



MATHEMATICS WORKSHEET OF CLASS VIII

TOPIC: ALGEBRAIC EXPRESSIONS

- 1. Classify the following expressions as monomials, binomials and trinomials.**

$4a^2$ _____

$5a^2b+3$ _____

$7b^3$ _____

$8a^2 + 7ab + b^2$ _____

$4x^2 + 1$ _____

$a^2 + b^2$ _____

- 2. Write the degrees of the following polynomials.**

a) $2x^2 + 3xy + 5y^2 + 2$ _____

b) $7x^2y + 3xy^2 + 4xy$ _____

c) $x^3y^3 - 4x^2y + 5xy^2 + x^2y^2$ _____

d) $4x^5 + 5x^3 + 7x^2 + 2$ _____

- 3. Add.**

a) $(10x^2 + 5x - 3) + (7x^2 - 2x + 7) =$

b) $(3x^2y + 4x^2y^2 - 7xy^2) + (9x^2y - x^2y^2 + 3xy^2) =$

c) $(10x^2y - 3xy^2 + 5x^2y^2 + 22) + (3x^2y^2 + 7) =$

- 4. Subtract $2x^2 + 5x - 7$ from $7x^2 - 5x + 3$.**

- 5. Subtract $2ab + 7a^2 + 8b^2$ from $10b^2 + 7ab + a^2$.**

1. Write the degrees of the following polynomials.

a) $4xy + 2x^2y + 3y^2 + 5x^2y^2$ _____

b) $4xy + 3$ _____

c) $7x + 2$ _____

d) $32 + 22xy + 3x^2 + 7y^2 + x^2y^2$ _____

2. Tick the pairs of like terms.

a) $3a^2b, -5ba^2$

b) $7abc, 8ab$

c) $15xy, -7yz$

d) $5a^2b^2c, 12b^2ca^2$

3. Add the following.

a) $3a^2 + 4ab - b^2, 7b^2 - 4ab + 2a^2, a^2 + b^2$

b) $5xy - 7x^2 - 3y^2 + 4x^2y, 5x^2y - xy + x^2 + y^2$

c) $5a^3 - 2b^3 + 3a^2b + 7ab^2, 3a^2b - 5ab^2, a^3 + b^3 - a^2b$

4. Subtract $3x^2 - 4y^2$ from the sum of $x^2 + y^2 - 2xy$ and $3x^2 - 4xy + 7y^2$.

5. Subtract $4a^3 - 3a^2b + ab^2 - b^3$ from $a^3 + b^3 - 3a^2b + 7ab^2$.

1. Add $x^3 - 5x^2 + 7x + 2, 15x^2 + 10x - 7$ and $x^3 - 13x + 2$.

2. Add $3x^2y + 4x^3y - xy^2 + x^2y^2, 11x^2y - x^3y + 5x^2y^2$ and $5x^3y - x^2y^2 + 7x^2y - 3xy^2$.

3. Subtract $5a^3 - 2a^2 + 7$ from the sum of $a^3 - 3a^2 + 5a + 1$ and $7a^2 + a + 3$.

4. What should be added to $x^4 + 2x^2 - 7$ to obtain $4x^4 - 3x^3 + x^2 + 2$?

5. What must be subtracted from $4x^2y^2 + 3xy + 3xy^2$ to obtain $8xy^2 - 4x^2y + 7x^2y^2 + 10xy$?

1. Find the products of the following expressions.

a) $(3x^2y) \times \left(\frac{-1}{5}xyz\right) \left(\frac{3}{5}y^2z\right) =$

b) $\left(\frac{1}{8}ab\right) \times \left(\frac{-8}{11}bc\right) \times \left(\frac{-22}{3}ca\right) =$

c) $\left(\frac{3}{8}x^2y\right) \times \left(\frac{-4}{7}y^2z\right) \times \left(\frac{-7}{11}z^2x\right) =$

d) $\left(\frac{1}{5}ab\right) \times \left(\frac{-3}{5}a^2b\right) \times \left(\frac{5}{22}b^2c\right) =$

2. Find the volume of the box whose dimensions are $3xy^2$, $\frac{1}{7}x^3$ and $\frac{4}{5}x^2y$.

3. Find the area of a field whose length is $3x^2y + y^2$ and breadth is $\frac{5}{8}x^2$.

Find the products of the following expressions.

1. $(2x - 1)(x + 2) =$

2. $(p^2 + q^2)(p + q) =$

3. $\left(\frac{2}{3}x + y\right)(x^2 - y^2) =$

4. $(2x - 1)(x^2 + x + 1) =$

5. $(3a + 1)\left(\frac{a^3}{5} - a + 1\right) =$

6. $(x + xy)\left(\frac{x^2}{2} + xy + y^2\right) =$

1. Write the squares of the following binomials.

a) $(2x + 5)$

b) $(3x - 5)$

c) $\left(x - \frac{1}{x}\right)$

d) $\left(2x + \frac{3}{y}\right)$

2. Find the following products using an identity.

a) $(2a + b)(2a - b) =$

b) $\left(3x + \frac{1}{y}\right)\left(3x - \frac{1}{y}\right) =$

3. Evaluate the following by using the formulae for $(a + b)^2$ and $(a - b)^2$.

a) $(101)^2 =$

b) $(99)^2 =$

c) $(198)^2 =$

1. Evaluate the following using suitable identities.

a) $82^2 - 18^2 =$

b) $95 \times 105 =$

c) $196 \times 204 =$

d) $\frac{65^2 - 20^2}{85} =$

2. Find the value of $x^2 + \frac{1}{x^2}$ if $x + \frac{1}{x} = 3$.

3. Find the value of $x^2 + \frac{1}{x^2}$ if $x - \frac{1}{x} = 4$.

4. If $x + y = 4$ and $xy = 3$, find the value of $x^2 + y^2$.

5. If $x^2 + \frac{1}{x^2} = 9$, find the value of $x^4 + \frac{1}{x^4}$.

1. Evaluate the following using suitable identities.

a) $(196)^2 =$

b) $52 \times 48 =$

c) $(205)^2 =$

d) $(108)^2 =$

2. If $x + \frac{1}{x} = 5$, find the value of $x^2 + \frac{1}{x^2}$ and $x^4 + \frac{1}{x^4}$.

3. If $x^2 + \frac{1}{x^2} = 7$ find the value of $x + \frac{1}{x}$, $x > 0$.

4. If $x + y = 5$ and $xy = 6$. Find the value of $x^2 + y^2$ and $x - y$.

1. Find the following products:

a) $(x + 2)(3x + 1)(x - 3) =$

b) $(5x + 1)(2x - 3)(x + 5) =$

c) $(2x + y)(x - y)(x + y) =$

d) $(3a + b)(2a + b)(a - b) =$

2. Factorise the following using suitable identities.

a) $49x^2 - 9^2 =$

b) $16x^2 - 25 =$

c) $x^2 - 2x + 1 =$

d) $9x^2 - 6x + 1 =$

e) $x^2 - (y + z)^2 =$