

## 1-1

## Practice

Form K

## Variables and Expressions

Write an algebraic expression for each word phrase.

1. 11 more than  $y$
2. 5 less than  $n$
3. the sum of 15 and  $w$
4. 22 minus  $k$
5. a number  $b$  divided by 8
6.  $q$  multiplied by 2
7. the product of 3.3 and a number  $x$
8. one third of a number  $m$

Write a word phrase for each algebraic expression.

9.  $8 - a$
10.  $v + 9$
11.  $\frac{y}{5} - 10$
12.  $1.9 + n$
13.  $5h + 3k$
14.  $2x + 1$

Write a rule in words and as an algebraic expression to model the relationship.

15. The cost of beverages in a vending machine is shown.

Beverages	Cost
1	\$1.25
2	\$2.50
3	\$3.75

## 1-1

**Practice** (continued)

Form K

## Variables and Expressions

16. Jordan gets paid to mow his neighbor's lawn. For every week that he mows the lawn, he earns \$20. Write a rule as an algebraic expression to model the relationship.

**Write an algebraic expression for each word phrase.**

17. 14 minus the quotient of 25 and  $p$
18. a number  $w$  tripled plus  $t$  quadrupled
19. the product of 13 and  $m$  plus the product of 2.7 and  $n$
20. the product of 2 times  $a$  and 5 times  $b$
21. **Error Analysis** A student writes *the sum of 7 times a number  $n$  plus 5* to describe the expression  $7(n + 5)$ . Explain the error.
22. Sarah is going to pay for an item using gift cards. The clerk tells her that she will need 2 gift cards and an additional \$3 to pay for the item. Write an algebraic expression to model the situation using the variable  $g$  for the amount of the gift cards to pay her total bill,  $t$ .

**1-2****Practice**

Form K

## Order of Operations and Evaluating Expressions

Simplify each expression.

1.  $9^2$

2.  $8^3$

3.  $\left(\frac{7}{8}\right)^2$

4.  $(4 + 3)^2$

5.  $8 + 5(7)$

6.  $\left(\frac{21}{3}\right) - 2(3)$

7.  $11(3) - 3^2$

8.  $\left(\frac{15}{5}\right)^3 - 6(2)^2$

9.  $(3(4))^3$

10.  $3^4 - 2^4 \div 2^2$

Evaluate each expression for  $x = 3$  and  $y = 2$ .

11.  $x + 7$

12.  $8 - y$

13.  $\frac{x^3}{3} - 8$

14.  $5(y)^3 - 6$

15.  $-6(x)^2 + y^3 - 8$

16.  $\left(\frac{x + 1}{y^2}\right)^2$

## 1-2

**Practice** (continued)

Form K

## Order of Operations and Evaluating Expressions

17. George is driving at an average speed of 62 miles per hour. Write an expression that would give his distance traveled for  $h$  hours. Make a table that records his distance for 3, 5.5, 7, and 8.5 hours.

**Simplify each expression.**

18.  $5[(4 + 8) - 3^3]$

19.  $2[(7 - 10)^2 + 5]^2$

20.  $[(32 \div 4)^3 - 500]^3$

21.  $\left(\frac{2(-2)(4)}{12 - 4(2)}\right)^3$

22. The cost to rent a car is \$30 per day. Write an expression for the cost of renting a car for  $d$  days. Make a table to find how much it will cost to rent a car for 3, 5, 7, and 10 days.

**Evaluate each expression for the given values of the variables.**

23.  $2(m + 1) - n^3; m = -2, n = 3$

24.  $-3[(a - 3)^2 + b]^2; a = 4, b = 6$

25.  $-1\left[x^3 - \left(\frac{2y}{4}\right)^2\right]; x = 5, y = -2$

26.  $t[v^2 - (23 - v^2) + 3]; t = -2, v = 2$

27. **Reasoning** Show that the expressions  $3m^2n^2$  and  $5m^3 + 13m^2n$  are equal when  $m = 2$  and  $n = 5$ .

## 1-3

**Practice**

Form K

## Real Numbers and the Number Line

**Simplify each expression.**

1.  $\sqrt{144}$

2.  $\sqrt{25}$

3.  $\sqrt{169}$

4.  $\sqrt{49}$

5.  $\sqrt{256}$

6.  $\sqrt{400}$

7.  $\sqrt{\frac{9}{49}}$

8.  $\sqrt{\frac{196}{144}}$

9.  $\sqrt{0.01}$

10.  $\sqrt{0.49}$

**Estimate the square root. Round to the nearest integer.**

11.  $\sqrt{38}$

12.  $\sqrt{65}$

13.  $\sqrt{99}$

14.  $\sqrt{145.5}$

15.  $\sqrt{23.75}$

16.  $\sqrt{64.36}$

**Find the approximate side length of each square figure to the nearest whole unit.**17. a tabletop with an area  $25 \text{ ft}^2$ 18. a wall that is  $105 \text{ m}^2$

## 1-3

## Practice (continued)

Form K

## Real Numbers and the Number Line

Name the subset(s) of the real numbers to which each number belongs.

19.  $\frac{3}{4}$

20.  $-8$

21.  $2\pi$

22.  $45,368$

23.  $\sqrt{11}$

24.  $-\frac{2}{3}$

Compare the numbers in each exercise using an inequality symbol.

25.  $\sqrt{36}, \sqrt{49}$

26.  $\frac{1}{3}, \sqrt{1.25}$

27.  $\sqrt{100}, -\sqrt{169}$

28.  $\frac{34}{19}, 1.8$

Order the numbers in each exercise from least to greatest.

29.  $2.75, \sqrt{25}, -\sqrt{36}$

30.  $1.25, -\frac{1}{3}, \sqrt{1.25}$

31.  $\frac{3}{5}, -0.6, \sqrt{1}$

32.  $\frac{80}{25}, \sqrt{9}, \frac{30}{9}$

33. Kate, Kevin, and Levi are comparing how fast they can run. Kate was able to run 5 miles in 47.5 minutes. Kevin was able to run 8 miles in 74 minutes. Levi was able to run 4 miles in 32 minutes. Order the friends from the fastest to the slowest.

**1-4****Practice**

Form G

## Properties of Real Numbers

**Name the property that each statement illustrates.**

1.  $12 + 917 = 917 + 12$

2.  $74.5 \cdot 0 = 0$

3.  $35 \cdot x = x \cdot 35$

4.  $3 \cdot (-1 \cdot p) = 3 \cdot (-p)$

5.  $m + 0 = m$

6.  $53.7 \cdot 1 = 53.7$

**Use mental math to simplify each expression.**

7.  $36 + 12 + 4$

8.  $19.2 + 0.6 + 12.4 + 0.8$

9.  $2 \cdot 16 \cdot 10 \cdot 5$

10.  $12 \cdot 18 \cdot 0 \cdot 17$

**Simplify each expression. Justify each step.**

11.  $6 + (8x + 12)$

12.  $5(16p)$

13.  $(2 + 7m) + 5$

14.  $\frac{12st}{4t}$

**Tell whether the expressions in each pair are equivalent.**

15.  $7x$  and  $7x \cdot 1$

16.  $4 + 6 + x$  and  $4 \cdot x \cdot 6$

17.  $(12 - 7) + x$  and  $5x$

18.  $p(4 - 4)$  and  $0$

19.  $\frac{24xy}{2x}$  and  $12y$

20.  $\frac{27m}{(3 + 9 - 12)}$  and  $27m$

**21. You have prepared 42 mL of distilled water, 18 mL of vinegar and 47 mL of salt water for an experiment.**

- How many milliliters of solution will you have if you first pour the distilled water, then the salt water, and finally the vinegar into your beaker?
- How many milliliters of solution will you have if you first pour the salt water, then the vinegar, and finally the distilled water into your beaker?
- Explain why the amounts described in parts (a) and (b) are equal.





## 1-7

## Practice

Form G

## The Distributive Property

**Use the Distributive Property to simplify each expression.**

1.  $3(h - 5)$

2.  $7(-5 + m)$

3.  $(6 + 9v)6$

4.  $(5n + 3)12$

5.  $20(8 - a)$

6.  $15(3y - 5)$

7.  $21(2x + 4)$

8.  $(7 + 6w)6$

9.  $(14 - 9p)1.1$

10.  $(2b - 10)3.2$

11.  $\frac{1}{3}(3z + 12)$

12.  $4\left(\frac{1}{2}t - 5\right)$

13.  $(-5x - 14)(5.1)$

14.  $1\left(-\frac{1}{2}r - \frac{5}{7}\right)$

15.  $10(6.85j + 7.654)$

16.  $\frac{2}{3}\left(\frac{2}{3}m - \frac{2}{3}\right)$

**Write each fraction as a sum or difference.**

17.  $\frac{3n + 5}{7}$

18.  $\frac{14 - 6x}{19}$

19.  $\frac{3d + 5}{6}$

20.  $\frac{9p - 6}{3}$

21.  $\frac{18 + 8z}{6}$

22.  $\frac{15n - 42}{14}$

23.  $\frac{56 - 28w}{8}$

24.  $\frac{81f + 63}{9}$

**Simplify each expression.**

25.  $-(14 + x)$

26.  $-(-8 - 6t)$

27.  $-(6 + d)$

28.  $-(-r + 1)$

29.  $-(4m - 6n)$

30.  $-(5.8a + 4.2b)$

31.  $-(-x + y - 1)$

32.  $-(f + 3g - 7)$

**Use mental math to find each product.**

33.  $3.2 \times 3$

34.  $5 \times 8.2$

35.  $149 \times 2$

36.  $6 \times 397$

37.  $4.2 \times 5$

38.  $4 \times 10.1$

39.  $8.25 \times 4$

40.  $11 \times 4.1$

41. You buy 75 candy bars at a cost of \$0.49 each. What is the total cost of 75 candy bars? Use mental math.

42. The distance around a track is 400 m. If you take 14 laps around the track, what is the total distance you walk? Use mental math.

43. There are 32 classmates that are going to the fair. Each ticket costs \$19. What is the total amount the classmates spend for tickets? Use mental math.

## 1-7

## Practice (continued)

Form G

## The Distributive Property

Simplify each expression by combining like terms.

44.  $4t + 6t$

45.  $17y - 15y$

46.  $-11b^2 + 4b^2$

47.  $-2y - 5y$

48.  $14n^2 - 7n^2$

49.  $8x^2 - 10x^2$

50.  $2f + 7g - 6 + 8g$

51.  $8x + 3 - 5x - 9$

52.  $-5k - 6k^2 - 12k + 10$

Write a word phrase for each expression. Then simplify each expression.

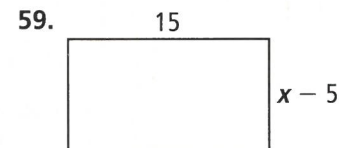
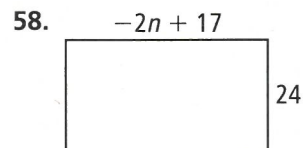
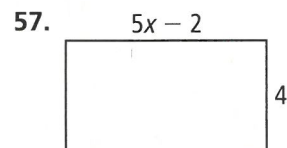
53.  $2(n + 1)$

54.  $-5(x - 7)$

55.  $\frac{1}{2}(4m - 8)$

56. The tax a plumber must charge for a service call is given by the expression  $0.06(35 + 25h)$  where  $h$  is the number of hours the job takes. Rewrite this expression using the Distributive Property. What is the tax for a 5 hour job and a 20 hour job? Use mental math.

Geometry Write an expression in simplified form for the area of each rectangle.



Simplify each expression.

60.  $4jk - 7jk + 12jk$

61.  $-17mn + 4mn - mn + 10mn$

62.  $8xy^4 - 7xy^3 - 11xy^4$

63.  $-2(5ab - 6)$

64.  $z + \frac{2z}{5} - \frac{4z}{5}$

65.  $7m^2n + 4m^2n^2 - 4m^2n - 5m^3n^2 - 5mn^2$

66. Reasoning Demonstrate why  $\frac{12x - 6}{6} \neq 2x - 6$ . Show your work.

Simplify each expression.

67.  $4(2h + 1) + 3(4h + 7)$

68.  $5(n - 8) + 6(7 - 2n)$

69.  $7(3 + x) - 4(x + 1)$

70.  $6(y + 5) - 3(4y + 2)$

71.  $-(a - 3b + 27)$

72.  $-2(5 - 4s + 6t) - 5s + t$