}{10}$

3. $\frac{5}{9} + -\frac{1}{9}$

4. $\frac{1}{6} + -\frac{5}{6}$

5. $-\frac{3}{8} + \frac{7}{8}$

6. $\frac{5}{11} - \left(-\frac{4}{11}\right)$

7. $-\frac{4}{5} - \frac{3}{5}$

8. $-\frac{9}{13} + \left(-\frac{6}{13}\right)$

9. $2\frac{1}{4} + 1\frac{1}{4}$

10. $3\frac{5}{7} + 2\frac{3}{7}$

11. $3\frac{5}{8} - 1\frac{3}{8}$

12. $4\frac{3}{5} - 2\frac{4}{5}$

2-5**Practice: Skills*****Adding and Subtracting Like Fractions***

Add or subtract. Write in simplest form.

1. $\frac{1}{5} + \frac{3}{5}$

2. $\frac{2}{9} + \frac{5}{9}$

3. $\frac{7}{11} + \frac{3}{11}$

4. $-\frac{1}{4} + \frac{3}{4}$

5. $-\frac{4}{9} + \frac{8}{9}$

6. $-\frac{5}{7} + \frac{2}{7}$

7. $\frac{7}{12} + \frac{5}{12}$

8. $\frac{1}{9} + \left(-\frac{4}{9}\right)$

9. $-\frac{5}{7} + \left(-\frac{3}{7}\right)$

10. $-\frac{9}{16} + \left(-\frac{3}{16}\right)$

11. $\frac{5}{8} - \frac{3}{8}$

12. $\frac{13}{19} - \frac{6}{19}$

13. $\frac{2}{7} - \frac{6}{7}$

14. $\frac{4}{15} - \frac{7}{15}$

15. $\frac{1}{9} - \left(-\frac{4}{9}\right)$

16. $\frac{3}{13} - \left(-\frac{11}{13}\right)$

17. $2\frac{3}{7} + 1\frac{2}{7}$

18. $1\frac{4}{15} + 4\frac{8}{15}$

19. $5\frac{6}{7} - 3\frac{2}{7}$

20. $6\frac{7}{12} - 3\frac{1}{12}$

21. $-2\frac{5}{11} - 7\frac{1}{11}$

22. $-4\frac{3}{8} - 2\frac{7}{8}$

23. $5\frac{2}{9} - 2\frac{4}{9}$

24. $8\frac{1}{5} - 4\frac{2}{5}$

2-5**Practice: Word Problems*****Adding and Subtracting Like Fractions***

<p>1. GEOMETRY Find the perimeter of a rectangle with a length of $4\frac{2}{3}$ inches and a width of $3\frac{1}{3}$ inches.</p>	<p>2. PETS Pat wants to find out how much her dog Hunter weighs. Pat steps on the scale and reads her weight as $126\frac{3}{8}$ pounds. The combined weight of Pat and Hunter is $137\frac{7}{8}$ pounds. How much does Hunter weigh?</p>
<p>3. MEASUREMENTS Tate fills a $13\frac{1}{3}$ ounce glass from a $21\frac{2}{3}$ ounce bottle of juice. How much juice is left in the bottle?</p>	<p>4. DECORATING Jeri has two posters. One is $4\frac{7}{10}$ feet wide and the other is $5\frac{1}{10}$ feet wide. Will the two posters fit beside each other on a wall that is 10 feet wide? Explain.</p>
<p>5. AGE Nida is $11\frac{1}{12}$ years old, while her sister Yoki is $8\frac{5}{12}$ years old. What is the sum of the ages of the sisters?</p>	<p>6. GEOMETRY A triangle has sides of $1\frac{1}{8}$ inches, $1\frac{3}{8}$ inches, and $1\frac{5}{8}$ inches. What is the perimeter of the triangle?</p>
<p>7. HUMAN BODY Tom's right foot measures $10\frac{2}{5}$ inches, while Randy's right foot measures $9\frac{4}{5}$ inches. How much longer is Tom's foot than Randy's?</p>	<p>8. COMPUTERS Trey has two data files on his computer that he is going to combine. One file is $1\frac{4}{9}$ megabytes, while the other file is $3\frac{8}{9}$ megabytes. What will be the size of the resulting file?</p>