

## **Adding Integers**

Find each sum.

1.  $-7 + (-5)$

2.  $10 + 9$

3.  $-12 + (-5)$

4.  $-13 + (-3)$

5.  $-10 + 12$

6.  $-7 + 8$

7.  $-11 + (-6)$

8.  $0 + (-21)$

9.  $72 + (-10)$

10.  $72 + 10$

11.  $-13 + (-11)$

12.  $-52 + 52$

13.  $-6 + (-12)$

14.  $14 + (-8)$

15.  $-17 + (-2)$

16.  $50 + (-8)$

17.  $-22 + 4$

18.  $14 + 8$

19.  $-21 + (-9)$

20.  $15 + (-5)$

21.  $9 + 10$

22.  $-12 + (-15)$

23.  $-13 + 6$

24.  $-1 + (-18)$

25.  $0 + 31$

26.  $-45 + (-15)$

27.  $-6 + 20$

28.  $24 + (-11)$

29.  $7 + (-14)$

30.  $-34 + (-10)$

31.  $-8 + (-25)$

32.  $-31 + 25$

33.  $6 + 5 + (-4)$

34.  $-4 + (-5) + 6$

35.  $-3 + 8 + (-9)$

36.  $-6 + (-2) + (-1)$

37.  $10 + (-5) + 6$

38.  $-8 + 8 + (-10)$

39.  $0 + (-8) + 22$

40.  $-31 + 19 + (-15)$

41.  $32 + (-4) + (-9)$

## Subtracting Integers

Find each difference.

1.  $-2 - (-8)$

2.  $4 - (-11)$

3.  $-7 - 6$

4.  $15 - 2$

5.  $-7 - (-1)$

6.  $1 - 9$

7.  $-5 - (-3)$

8.  $6 - (-5)$

9.  $-4 - (-10)$

10.  $4 - 6$

11.  $0 - (-15)$

12.  $-16 - (-10)$

13.  $0 - 16$

14.  $11 - (-9)$

15.  $-9 - 1$

16.  $-1 - (-8)$

17.  $1 - (-2)$

18.  $-2 - (-19)$

19.  $13 - 17$

20.  $20 - (-15)$

21.  $-10 - (-21)$

22.  $4 - 22$

23.  $-8 - 16$

24.  $12 - (-9)$

Evaluate each expression if  $a = -9$ ,  $b = 4$ , and  $c = -5$ .

25.  $a - 8$

26.  $10 - c$

27.  $11 - b$

28.  $15 - a$

29.  $-8 - b$

30.  $c - 1$

31.  $-32 - a$

32.  $b - 25$

33.  $c - (-14)$

34.  $-33 - a$

35.  $14 - c$

36.  $b - c$

37.  $a - c$

38.  $b - a$

39.  $c - b$

40.  $c - a$

41.  $a - b$

42.  $a + b - c$

43.  $b + 15 + a$

44.  $a - (-b) + c$

## Multiplying Integers

Find each product.

1.  $-2(8)$

2.  $-4(-4)$

3.  $6(-2)$

4.  $-7(-3)$

5.  $12(1)$

6.  $0(-2)$

7.  $-11(5)$

8.  $-9(-3)$

9.  $-13(0)$

10.  $-1(-1)$

11.  $-1(1)$

12.  $1(-1)$

13.  $-5(20)$

14.  $16(-2)$

15.  $18(-3)$

16.  $-5(-5)$

17.  $8(6)(-2)$

18.  $-1(50)(-1)$

19.  $6(0)(-2)$

20.  $(-3)(-2)(-1)$

21.  $-4(5)(-3)$

22.  $10(-3)(2)$

23.  $-9(8)(1)$

24.  $-1(-1)(-1)$

ALGEBRA Simplify each expression.

25.  $-2 \cdot 3x$

26.  $-4 \cdot 5y$

27.  $9 \cdot (-2z)$

28.  $-5 \cdot (-6a)$

29.  $8t \cdot (-3)$

30.  $2n \cdot (-1)$

31.  $-5 \cdot 2w$

32.  $8c \cdot (-2)$

33.  $-3c \cdot (-5d)$

34.  $4r \cdot 7s$

35.  $-3x \cdot (-z)$

36.  $-4ab \cdot (-6)$

37.  $(-3)(4)(-x)$

38.  $-3(5)(-y)$

39.  $(-6)(-2)(8r)$

40.  $-5(0)(-xy)$

ALGEBRA Evaluate each expression if  $x = -5$  and  $y = -6$ .

41.  $3y$

42.  $-8x$

43.  $-4y$

44.  $12x$

45.  $xy$

46.  $-xy$

47.  $-6xy$

48.  $4xy$

## ***Dividing integers***

**Find each quotient.**

1.  $16 \div 4$

2.  $-27 \div 3$

3.  $25 \div (-5)$

4.  $63 \div (-9)$

5.  $-15 \div (-3)$

6.  $14 \div (-7)$

7.  $-124 \div 4$

8.  $60 \div 15$

9.  $28 \div (-4)$

10.  $-56 \div (-8)$

11.  $72 \div 8$

12.  $-21 \div (-7)$

13.  $\frac{-32}{4}$

14.  $\frac{45}{9}$

15.  $\frac{-45}{3}$

16.  $\frac{-25}{-5}$

17.  $\frac{35}{-7}$

18.  $\frac{-63}{-7}$

19.  $\frac{-144}{12}$

20.  $\frac{48}{-6}$

21. What is  $-54$  divided by  $9$ ?

22. Divide  $-27$  by  $-3$ .

23. Divide  $144$  by  $-12$ .

24. What is  $-65$  divided by  $-13$ ?

**Evaluate each expression if  $x = -8$  and  $y = -12$ .**

25.  $x \div 2$

26.  $x \div (-4)$

27.  $36 \div y$

28.  $0 \div y$

29.  $-60 \div y$

30.  $56 \div x$

31.  $8 \div x$

32.  $-108 \div y$

33.  $\frac{x}{-2}$

34.  $\frac{y}{3}$

35.  $\frac{0}{x}$

36.  $\frac{-112}{x}$

37.  $\frac{y}{-6}$

38.  $\frac{x}{4}$

39.  $\frac{-144}{y}$

40.  $\frac{-136}{x}$

**Find the average (mean) of each group of numbers.**

41. 3, 12, 6

42.  $-8, -1, -3$

43.  $-8, 15, 5, 8$

44.  $-3, -10, 2, -4, 0$

45.  $-10, -7, 7, 10$

46. 12, 24, 9, 15, 18, 20, 16, 14

47.  $-4, -11, -6, 1, 8, -12$

# Numbers and Expressions

Use the order of operations to evaluate expressions.

**Step 1** Evaluate the expressions inside grouping symbols.

**Step 2** Multiply and/or divide in order from left to right.

**Step 3** Add and/or subtract in order from left to right.

## Example 1

$$6 \cdot 5 - 10 \div 2$$

$$6 \cdot 5 - 10 \div 2 \quad \text{Multiply 6 and 5.}$$

$$= 30 - 10 \div 2 \quad \text{Divide 10 by 2.}$$

$$= 30 - 5 \quad \text{Subtract 5 from 30.}$$

$$= 25$$

## Example 2

$$4(3 + 6) + 2 \cdot 11$$

$$4(3 + 6) + 2 \cdot 11 \quad \text{Evaluate } (3 + 6).$$

$$= 4(9) + 2 \cdot 11 \quad \text{Multiply 4 and 9, and 2 and 11.}$$

$$= 36 + 22 \quad \text{Add 36 and 22.}$$

$$= 58$$

Translate verbal phrases into numerical expressions.

## Example 3

Write and evaluate a numerical expression for the product of seventeen and three.

Words

the product of seventeen and three

Expression

$$17 \times 3$$

## Exercises

Find the value of each expression.

1.  $6 + 3 \cdot 9$

2.  $7 + 7 \cdot 3$

3.  $14 - 6 + 8$

4.  $26 - 4 + 9$

5.  $10 \div 5 \cdot 3$

6.  $22 \div 11 \cdot 6$

7.  $2(6 + 2) - 4 \cdot 3$

8.  $5(6 + 1) - 3 \cdot 3$

9.  $2[(13 - 4) + 2(2)]$

10.  $4[(10 - 6) + 6(2)]$

11.  $\frac{67 + 13}{34 - 29}$

12.  $6(4 - 2) + 8$

13.  $3[(2 + 7) \div 9] - 3$

14.  $(8 \cdot 7) \div 14 - 1$

15.  $\frac{4(18)}{2(9)}$

16.  $(9 \cdot 8) - (100 \div 5)$

Write a numerical expression for each verbal phrase.

17. eleven less than twenty

18. twenty-five increased by six

19. sixty-four divided by eight

20. the product of seven and twelve

Arithmetic Review 1

Multiplying and Dividing Decimals

21. 
$$\begin{array}{r} 3.7 \\ \times 0.8 \\ \hline \end{array}$$

22. 
$$\begin{array}{r} 0.031 \\ \times 0.8 \\ \hline \end{array}$$

23. 
$$\begin{array}{r} 30.5 \\ \times 0.76 \\ \hline \end{array}$$

24. 
$$\begin{array}{r} 25.12 \\ \times 0.09 \\ \hline \end{array}$$

25. 
$$\begin{array}{r} 3.22 \\ \times 0.0007 \\ \hline \end{array}$$

26. 
$$\begin{array}{r} 1345.62 \\ \times 0.0301 \\ \hline \end{array}$$

27. 
$$\begin{array}{r} 5.17 \\ \times 0.48 \\ \hline \end{array}$$

28. 
$$\begin{array}{r} 0.87 \\ \times 3.5 \\ \hline \end{array}$$

29.  $7.506 \times 0.28$

30.  $2.1101 \times 3.1$

31.  $6 \overline{) 15.12}$

32.  $4 \overline{) 7.28}$

33.  $9 \overline{) 2.511}$

34.  $4.2 \div 15$

35.  $0.46 \div 50$

36.  $10.01 \div 7$

Find the quotients to the nearest hundredth.

37.  $5.8 \overline{) 30.8}$

38.  $4.8 \overline{) 6.75}$

39.  $0.72 \overline{) 0.915}$

40.  $12.4 \div 0.9$

41.  $5.55 \div 0.15$

## Simplifying Algebraic Fractions

Write each fraction in simplest form. If the fraction is already in simplest form, write *simplified*.

1.  $\frac{10}{70}$

2.  $\frac{12}{18}$

3.  $\frac{30}{45}$

4.  $\frac{8}{24}$

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

6.  $\frac{56}{63}$

7.  $\frac{18}{24}$

8.  $\frac{7}{49}$

9.  $\frac{13}{39}$

10.  $\frac{21}{36}$

11.  $\frac{32}{40}$

12.  $\frac{4}{36}$

13.  $\frac{44}{55}$

14.  $\frac{4}{14}$

15.  $\frac{36}{48}$

16.  $\frac{81}{90}$

17.  $\frac{5}{25}$

18.  $\frac{56}{74}$

19.  $\frac{22}{42}$

20.  $\frac{7}{18}$

21.  $\frac{d^3}{d^4}$

22.  $\frac{y}{y^3}$

23.  $\frac{q^3}{q}$

24.  $\frac{s^4}{s^2}$

25.  $\frac{x^2}{y}$

26.  $\frac{9a}{12a}$

27.  $\frac{8t}{16t}$

28.  $\frac{14g}{24g}$

29.  $\frac{35j}{40}$

30.  $\frac{100p}{200p^2}$

31.  $\frac{75n}{100n^3}$

32.  $\frac{6k^5}{21k^2}$

33.  $\frac{3a}{4b}$

34.  $\frac{16b}{24d}$

35.  $\frac{8a}{24a}$

36.  $\frac{5t^3}{35t^2}$

Arithmetic Review 2

Add or subtract.

1.  $\frac{10}{12} - \frac{2}{3}$  \_\_\_\_\_

2.  $\frac{11}{33} - \frac{5}{35}$  \_\_\_\_\_

3.  $12\frac{3}{5} - 3\frac{1}{4}$  \_\_\_\_\_

4.  $7\frac{1}{4} - 3\frac{3}{5}$  \_\_\_\_\_

5.  $9\frac{3}{4} + 7\frac{5}{8} + 5\frac{3}{12}$  \_\_\_\_\_

6.  $5\frac{1}{3} + 2\frac{1}{2} + 3\frac{3}{4}$  \_\_\_\_\_

7.  $\frac{5}{30} + \frac{7}{21}$  \_\_\_\_\_

8.  $\frac{7}{28} + \frac{12}{18}$  \_\_\_\_\_

9.  $60\frac{2}{5} - 32\frac{4}{5}$  \_\_\_\_\_

10.  $12\frac{7}{8} - 4\frac{3}{4}$  \_\_\_\_\_

11.  $12\frac{1}{8} - 5\frac{1}{4}$  \_\_\_\_\_

12.  $7\frac{3}{5} - 5\frac{4}{5}$  \_\_\_\_\_

13.  $\frac{3}{8} - \frac{6}{24}$  \_\_\_\_\_

14.  $\frac{14}{56} - \frac{3}{21}$  \_\_\_\_\_

15.  $\frac{17}{5} - 2$  \_\_\_\_\_

16.  $\frac{81}{4} - 6$  \_\_\_\_\_

17.  $7 + \frac{32}{5}$  \_\_\_\_\_

18.  $27 + \frac{15}{7}$  \_\_\_\_\_

19.  $6\frac{1}{7} + 5\frac{2}{5}$  \_\_\_\_\_

20.  $7\frac{3}{4} + 2\frac{1}{5}$  \_\_\_\_\_

21.  $8\frac{7}{8} - \frac{25}{3}$  \_\_\_\_\_

Multiply or divide. Reduce all fractions.

22.  $\frac{5}{3} \cdot \frac{11}{3}$  \_\_\_\_\_

23.  $\frac{2}{5} \cdot \frac{7}{3}$  \_\_\_\_\_

24.  $\frac{7}{11} \cdot \frac{44}{7}$  \_\_\_\_\_

25.  $\frac{35}{6} \cdot \frac{33}{49}$  \_\_\_\_\_

26.  $\left(2\frac{3}{5}\right) \cdot 3$  \_\_\_\_\_

27.  $\left(1\frac{3}{5}\right) \cdot \left(\frac{10}{3}\right)$  \_\_\_\_\_

28.  $\left(2\frac{3}{8}\right) \cdot \left(\frac{3}{5}\right)$  \_\_\_\_\_

29.  $\left(5\frac{1}{7}\right) \cdot \left(2\frac{3}{4}\right)$  \_\_\_\_\_

30.  $\left(3\frac{5}{8}\right) \cdot \left(2\frac{2}{5}\right)$  \_\_\_\_\_

31.  $\left(\frac{55}{121}\right) \cdot \left(2\frac{17}{5}\right)$  \_\_\_\_\_

32.  $\frac{5}{3} \div \frac{11}{3}$  \_\_\_\_\_

33.  $\frac{2}{5} \div \frac{3}{7}$  \_\_\_\_\_

34.  $\frac{7}{11} \div \frac{3}{11}$  \_\_\_\_\_

35.  $\frac{15}{14} \div \frac{12}{35}$  \_\_\_\_\_

36.  $\left(2\frac{2}{3}\right) \div \left(3\frac{1}{3}\right)$  \_\_\_\_\_

37.  $\left(3\frac{1}{8}\right) \div \left(3\frac{4}{5}\right)$  \_\_\_\_\_

38.  $\left(5\frac{2}{3}\right) \div 4$  \_\_\_\_\_

39.  $3 \div \left(2\frac{1}{8}\right)$  \_\_\_\_\_

40.  $\left(3\frac{3}{5}\right) \div \left(2\frac{1}{3}\right)$  \_\_\_\_\_

41.  $\left(2\frac{3}{5}\right) \div \left(1\frac{1}{3}\right)$  \_\_\_\_\_

42.  $\left(3\frac{3}{5}\right) \div \frac{2}{3}$  \_\_\_\_\_

43.  $\frac{3}{8} \div \left(3\frac{8}{3}\right)$  \_\_\_\_\_



Arithmetic Review 3

Fraction Concepts

Rewrite as a mixed fraction. Reduce.

13.  $\frac{25}{2}$  \_\_\_\_\_ 14.  $\frac{63}{27}$  \_\_\_\_\_ 15.  $\frac{54}{6}$  \_\_\_\_\_ 16.  $\frac{21}{5}$  \_\_\_\_\_

Rewrite as a fraction.

17.  $3\frac{5}{8}$  \_\_\_\_\_ 18.  $2\frac{1}{7}$  \_\_\_\_\_ 19.  $15\frac{3}{11}$  \_\_\_\_\_ 20.  $12\frac{2}{3}$  \_\_\_\_\_

Find the reciprocals for each of the following.

21.  $\frac{3}{4}$  \_\_\_\_\_ 22.  $\frac{12}{2}$  \_\_\_\_\_ 23. 2 \_\_\_\_\_ 24.  $\frac{8}{5}$  \_\_\_\_\_

Find the LCM (least common multiple) for the following pairs.

25. 14, 35 \_\_\_\_\_ 26. 105, 154 \_\_\_\_\_ 27. 28, 42 \_\_\_\_\_ 28. 24, 36 \_\_\_\_\_

Find the GCF (greatest common factor) for the following pairs.

29. 60, 64 \_\_\_\_\_ 30. 105, 42 \_\_\_\_\_ 31. 154, 28 \_\_\_\_\_ 32. 60, 35 \_\_\_\_\_

Write each decimal as a mixed fraction. Reduce all fractions.

33. 0.04 \_\_\_\_\_ 34. 3.28 \_\_\_\_\_ 35. 7.64 \_\_\_\_\_ 36. 30.14 \_\_\_\_\_

37. 0.0002 \_\_\_\_\_ 38. 1.12 \_\_\_\_\_ 39. 3.05 \_\_\_\_\_ 40. 0.77 \_\_\_\_\_

41. 0.66 \_\_\_\_\_ 42. 0.3 \_\_\_\_\_ 43. 0.125 \_\_\_\_\_ 44. 0.375 \_\_\_\_\_

Write each fraction as a decimal.

45.  $\frac{9}{15}$  \_\_\_\_\_ 46.  $\frac{33}{50}$  \_\_\_\_\_ 47.  $5\frac{4}{5}$  \_\_\_\_\_ 48.  $\frac{327}{1000}$  \_\_\_\_\_

49.  $\frac{7}{20}$  \_\_\_\_\_ 50.  $3\frac{5}{8}$  \_\_\_\_\_ 51.  $2\frac{3}{4}$  \_\_\_\_\_ 52.  $\frac{1}{3}$  \_\_\_\_\_