

# Evaluating Expressions

Steps:

1. Write the problem
2. Substitute (take out each letter and replace it with the appropriate given value)
3. Follow the rules of PEMDAS (show all work)
4. Box your answer

Example: If  $x = 4$  and  $y = -8$  find the value of  
 $3x + y$

**Let's do some together**

- If  $a = 3$ ,  $b = 4$ ,  $c = 5$ , evaluate the following:
- $5a$
- $3bc$
- $1/5bc$

## Let's try one more

- If  $x = -2$ , evaluate:
- $3x^2 + 5x - 7$
- Now it's your turn – Worksheet page 31

**Substitution**

Substitute and simplify.

$a = 3, b = -9, c = 5$

1.  $a^2 + b^3 =$

6.  $(b + c)^2 =$

2.  $(a + b)^2 =$

7.  $b^2 + c^2 =$

3.  $a + b - c =$

8.  $a^3 - (b + c)^2 =$

4.  $(c - a)^2 =$

9.  $-4b + (a + c)^2 =$

5.  $2a - b - 3c =$

10.  $abc =$

Substitute and simplify.

$a = -6, b = -3, c = 4$

1.  $3a - 4b =$

6.  $(a + b)^2 =$

2.  $7c + b^3 =$

7.  $c^2 - ab =$

3.  $a^2 - b^2 =$

8.  $2c + 3a - 4b =$

4.  $(a - b)^2 =$

9.  $a^2 - (b + c)^3 =$

5.  $a^2 + b^2 =$

10.  $(a + b + c)^2 =$

## Evaluating Expressions

1 If  $t = -3$ , then  $3t^2 + 5t + 6$  equals

2 If  $x = 2$  and  $y = -3$ , what is the value of  $2x^2 - 3xy - 2y^2$ ?

3 What is the value of the expression  $2x^3y$  when  $x = -2$  and  $y = 3$ ?

4 What is the value of the expression  $(a^3 + b^0)^2$  when  $a = -2$  and  $b = 4$ ?

5 If  $a = 3$  and  $b = -1$ , what is the value of  $ab - b^2$ ?

6 If  $x = 4$  and  $y = -2$ , the value of  $\frac{1}{2}xy^2$  is

7 If  $x = -4$  and  $y = 3$ , what is the value of  $x - 3y^2$ ?

8 What is the value of  $\frac{x^2 - 4y}{2}$ , if  $x = 4$  and  $y = -3$ ?

9 What is the value of the expression  $-3x^2y + 4x$  when  $x = -4$  and  $y = 2$ ?

10 The expression  $-|-7|$  is equivalent to

1-10**Substitution**

Substitute and simplify.

$x = 2, y = 9, z = -5$

1.  $x + y + z =$

6.  $(y + z)^3 =$

2.  $8x + 3z =$

7.  $3z + xy =$

3.  $4y + 3xz =$

8.  $(x + y + z)^2 =$

4.  $xyz \div 10 =$

9.  $(x + y)^2 =$

5.  $2(y + z) =$

10.  $(x - z) + y =$

Substitute and simplify.

$w = -6, x = 4, y = 3, z = -8$

1.  $wx + yz =$

6.  $5(w + x) + 4(y + z) =$

2.  $2w + 3z - xy + z^3 =$

7.  $w^2 - x^2 =$

3.  $y(z + x) =$

8.  $(xy)^2 - 2wz =$

4.  $(w + x + y)^3 =$

9.  $wz - 4xy =$

5.  $(z - w)^3 =$

10.  $w + (x + y + z)^2 =$

1-2

# Skills Practice

## Order of Operations

Evaluate each expression.

1.  $(5 + 4) \cdot 7$

2.  $(9 - 2) \cdot 3$

3.  $4 + 6 \cdot 3$

4.  $28 - 5 \cdot 4$

5.  $12 + 2 \cdot 2$

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

7.  $9 + 4(3 + 1)$

8.  $2 + 3 \cdot 5 + 4$

9.  $30 - 5 \cdot 4 + 2$

10.  $10 + 2 \cdot 6 + 4$

11.  $14 \div 7 \cdot 5 - 3^2$

12.  $6 \div 3 \cdot 7 + 2^3$

13.  $4[30 - (10 - 2) \cdot 3]$

14.  $5 + [30 - (6 - 1)^2]$

15.  $2[12 + (5 - 2)^2]$

16.  $[8 \cdot 2 - (3 + 9)] + [8 - 2 \cdot 3]$

Evaluate each expression if  $x = 6$ ,  $y = 8$ , and  $z = 3$ .

17.  $xy + z$

18.  $yz - x$

19.  $2x + 3y - z$

20.  $2(x + z) - y$

21.  $5z + (y - x)$

22.  $5x - (y + 2z)$

23.  $x^2 + y^2 - 10z$

24.  $z^3 + (y^2 - 4x)$

25.  $\frac{y + xz}{2}$

26.  $\frac{3y + x^2}{z}$