

LESSON

4

Fraction Operations

Review for Mastery: Solving Fraction Equations: Addition and Subtraction

You can write related facts using addition and subtraction.

$3 + 4 = 7$ $7 - 4 = 3$

You can use related facts to solve equations.

A. $x + 2\frac{1}{2} = 4$

Think: $4 - 2\frac{1}{2} = x$

$x = 4 - 2\frac{1}{2}$

$x = 3\frac{2}{2} - 2\frac{1}{2}$ Regroup 4 as $3\frac{2}{2}$.

$x = 1\frac{1}{2}$

B. $x - 4\frac{1}{3} = 3\frac{1}{2}$

Think: $3\frac{1}{2} + 4\frac{1}{3} = x$

$x = 3\frac{1}{2} + 4\frac{1}{3}$

$x = \frac{7}{2} + \frac{13}{3}$ Write the mixed numbers as improper fractions.

$x = \frac{21}{6} + \frac{26}{6}$ Write the fractions using a common denominator.

$x = \frac{47}{6} = 7\frac{5}{6}$ Write the sum as a mixed number.

Use related facts to solve each equation.

1. $x + 3\frac{1}{3} = 7$

$x = 7 - 3\frac{1}{3}$

$x = 6\frac{3}{3} - 3\frac{1}{3}$

$x = \frac{21}{3} - \frac{10}{3}$

$x = \underline{\hspace{2cm}}$

2. $x - 2\frac{1}{4} = 4\frac{1}{2}$

$x = 4\frac{1}{2} + 2\frac{1}{4}$

$x = \frac{9}{2} + \frac{9}{4}$

$x = \frac{18}{4} + \frac{9}{4}$

$x = \underline{\hspace{2cm}}$

3. $x + \frac{3}{8} = 5\frac{1}{4}$

$x = 5\frac{1}{4} - \frac{3}{8}$

$x = \frac{21}{4} - \frac{3}{8}$

$x = \frac{42}{8} - \frac{3}{8}$

$x = \underline{\hspace{2cm}}$

4. $x - \frac{5}{12} = 2\frac{1}{2}$

$x = 2\frac{1}{2} + \frac{5}{12}$

$x = \frac{5}{2} + \frac{5}{12}$

$x = \frac{30}{12} + \frac{5}{12}$

$x = \underline{\hspace{2cm}}$

5. $x - 1\frac{3}{4} = 7\frac{1}{2}$

$\underline{\hspace{2cm}}$

6. $x - 3\frac{2}{3} = 1\frac{1}{3}$

$\underline{\hspace{2cm}}$

7. $x + 3\frac{1}{2} = 6\frac{1}{4}$

$\underline{\hspace{2cm}}$

8. $x - 2\frac{2}{5} = 1\frac{3}{10}$

$\underline{\hspace{2cm}}$

9. $f = \frac{4}{9}$

10. $b = \frac{7}{8}$

7. $x = 2\frac{3}{4}$

8. $x = 3\frac{7}{10}$

11. $t = 2\frac{1}{10}$

12. $w = 2\frac{1}{12}$

Challenge

1. $2 \cdot \frac{7}{9} = \frac{14}{9} = 1\frac{5}{9}$

13. $c = 18\frac{1}{2}$

14. $h = 1\frac{5}{6}$

$1\frac{5}{9} + 12 = 13\frac{5}{9}$

15. $g = 4\frac{5}{6}$

16. $6\frac{1}{2}$ minutes

$13\frac{5}{9} \div 2 = \frac{122}{18} = 6\frac{14}{18} = 6\frac{7}{9}$

17. $3\frac{5}{6}$ gallons

$6\frac{7}{9} - \frac{7}{9} = 6$

Practice B

1. $x = 4\frac{13}{16}$

2. $z = 4\frac{5}{8}$

2. $2 \cdot 3\frac{1}{4} = \frac{26}{4} = 6\frac{2}{4} = 6\frac{1}{2}$

3. $n = 8\frac{2}{7}$

4. $a = 3\frac{5}{22}$

$6\frac{1}{2} + 12 = 18\frac{1}{2}$

5. $k = \frac{7}{12}$

6. $r = \frac{9}{10}$

$18\frac{1}{2} \div 2 = \frac{37}{4} = 9\frac{1}{4}$

7. $q = 13\frac{19}{35}$

8. $p = 1\frac{3}{5}$

$9\frac{1}{4} - 3\frac{1}{4} = 6$

9. $c = 5\frac{3}{8}$

10. $c = 1\frac{1}{4}$

Problem Solving

11. $14\frac{2}{3}$ inches

12. $2\frac{5}{8}$ miles

1. $\frac{3}{4}$ of an hour

2. $1\frac{3}{4}$ inches

3. $\frac{1}{3}$ mile more

4. $\frac{2}{3}$ minute

5. A

6. G

7. A

8. G

Practice C

1. $p = 1\frac{1}{15}$

2. $d = 20\frac{19}{20}$

Reading Strategies

3. $x = 15\frac{13}{24}$

4. $a = 5\frac{23}{44}$

1. Subtract $2\frac{1}{3}$ from both sides of the equation.

5. $f = 18\frac{11}{50}$

6. $c = 3\frac{19}{24}$

2. To get m by itself.

7. $r = 5\frac{1}{10}$

8. $s = 7\frac{1}{10}$

3. Regroup 5 as $4\frac{3}{3}$.

9. $3\frac{1}{24}$ feet

10. $8\frac{1}{4}$ inches

4. Add $3\frac{2}{3}$ to both sides of the equation.**Review for Mastery**

1. $3\frac{2}{3}$

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

5. Add fractions and whole numbers.

3. $4\frac{7}{8}$

4. $2\frac{11}{12}$

6. Possible answer: Get the variable on one side of the equation, rename if needed, add or subtract fractions, and add or subtract whole numbers.

5. $x = 9\frac{1}{4}$

6. $x = 5$