Year 8 Worksheet 1: Algebra

Question 1: Answer the following.

1	Which one of the following expressions is equal to 5x? A. x + x + x B. 5x × 1 C. 6x - x D. 10x ÷ 2
2	If m = 2, evaluate 2m + 3. A. 5 B. 6 C. 7 D. 8
3	Simplify 2a + 4a - 3a. A. 3a B. 4a C. 2a D. 5a
4	If g = 6, evaluate 2g - 1. A. 10 B. 11 C. 12 D. 13
5	Factorise 6x + 12. A. 3(2x + 4) B. 2(3x + 6) C. 6(x + 2) D. 12(x + 1)

6	Which algebraic expression means 'the product of 5 and y'? A. 5y B. 5 - y C. y/5 D. y - 5
7	Simplify 3p - 2p + 7p. A. 12p B. 8p C. 10p D. 6p
8	If t = 9, evaluate 4t ÷ 2. A. 6 B. 9 C. 18 D. 36
9	Expand 2(x - 3). A. 2x - 6 B. 2x + 6 C. 2x^2 - 6 D. 2x^2 + 6
10	If n = 10, evaluate 2n + 5n - 3n. A. 140 B. 50 C. 60 D. 40

Question 2: Answer the following.

1	What is the algebraic expression for '3 times the quantity x plus 2'?
2	Express 'Twice the sum of a and b, minus c' as an algebraic expression.
3	What is the algebraic expression for 'The square of a number x'?
4	Write the algebraic expression for 'Half of the difference between p and q.'
5	Express 'The product of 5 and the sum of m and n' algebraically.
6	What is the algebraic expression for '10 less than twice y'?

7	Write the algebraic expression for 'One-third of the quantity a plus b.'
8	What is the algebraic expression for 'The sum of r squared and 5'?
9	Express '4 more than half of x' as an algebraic expression.
10	Write the algebraic expression for 'The difference between twice c and d.'

Question 3: Simplify each expression.

1	Simplify the expression: 3x + 2x - 5x.
2	Expand and simplify: 4(a + 2b).
3	Simplify the expression: 2(3x - 5) + 4x.
4	Expand and simplify: 3(2x - 4y) + 5(2y - x).
5	Simplify the expression: 2(4x + 3) - 3(2x - 2).

6	Expand and simplify: 5(2a + 3b) - 2(4a - b).
7	Simplify the expression: 3(x + 4) + 2(x - 2).
8	Expand and simplify: 2(3x + 5) - 4(2x - 3).
9	Simplify the expression: 4(2a - 3) - 3(5a + 2).
10	Expand and simplify: 2(2x + 3y) + 3(4x - 2y).

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Answer Key

Question 1: Answer the following.

1	Which one of the following expressions is equal to 5x? A. x + x + x B. 5x × 1 C. 6x - x D. 10x ÷ 2 Answer: B. 5x × 1
2	If m = 2, evaluate 2m + 3. A. 5 B. 6 C. 7 D. 8 Answer: C. 7
3	Simplify 2a + 4a - 3a. A. 3a B. 4a C. 2a D. 5a Answer: A. 3a
4	If g = 6, evaluate 2g - 1. A. 10 B. 11 C. 12 D. 13 Answer: B. 11

5	Factorise 6x + 12. A. 3(2x + 4) B. 2(3x + 6) C. 6(x + 2) D. 12(x + 1) Answer: A. 3(2x + 4)
6	Which algebraic expression means 'the product of 5 and y'? A. 5y B. 5 - y C. y/5 D. y - 5 Answer: A. 5y
7	Simplify 3p - 2p + 7p. A. 12p B. 8p C. 10p D. 6p Answer: B. 8p
8	If t = 9, evaluate 4t ÷ 2. A. 6 B. 9 C. 18 D. 36 Answer: C. 18

9	Expand 2(x - 3). A. 2x - 6 B. 2x + 6 C. 2x^2 - 6 D. 2x^2 + 6 Answer: A. 2x - 6
10	If n = 10, evaluate 2n + 5n - 3n. A. 140 B. 50 C. 60 D. 40 Answer: D. 40

Question 2: Answer the following.

1	What is the algebraic expression for '3 times the quantity x plus 2'? Answer: 3(x + 2)
2	Express 'Twice the sum of a and b, minus c' as an algebraic expression. Answer: 2(a + b) - c
3	What is the algebraic expression for 'The square of a number x'? Answer: x²
4	Write the algebraic expression for 'Half of the difference between p and q.' Answer: (p - q) / 2
5	Express 'The product of 5 and the sum of m and n' algebraically. Answer: 5(m + n)
6	What is the algebraic expression for '10 less than twice y'? Answer: 2y - 10
7	Write the algebraic expression for 'One-third of the quantity a plus b.' Answer: (a + b) / 3
8	What is the algebraic expression for 'The sum of r squared and 5'? Answer: r² + 5
9	Express '4 more than half of x' as an algebraic expression. Answer: (x / 2) + 4
10	Write the algebraic expression for 'The difference between twice c and d.' Answer: 2c - d

Question 3: Simplify each expression.

1	Simplify the expression: 3x + 2x - 5x. Answer: 0
2	Expand and simplify: 4(a + 2b). Answer: 4a + 8b
3	Simplify the expression: 2(3x - 5) + 4x. Answer: 10x - 10 = 10(x-1)
4	Expand and simplify: 3(2x - 4y) + 5(2y - x). Answer: 6x - 12y + 10y - 5x = x-2y
5	Simplify the expression: 2(4x + 3) - 3(2x - 2). Answer: 8x + 6 - 6x + 6 = 2(x+6)
6	Expand and simplify: 5(2a + 3b) - 2(4a - b). Answer: 10a + 15b - 8a + 2b = 2a + 17b
7	Simplify the expression: 3(x + 4) + 2(x - 2). Answer: 3x + 12 + 2x - 4 = 5x+8
8	Expand and simplify: 2(3x + 5) - 4(2x - 3). Answer: 6x + 10 - 8x + 12 = -2x + 22 = 2(11-x)
9	Simplify the expression: 4(2a - 3) - 3(5a + 2). Answer: 8a - 12 - 15a - 6 = -7a -18
10	Expand and simplify: 2(2x + 3y) + 3(4x - 2y). Answer: 4x + 6y + 12x - 6y = 16x