

Lesson 2: Evaluating Algebraic Expressions

Section 1: Substituting Values for Variables

Evaluate each expression by substituting the given values for the variables.

- 1) $2x + 3$ when $x = 4$
- 2) $5a - 2b$ when $a = 3$ and $b = 7$
- 3) $4m^2 - 6n$ when $m = 2$ and $n = 1$
- 4) $3p + q^2 - 2r$ when $p = 5$, $q = 3$ and $r = 4$
- 5) $2x^3 + y \div z$ when $x = 2$, $y = 9$ and $z = 3$

Section 2: Order of Operations

Substitute the given values for the variables, then use PEMDAS/BODMAS to solve.

- 1) $3x + 2y = ?$
 $x = 4$ and $y = 5$
- 2) $4a^2 - 2b + c = ?$
 $a = 3$, $b = 5$ and $c = 2$
- 3) $(x + y)^2 \div z = ?$
 $x = 2$, $y = 6$ and $z = 4$
- 4) $2m + (n^2 - 3p) = ?$
 $m = 4$, $n = 5$ and $p = 3$
- 5) $5(a + b)^2 - c = ?$
 $a = 1$, $b = 3$ and $c = 10$
- 6) $2x^3 + 3y - 4z = ?$
 $x = 2$, $y = 1$ and $z = 3$
- 7) $(4p + q)^2 \div r = ?$
 $p = 3$, $q = 2$ and $r = 10$
- 8) $3(a + b)^2 + 2(c - d) = ?$
 $a = 1$, $b = 2$, $c = 6$ and $d = 3$
- 9) $2[x + (y \times z)^2] = ?$
 $x = 3$, $y = 2$ and $z = 3$
- 10) $[(2a + b)^3 \div c] - d = ?$
 $a = 2$, $b = 1$, $c = 4$ and $d = 3$

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Answer Key:

Section 1:

1) $2(4) + 3 = 8 + 3 = \mathbf{11}$

2) $5(3) - 2(7) = 15 - 14 = \mathbf{1}$

3) $4(2)^2 - 6(1) = 4(4) - 6 = 16 - 6 = \mathbf{10}$

4) $3(5) + (3)^2 - 2(4) = 15 + 9 - 8 = \mathbf{16}$

5) $2(2)^3 + 9 \div 3 = 2(8) + 3 = 16 + 3 = \mathbf{19}$

Section 2:

1) $3(4) + 2(5) = 12 + 10 = \mathbf{22}$

2) $4(3)^2 - 2(5) + 2 = 4(9) - 10 + 2 = 36 - 10 + 2 = \mathbf{28}$

3) $(2 + 6)^2 \div 4 = 8^2 \div 4 = 64 \div 4 = \mathbf{16}$

4) $2(4) + (5^2 - 3(3)) = 8 + (25 - 9) = 8 + 16 = \mathbf{24}$

5) $5(1 + 3)^2 - 10 = 5(4)^2 - 10 = 5(16) - 10 = 80 - 10 = \mathbf{70}$

6) $2(2)^3 + 3(1) - 4(3) = 2(8) + 3 - 12 = 16 + 3 - 12 = \mathbf{7}$

7) $(4(3) + 2)^2 \div 10 = (12 + 2)^2 \div 10 = 14^2 \div 10 = 196 \div 10 = \mathbf{19.6}$

8) $3(1 + 2)^2 + 2(6 - 3) = 3(3)^2 + 2(3) = 3(9) + 6 = 27 + 6 = \mathbf{33}$

9) $2[3 + (2 \times 3)^2] = 2[3 + (6)^2] = 2[3 + 36] = 2(39) = \mathbf{78}$

10) $[(2(2) + 1)^3 \div 4] - 3 = [(4 + 1)^3 \div 4] - 3 = [5^3 \div 4] - 3 = [125 \div 4] - 3 = 31.25 - 3 = \mathbf{28.25}$