Reteaching 1-1 Variables and Expressions

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A variable is a letter that stands for a number.

Thomas needs \$2 to ride the bus to Videoland. How much can he spend on video games for each amount in the table?

Thomas Has	Thomas Can Spend				
	Expression	Amount			
\$5	5 – 2	\$3			
\$7	7 – 2	\$5			
\$10	10 - 2	\$8			
d	d-2	d-2			

The letter d is a variable that stands for the amount of money Thomas has. The expression d-2 is a variable expression. It has a variable (d), a numeral (2), and an operation symbol (-).

Videoland tokens cost one dollar for 4. How many tokens can Jennifer buy for each amount of money in the table?

	Jennifer Has	Tokens Jennifer Can Buy					
		Expression	Amount				
1.	\$5						
2.	\$8						
3.	\$6						
4.	d dollars						

Write a variable expression for each word phrase.

5. h divided by 7

6. j decreased by 9

7. twice x

- **8.** two more than *y*
- **9.** the quotient of 42 and a number s
- **10.** the product of a number d and 16

Practice 1-1 Variables and Expressions

Write an expression for each quantity.

1. the value in cents of 5 quarters

2. the value in cents of q quarters

3. the number of months in 7 years

4. the number of months in y years ___

5. the number of gallons in 21 quarts

6. the number of gallons in q quarts

Write a variable expression for each word phrase.

7. 9 less than k

8. m divided by 6

9. twice x

10. 4 more than twice x

- **11.** the sum of eighteen and b
- **12.** three times the quantity 2 plus a

Tell whether each expression is a numerical expression or a variable expression. For a variable expression, name the variable.

- 13. 4d
- **14.** 74 + 8 ___
- **15.** $\frac{4(9)}{6}$
- **16.** 14 *p*
- **17.** 5*k* − 9 _____
- **18.** 3 + 3 + 3 + 3 _____
- **19.** 19 + 3(12) **20.** 25 9 + x

The room temperature is c degrees centigrade. Write a word phrase for each expression.

- **21.** c + 15
- **22.** c 7

Reteaching 1-2 The Order of Operations

Simplify $\frac{18+4}{2} - 3(10 \cdot 2 - 3 \cdot 6)$

$$\frac{18+4}{2} - 3(10 \cdot 2 - 3 \cdot 6)$$

$$= \frac{22}{2} - 3(10 \cdot 2 - 3 \cdot 6)$$

$$= 11 - 3(10 \cdot 2 - 3 \cdot 6)$$

$$= 11 - 3(20 - 18)$$

$$= 11 - 3(2)$$

$$= 11 - 6$$

Work inside grouping symbols first.

A fraction bar is a grouping symbol.

Divide the fraction.

Multiply within the parentheses.

Subtract within the parentheses.

Multiply.

Subtract.

1.
$$8 + 2 \times 7$$

3.
$$\frac{8+12}{5}$$

5.
$$3 + 2 \cdot 5 - 4$$

7.
$$9 \cdot 3 + 2 \cdot 5$$

9.
$$5(2+4)+15\div(9-6)$$

11.
$$(18 + 7) \div (3 + 2)$$

13.
$$4 \cdot 9 + 8 \div 2 - 6 \cdot 5$$

15.
$$53 - [3(8+2) + 5(9-5)]$$

2.
$$16 \div 2 - 5$$

4.
$$4 - 24 \div 8$$

6.
$$15 - 2(5 - 2)$$

8.
$$12 \div 4 - 6 \div 3$$

10.
$$3 \cdot 2 + 16 \div 4 - 3$$

12.
$$3[8-3\cdot 2+4(5-2)]$$

14.
$$[7 + 3 \cdot 2 + 8] \div 7$$

16.
$$(20 + 22) \div 6 + 1$$

18.
$$5 + 3 \cdot 4 - 8 + 2 \cdot 7$$

Practice 1-2 The Order of Operations

Simplify each expression.

11.
$$\frac{16+24}{30-22}$$

18. $4 \cdot 6 - 2 + 7 = 23$

20. $3 + 6 \cdot 2 = 18$

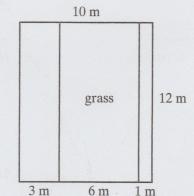
Insert grouping symbols to make each number sentence true.

17.
$$3 + 5 \cdot 8 = 64$$

19.
$$10 \div 3 + 2 \cdot 4 = 8$$

A city park has two walkways with a grassy area in the center, as shown in the diagram.

- 21. Write an expression for the area of the sidewalks, using subtraction.
- 22. Write an expression for the area of the sidewalks, using addition.



Compare. Use >, <, or = to complete each statement.

5.
$$(22 + 8) \div 2 \qquad 22 + 8 \div 2$$

27.
$$11 \cdot 4 - 2$$
 $11 \cdot (4 - 2)$

24.
$$3 \cdot (4-2) \cdot 5$$
 $3 \cdot 4 - 2 \cdot 5$

25.
$$(22 + 8) \div 2$$
 $22 + 8 \div 2$ **26.** $20 \div 2 + 8 \cdot 2$ $20 \div (2 + 8) \cdot 2$

27.
$$11 \cdot 4 - 2$$
 $11 \cdot (4 - 2)$ **28.** $(7 \cdot 3) - (4 \cdot 2)$ $7 \cdot 3 - 4 \cdot 2$

Reteaching 1-3 Evaluating Expressions

Evaluate a(b + 4) - c, for a = 2, b = 5, and c = 12.

$$a(b + 4) - c$$

$$= 2(5 + 4) - 12$$

$$= 2(9) - 12$$

$$= 18 - 12$$

$$= 6$$

Replace the variables.

Work within grouping symbols.

Multiply.

Subtract.

Evaluate each expression.

1.
$$2n - 7$$
, for $n = 8$

2.
$$4ab$$
, for $a = 2$ and $b = 5$

3.
$$\frac{x+y}{3}$$
, for $x = 7$ and $y = 8$

4.
$$2(m+n)$$
, for $m=3$ and $n=2$

5.
$$37 - 5h$$
, for $h = 7$

6.
$$\frac{6}{a} + b$$
, for $a = 3$ and $b = 7$

7.
$$4x + 5y - 3z$$
, for $x = 3$, $y = 4$, and $z = 2$

8.
$$15a - 2(b + c)$$
, for $a = 2$, $b = 3$, and $c = 4$

9.
$$7p + q(3 + r)$$
, for $p = 3$, $q = 2$, and $r = 1$

10.
$$\frac{36}{j} - 4(k+l)$$
, for $j = 2, k = 1$, and $l = 3$

11.
$$x + 3y - 4(z - 3)$$
, for $x = 4$, $y = 6$, and $z = 5$

12.
$$(4+d) - e(9-f)$$
, for $d=7$, $e=4$, $f=8$

13.
$$3a - 2b + b(6 - 2)$$
, for $a = 4, b = 2$

14.
$$r(p+3) + q(p-1)$$
, for $p = 7$, $q = 4$, $r = 3$

Practice 1-3 Evaluating Expressions

Evaluate each expression.

1.
$$xy$$
, for $x = 3$ and $y = 5$ ______ **2.** $24 - p \cdot 5$, for $p = 4$ _____

2.
$$24 - p \cdot 5$$
, for $p = 4$

3.
$$5a + b$$
, for $a = 6$ and $b = 3$ _____ **4.** $6x$, for $x = 3$ _____

4.
$$6x$$
, for $x = 3$

5.
$$9 - k$$
, for $k = 2$

6.
$$63 \div p$$
, for $p = 7$

7.
$$2 + n$$
, for $n = 3$

8.
$$3m$$
, for $m = 11$

9.
$$10 - r + 5$$
, for $r = 9$

10.
$$m + n \div 6$$
, for $m = 12$ and $n = 18$

11. 1,221 ÷
$$x$$
, for $x = 37$ _____ **12.** 10 - x , for $x = 3$ _____

12.
$$10 - x$$
, for $x = 3$

13.
$$4m + 3$$
, for $m = 5$ ______ **14.** $35 - 3x$, for $x = 10$ _____

14.
$$35 - 3x$$
, for $x = 10$

15.
$$851 - p$$
, for $p = 215$

16.
$$18a - 9b$$
, for $a = 12$ and $b = 15$

17.
$$3ab - c$$
, for $a = 4$, $b = 2$, and $c = 5$

18.
$$\frac{ab}{2} + 4c$$
, for $a = 6$, $b = 5$, and $c = 3$

19.
$$\frac{rst}{3}$$
, for $r = 9$, $s = 2$, and $t = 4$

20.
$$x(y + 5) - z$$
, for $x = 3$, $y = 2$, and $z = 7$

21. Elliot is 58 years old.

- a. Write an expression for the number of years by which Elliot's age exceeds that of his daughter, who is y years old.
- **b.** If his daughter is 25, how much older is Elliot?

22. A tree grows 5 in. each year.

- **a.** Write an expression for the tree's height after x years.
- **b.** When the tree is 36 years old, how tall will it be?

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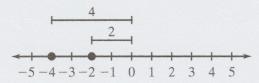
Reteaching 1-4 Integers and Absolute Value

Compare. Use >, <, or = to complete each statement.

Graph -4 and -2 on the number line. -5-4-3-2-1 0 1 2 3 4 5

A number on the left is less than a number on the right. Thus, -4 is less than -2. -4 < -2

The *absolute value* of a number is its distance from zero on the number line.



Thus |-4| = 4 and |-2| = 2. Since 4 > 2, |-4| > |-2|

Compare. Use >, <, or = to complete each statement.

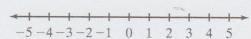
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Practice 1-4 Integers and Absolute Value

Graph each set of numbers on a number line. Then order the numbers from least to greatest.

1.
$$-4$$
, -8 , 5







$$-10-8-6-4-2$$
 0 2 4 6 8 10

Write an integer to represent each quantity.

Simplify each expression.

9. the opposite of
$$-15$$
 ______ **10.** $|-9|$

12. the opposite of
$$|-8|$$

Write the integer represented by each point on the number line.



Compare. Use >, <, or = to complete each statement.

Reteaching 1-5 Adding Integers

Use tiles and the rules for adding integers to find each sum.

a. -4 + -3



Four negative tiles plus 3 negative tiles gives 7 negative tiles.

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

The sum of two negative integers is negative.

b. -8 + 3



Remove zero pairs

Since the signs of the integers are different, you must remove zero pairs. The number of tiles left is the number of negative tiles |-8| minus the number of positive tiles |3|. Thus, you can always subtract the absolute values of the numbers to find how many tiles will be left.

$$|-8| - |3| = 5$$

Since there are more negative tiles than positive tiles, |-8| > |3|, there are negative tiles left after you subtract zero pairs. Thus, the sum is negative.

$$-8 + 3 = -5$$

Use rules or tiles to find each sum.

3.
$$-1 + (-8)$$

5.
$$-5 + 15$$

6.
$$2 + (-14)$$

8.
$$-(-2) + 9$$

9.
$$(-2) + (-4)$$

10.
$$-5 + 4$$

Practice 1-5 Adding Integers

Write a numerical expression for each of the following. Then find the sum.

1. climb up 26 steps, then climb down 9 steps

2. earn \$100, spend \$62, earn \$35, spend \$72

Find each sum.

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

5.
$$-12 + (-17)$$

6.
$$9 + (-11)$$

8.
$$18 + (-17)$$

9.
$$-8 + 8 + (-11)$$

10.
$$12 + (-7) + 3 + (-8)$$
 11. $-15 + 7 + 15$

12.
$$0 + (-11)$$

13.
$$6 + (-5) + (-4)$$

Without adding, tell whether each sum is positive, negative, or zero.

Evaluate each expression for n = -12.

18.
$$n + 8$$

19.
$$n + (-5)$$

20.
$$12 + n$$

Compare. Write >, <, or = to complete each statement.

21.
$$-7 + 5$$
 $3 + (-6)$ **22.** $4 + (-9)$ $6 + (-7) + (-4)$

23. An elevator went up 15 floors, down 9 floors, up 11 floors, and down 19

floors. Find the net change.

24. The price of a share of stock started the day at \$37. During the day it went down \$3, up \$1, down \$7, and up \$4. What was the price of a share at the end of the day?

Reteaching 1-6 Subtracting Integers

a. Find -7 - (-3) and -7 + 3. Compare.

$$-7 - (-3)$$

-7 + 3





Start with 7 negative tiles and take away 3 negative tiles.

Remove zero pairs.

With both you start with 7 negative tiles. Taking away 3 negative tiles has the same effect as adding 3 positive tiles and removing zero pairs. -7 - (-3) = -7 + 3 = -4

b. Find -4 - 2 and -4 + (-2). Compare.



$$-4 + (-2)$$





With both you start with 4 negative tiles. Adding two zero pairs and taking away two positive tiles has the same effect as adding two negative tiles.

$$-4 - 2 = -4 + (-2) = -6$$

Use rules for subtracting integers to find each difference. Use tiles to help.

1.
$$-5 - (-3) = -5 +$$

2.
$$-8 - 6 = -8 +$$

Practice 1-6 Subtracting Integers

Use rules to find each difference.

3.
$$9 - (-12)$$

Find each difference.

Round each number. Then estimate each sum or difference.

Write a numerical expression for each phrase. Then simplify.

- **25.** A balloon goes up 2,300 ft, then goes down 600 ft.
- **26.** You lose \$50, then spend \$35.
- **27.** The Glasers had \$317 in their checking account. They wrote checks for \$74, \$132, and \$48. What is their checking account balance?

Reteaching 1-8 Look for a Pattern

Margarita learned to dig clams over her vacation and got steadily better at finding clams each day. On the first day she found 2 clams, on the second day 5 clams, and on the third day 8. If she continued to improve at the same rate, how many clams did she find on the sixth day?

Make a table to organize the numbers. Then look for a pattern.

Day	1	2	3	4	5	6
Clams	2	5	8	11	14	17
More Than Day Before	0	3	3	3	3	3

Margarita found 17 clams on the sixth day.

Phillipe got steadily better at playing ping pong on his vacation. The table shows the number of games he won the first three days. If he continued to improve at the same rate, how many games would he win on the sixth day?

1. Complete the table.

Day	1	2	3	4	5	6
Games Won	3	5	7			
More Than Day Before	0					

2. Solve the problem.

Jennifer improved her bike riding distance steadily while preparing for a race. The table shows the distance in miles she rode during the first three weeks of training. If she continues to improve at the same rate, how many miles will she be able to ride in the sixth week? How many more miles did she ride in week 6 than she rode in week 5?

3. Complete the table.

Week	1	2	3	4	5	6
Miles Traveled	3	4	6	9		
More Than Week Before	0					

4. Solve the problems.

Practice 1-8 Look for a Pattern

Solve by looking for a pattern.

- 1. Each row in a window display of floppy disk cartons contains two more boxes than the row above. The first row has one box.
 - a. Complete the table.

Row Number	1	2	3	4	5	6
Boxes in the Row						
Total Boxes in the Display						

- **b.** Describe the pattern in the numbers you wrote.
- **c.** Find the number of rows in a display containing the given number of boxes.

144

400

- d. Describe how you can use the number of boxes in the display to calculate the number of rows.
- **2.** A computer multiplied nine 100 times. You can use patterns to find the ones digit of the product.

$$\underbrace{9 \times 9 \times 9 \times 9 \times \cdots \times 9}_{100 \text{ times}}$$

a. Find the ones digit when nine is multiplied:

1 time _____ 2 times ____ 3 times 4 times

b. Describe the pattern.

- **c.** What is the ones digit of the computer's product?
- 3. Use the method of Exercise 2 to find the ones digit of the product when

4 is multiplied by itself 100 times.

Reteaching 1-9 Multiplying and Dividing Integers

Multiplying and dividing integers is very similar to multiplying and dividing whole numbers. Just remember the two basic rules for determining the sign of the product or quotient.

Rule 1: The product or quotient of two integers with the *same sign* is positive.

Rule 2: The product or quotient of two integers with *opposite signs* is negative.

Find each product or quotient.

a.
$$5 \cdot 7$$
 $5 \cdot 7 = 35$

Same sign (both +)

e. −5 · 7

 $-5 \cdot 7 = -35$ $\uparrow \qquad \uparrow$ Opposite signs (-, +)

b. -2(-3)

-2(-3) = 6 \uparrow Same sign (both -)

f. 2(-3)

2(-3) = -6 $\uparrow \qquad \uparrow$ Opposite signs (+, -)

c. $15 \div 3$

 $15 \div 3 = 5$ $\uparrow \qquad \uparrow$ Same sign (both +)

g. $-15 \div 3$

 $-15 \div 3 = -5$ $\uparrow \qquad \qquad \uparrow$ Opposite signs (-, +)

d. $-40 \div (-10)$

 $-40 \div (-10) = 4$ Same sign (both -)

h. $40 \div (-10)$

 $40 \div (-10) = -4$ Opposite signs (+, -)

Complete the table. The first row has been done for you.

		Same or Opposite Sign?	Sign of Product or Quotient	Product or Quotient
	−5 ° ∙ 12	Opposite	Negative	-60
1.	$-91 \div (-13)$			
2.	6 · 8			
3.	72 ÷ −9			
4.	-3(-6)			
5.	$-18 \div 2$			
6.	11 · (-5)			
7.	52 ÷ 4			
8.	-12(6)			

Practice 1-9 Multiplying and Dividing Integers

Use repeated addition, patterns, or rules to find each product or quotient.

2.
$$8 \cdot 7(-6)$$

5.
$$-65 \div 5$$

6.
$$117 \div (-1)$$

7.
$$-30 \div (-6)$$

8.
$$-21 \div (-3)$$

9.
$$63 \div (-21)$$

11.
$$-6(-3) \cdot 2$$

12.
$$-3 \cdot 7(-2)$$

13.
$$\frac{1,512}{-42}$$

14.
$$\frac{-4,875}{-65}$$

15.
$$\frac{-15(-3)}{-9}$$

Compare. Use >, <, or = to complete each statement.

For each group, find the average.

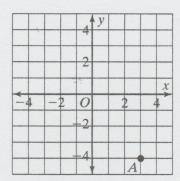
Write a multiplication or division sentence to answer the question.

27. The temperature dropped 4° each hour for 3 hours. What was the total change in temperature?

Reteaching 1-10 The Coordinate Plane

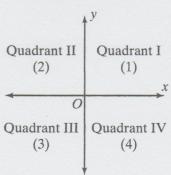
Write the coordinates of point A.

Point A is 3 units to the right of the y-axis. So the x-coordinate is 3. It is 4 units below the x-axis. So the y-coordinate is -4. The coordinates of point A are (3, -4).



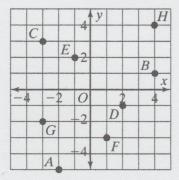
In which quadrant is point A located?

Compare the point to the diagram. Point A is in the fourth quadrant.



Write the coordinates of each point.

- 1. A _____
- **2.** B _____
- 3. C _____
- 4. D
- **5.** *E* _____
- 6. F
- 7. G _____
- 8. H



In which quadrant does each point lie?

- 9. A _____
- **10.** *B* _____
- 11. C _____
- **12.** D
- **13.** *E* _____
- **14.** F
- **15.** *G*
- **16.** *H*

Practice 1-10 The Coordinate Plane

Graph each point.

1.
$$A(-2,2)$$

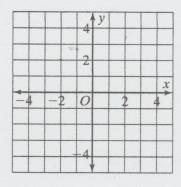
2. B(0,3)

3.
$$C(-3,0)$$

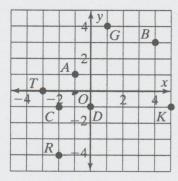
4. D(2,3)

5.
$$E(-1, -2)$$

6. F(4, -2)



Write the coordinates of each point.



In which quadrant or on what axis does each point fall?

11. A _____ 12. B

13. C

14. D

Name the point with the given coordinates.

15. (1,4) _____ **16.** (-3,0) _____

- **17.** (5, -1) _____ **18.** (-2, -4) _____

Complete using positive, negative, or zero.

19. In Quadrant II, *x* is ______ and *y* is ______.

20. In Quadrant III, *x* is ______ and *y* is ______.

21. On the *y*-axis *x* is ______.

22. On the *x*-axis *y* is _____

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