Writing and Evaluating Expressions Worksheet

Evaluate each expression using the values \( m = 7 \), \( r = 8 \), and \( t = 2 \).

1. \( 5m - 6 \) 
2. \( 4m + t \) 
3. \( \frac{r}{t} \) 
4. \( mt \) 

5. \( 5t + 2m \) 
6. \( rm \) 
7. \( 3m - 5t \) 
8. \( \frac{mr}{t} \) 

Write a word phrase for each algebraic expression.

10. \( n + 16 \) 
11. \( 3.2n \) 
12. \( 25.6 - n \) 

13. \( \frac{n}{24} \) 
14. \( \frac{24}{n} \) 
15. \( n - 15 \) 

Write an algebraic expression for each word phrase.

16. 12 more than \( m \) machines 
17. six times the daily amount of fiber \( f \) in your diet 

18. your aunt’s age \( a \) minus 25 
19. the total number of seashells \( s \) divided by 10 

20. 9 less than \( k \) 
21. \( m \) divided by 6
Study Guide and Intervention
Algebra: Variables and Expressions

To evaluate an algebraic expression you replace each variable with its numerical value, then use the order of operations to simplify.

**EXAMPLE 1** Evaluate $6x - 7$ if $x = 8$.

$6x - 7 = 6(8) - 7$ Replace $x$ with 8.

$= 48 - 7$ Use the order of operations.

$= 41$ Subtract 7 from 48.

**EXAMPLE 2** Evaluate $5m - 3n$ if $m = 6$ and $n = 5$.

$5m - 3n = 5(6) - 3(5)$ Replace $m$ with 6 and $n$ with 5.

$= 30 - 15$ Use the order of operations.

$= 15$ Subtract 15 from 30.

**EXAMPLE 3** Evaluate $\frac{ab}{3}$ if $a = 7$ and $b = 6$.

$\frac{ab}{3} = \frac{(7)(6)}{3}$ Replace $a$ with 7 and $b$ with 6.

$= \frac{42}{3}$ The fraction bar is like a grouping symbol.

$= 14$ Divide.

**EXAMPLE 4** Evaluate $x^3 + 4$ if $x = 3$.

$x^3 + 4 = 3^3 + 4$ Replace $x$ with 3.

$= 27 + 4$ Use the order of operations.

$= 31$ Add 27 and 4.

**EXERCISES**

Evaluate each expression if $a = 4$, $b = 2$, and $c = 7$.

1. $3ac$  
2. $5b^3$  
3. $abc$

4. $5 + 6c$  
5. $\frac{ab}{8}$  
6. $2a - 3b$

7. $\frac{b^4}{4}$  
8. $c - a$  
9. $20 - bc$

10. $2bc$  
11. $ac - 3b$  
12. $6a^2$

13. $7c$  
14. $6a - b$  
15. $ab - c$
Write each as an algebraic expression.

1) the difference of 10 and 5

2) the quotient of 14 and 7

3) u decreased by 17

4) half of 14

5) x increased by 6

6) the product of x and 7

7) the sum of q and 8

8) 6 squared

9) twice q

10) the product of 8 and 12

11) the quotient of 18 and n

12) n cubed

Write each as a verbal expression.

13) \( \frac{x}{2} \)

14) \( a + 9 \)

15) 19 - 3

16) 5n
17) \( q^2 \)

18) \( \frac{40}{5} \)

19) \( \frac{a}{8} \)

20) \( x + 8 \)

21) \( n - 14 \)

22) \( 2^2 \)

23) \( \frac{60}{5} \)

24) \( n \cdot 6 \)

**Evaluate each expression.**

25) 5 squared

26) the product of 8 and 10

27) 20 decreased by 17

28) the quotient of 96 and 8

29) twice 6

30) 10 less than 17

31) 9 times 5

32) 10 increased by 8

33) 7 squared

34) the product of 4 and 5