EXPRESSWALA ACADEMY

Algebraic Expressions

MCQ Test, Set 08

Time: 30 minutes | Maximum marks: 25

Name: _____ Class: _____ Date: _____

1. There are 25 questions. Each has exactly one correct answer: choose A, B, C or D.
2. Each correct answer carries 1 mark. There is no negative marking.
3. The key sheet and worked solutions are at the end of this test.

1. How many variables are there in the list $b, -6, 0, c, a, p, 8$?

A. 1 **B.** 3 **C.** 7 **D.** 4

2. "10 times the sum of m and n" in symbolic form is

A. $10 + m + n$ **B.** $10(m + n)$ **C.** $10m + n$ **D.** $m + 10n$

3. The number of terms in $7b^2 + 4b^3 + 6c^2 - \frac{c^3}{6}$ is

A. 6 **B.** 5 **C.** 3 **D.** 4

4. The numerical factor of $-\frac{5}{4}bc^2$ is

A. $-\frac{5}{4}$ **B.** -5 **C.** 2 **D.** $\frac{5}{4}$

5. The co-efficient of b^2 in $-8b^2c^2z$ is

A. -8 **B.** c^2z **C.** $-8c^2z$ **D.** $8c^2z$

6. Which of the following is a like term of $3a^3c^2$?

A. $\frac{5c^2a^3}{4}$ **B.** $3a^3$ **C.** $3a^2c^3$ **D.** $3c^2q$

7. $9q + 6q + 11q =$

A. $26q^3$ **B.** $26q^2$ **C.** $26q$ **D.** 26

8. $5p + p - 8p - 6 =$

A. $-2p - 6$ **B.** $-3p - 6$ **C.** $2p - 6$ **D.** $-2p + 6$

9. $6\sqrt{y}$ is not a monomial because

A. it has no co-efficient

B. it has only one term

C. the power of y is negative

D. the power of y is $\frac{1}{2}$, not a whole number

10. $5 + \sqrt{n}$ is

A. a binomial **B.** a monomial

C. a polynomial **D.** a multinomial but not a polynomial

11. The degree of $-\frac{1}{6}b^3c^5z^2$ is

A. 10 **B.** 11 **C.** 3 **D.** 5

12. The degree of $6t^3 + 8m^5t^3 - 5mt^4 - 4m^5t^2$ is

A. 8 **B.** 4 **C.** 3 **D.** 5

13. The value of $a^2 - ac + c^2$ when $a = 3$ and $c = -1$ is

A. 7 **B.** 11 **C.** -13 **D.** 13

14. The value of $p^3 - 5p$ when $p = -2$ is

A. 2 **B.** -2 **C.** 18 **D.** 4

15. The sum of $7a^2 + 2c^2 - 4ac$ and $-5a^2 - 6c^2 - 6ac$ is

A. $12a^2 - 4c^2 - 10ac$ **B.** $2a^2 - 4c^2 - 10ac$ **C.** $-2a^2 - 4c^2 - 10ac$ **D.** $12a^2 + 8c^2 + 2ac$

16. The sum of $7x + 8y$, $4y - 7t$ and $2x + 4t$ is

A. $9x + 12y + 3t$ **B.** $9x + 12y - 3t$ **C.** $9x + 12y - 11t$ **D.** $5x + 12y - 11t$

17. Subtract $9p - 6r$ from $3p - 5r$.

A. $6p - r$ **B.** $-6p - 11r$ **C.** $-6p + r$ **D.** $12p - 11r$

18. If $A = 3m + n - 6$ and $B = 3m + 4n - 6$, then $A - 3B =$

A. $-6m - 3n$ **B.** $-6m + 13n - 24$ **C.** $-6m - 11n + 12$ **D.** $12m + 13n - 24$

19. Subtract $2a^2 + 2ac - 9$ from $5a^2 - 2c^2 + 5$.

A. $-3a^2 + 2ac - 14 + 2c^2$ **B.** $3a^2 - 2c^2 + 14 - 2ac$ **C.** $7a^2 - 2c^2 - 4 + 2ac$ **D.** $3a^2 - 2c^2 - 4 + 2ac$

20. $2a^3 \times (-7a^3b^2) =$

A. $14a^6b^2$ **B.** $-14a^9b^2$ **C.** $-14a^6b^2$ **D.** $-5a^6b^2$

21. $6x(8xy + 4) =$

A. $48x^2y - 24x$ **B.** $48xy + 24x$ **C.** $48x^2y + 4$ **D.** $48x^2y + 24x$

22. $(a - 3)(3a + 5) =$

A. $3a^2 - 4a + 15$ **B.** $3a^2 - 4a - 15$ **C.** $3a^2 + 4a - 15$ **D.** $3a^2 - 15$

23. $(2p + 4q)(-4p - 5q) =$

A. $-8p^2 + 26pq - 20q^2$ **B.** $-8p^2 - 26pq - 20q^2$ **C.** $-8p^2 - 20q^2$ **D.** $-8p^2 - 26pq + 20q^2$

24. $6m(m - t) + 5t(3m + 2t) =$

A. $6m^2 + 9mt + 10t^2$ **B.** $6m^2 - t + 15mt + 10t^2$ **C.** $6m^2 + 9mt + 2t$ **D.** $6m^2 - 21mt - 10t^2$

25. $5x + \{3y - (5y - 2x)\} =$

A. $3x + 2y$ **B.** $3x + 8y$ **C.** $7x - 2y$ **D.** $3x - 2y$

Key sheet

1. D	**2.** B	**3.** D	**4.** A	**5.** C
6. A	**7.** C	**8.** A	**9.** D	**10.** D
11. A	**12.** A	**13.** D	**14.** A	**15.** B
16. B	**17.** C	**18.** C	**19.** B	**20.** C
21. D	**22.** B	**23.** B	**24.** A	**25.** C

Solutions

1. How many variables are there in the list $b, -6, 0, c, a, p, 8$?

The variables are the literals a, b, c, p.

So there are 4 variables.

Ans: (D) 4

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2. "10 times the sum of m and n" in symbolic form is

The sum $m + n$ is taken first, then multiplied by 10.

So it is $10(m + n)$.

Ans: (B) $10(m + n)$

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3. The number of terms in $7b^2 + 4b^3 + 6c^2 - \frac{c^3}{6}$ is

Terms are separated by $+$ and $-$ signs.

The terms are $7b^2$, $4b^3$, $6c^2$, $-\frac{c^3}{6}$.

So there are 4 terms.

Ans: (D) 4

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4. The numerical factor of $-\frac{5}{4}bc^2$ is

$-\frac{5}{4}bc^2 = \left(-\frac{5}{4}\right) \times bc^2$

The numerical factor is $-\frac{5}{4}$.

Ans: (A) $-\frac{5}{4}$

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5. The co-efficient of b^2 in $-8b^2c^2z$ is

$-8b^2c^2z = \left(-8c^2z\right) \times b^2$

So the co-efficient of b^2 is $-8c^2z$.

Ans: (C) $-8c^2z$

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6. Which of the following is a like term of $3a^3c^2$?

Like terms have the same literal factors.

$\frac{5c^2a^3}{4}$ has the literal factors $c^2a^3 = a^3c^2$, the same as $3a^3c^2$.

Ans: (A) $\frac{5c^2a^3}{4}$

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7. $9q + 6q + 11q =$

$9q + 6q + 11q$

$= (9 + 6 + 11)q$

$= 26q$

Ans: (C) $26q$

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8. $5p + p - 8p - 6 =$

$5p + p - 8p - 6$

$= (5 + 1 - 8)p - 6$

$= -2p - 6$

Ans: (A) $-2p - 6$

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9. $6\sqrt{y}$ is not a monomial because

$\sqrt{y} = y^{\frac{1}{2}}$

A monomial needs whole number powers, and $\frac{1}{2}$ is not one.

Ans: (D) the power of y is $\frac{1}{2}$, not a whole number

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10. $5 + \sqrt{n}$ is

$\sqrt{n} = n^{\frac{1}{2}}$ is not a monomial.

So $5 + \sqrt{n}$ is a multinomial but not a polynomial.

Ans: (D) a multinomial but not a polynomial

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11. The degree of $-\frac{1}{6}b^3c^5z^2$ is

Add the powers of the variables:

$3 + 5 + 2 = 10$

Ans: (A) 10

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12. The degree of $6t^3 + 8m^5t^3 - 5mt^4 - 4m^5t^2$ is

Degrees of the terms are $3, 8, 5, 7$.

The greatest is 8.

Ans: (A) 8

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13. The value of $a^2 - ac + c^2$ when $a = 3$ and $c = -1$ is

Put $a = 3$ and $c = -1$:

$(3)^2 - (3)(-1) + (-1)^2$

$= 9 + 3 + 1$

$= 13$

Ans: (D) 13

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14. The value of $p^3 - 5p$ when $p = -2$ is

Put $p = -2$:

$(-2)^3 - 5(-2)$

$= -8 + 10$

$= 2$

Ans: (A) 2

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15. The sum of $7a^2 + 2c^2 - 4ac$ and $-5a^2 - 6c^2 - 6ac$ is

$7a^2 + 2c^2 - 4ac - 5a^2 - 6c^2 - 6ac$

$= (7 - 5)a^2 + (2 - 6)c^2 + (-4 - 6)ac$

$= 2a^2 - 4c^2 - 10ac$

Ans: (B) $2a^2 - 4c^2 - 10ac$

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16. The sum of $7x + 8y$, $4y - 7t$ and $2x + 4t$ is

Add the like terms column by column:

$$\begin{array}{cccc} 7x & +8y & & \\ & 4y & -7t & \\ 2x & & +4t & \\ \hline 9x & +12y & -3t & \end{array}$$

Ans: (B) $9x + 12y - 3t$

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17. Subtract $9p - 6r$ from $3p - 5r$.

$(3p - 5r) - (9p - 6r)$

$= 3p - 5r - 9p + 6r$

$= (3 - 9)p + (-5 + 6)r$

$= -6p + r$

Ans: (C) $-6p + r$

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18. If $A = 3m + n - 6$ and $B = 3m + 4n - 6$, then $A - 3B =$

$(3m + n - 6) - 3(3m + 4n - 6)$

$= 3m + n - 6 - 9m - 12n + 18$

$= (3 - 9)m + (1 - 12)n + (-6 + 18)$

$= -6m - 11n + 12$

Ans: (C) $-6m - 11n + 12$

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19. Subtract $2a^2 + 2ac - 9$ from $5a^2 - 2c^2 + 5$.

Change the signs of $2a^2 + 2ac - 9$ and add:

$$\begin{array}{cccc} 5a^2 & -2c^2 & +5 & \\ 2a^2 & & -9 & +2ac \\ (-) & & (+) & (-) \\ \hline 3a^2 & -2c^2 & +14 & -2ac \end{array}$$

$= 3a^2 - 2c^2 + 14 - 2ac$

Ans: (B) $3a^2 - 2c^2 + 14 - 2ac$

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20. $2a^3 \times (-7a^3b^2) =$

Multiply the numbers and add the powers of the same letters:

$= (2 \times (-7))(a^3 \times a^3)b^2$

$= -14a^6b^2$

Ans: (C) $-14a^6b^2$

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21. $6x(8xy + 4) =$

Multiply $6x$ with every term inside the bracket:

$= (6x)(8xy) + (6x)(4)$

$= 48x^2y + 24x$

Ans: (D) $48x^2y + 24x$

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22. $(a - 3)(3a + 5) =$

$(a + b)(c + d) = ac + ad + bc + bd$

$= 3a^2 + 5a - 9a - 15$

$= 3a^2 - 4a - 15$

Ans: (B) $3a^2 - 4a - 15$

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23. $(2p + 4q)(-4p - 5q) =$

$(a + b)(c + d) = ac + ad + bc + bd$

$= -8p^2 - 10pq - 16pq - 20q^2$

$= -8p^2 - 26pq - 20q^2$

Ans: (B) $-8p^2 - 26pq - 20q^2$

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24. $6m(m - t) + 5t(3m + 2t) =$

Multiply out each bracket and add like terms:

$= 6m^2 - 6mt + 15mt + 10t^2$

$= 6m^2 + (-6 + 15)mt + 10t^2$

$= 6m^2 + 9mt + 10t^2$

Ans: (A) $6m^2 + 9mt + 10t^2$

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25. $5x + \{3y - (5y - 2x)\} =$

Remove the round brackets first, then the curly brackets:

$= 5x + \{3y - 5y + 2x\}$

$= 5x + \{-2y + 2x\}$

$= 5x - 2y + 2x$

$= 7x - 2y$

Ans: (C) $7x - 2y$