MATHS

NCERT - NCERT Mathematics(English)

ALGEBRAIC EXPRESSIONS

Exercise 12 3

1. Simplify the expression and find its value when $a = 5$ and $b = -3$ then $2(a^2 + ab) + 3 - ab$

A. 36

B. 38

C. 30

D. 35

Answer: B

2. What should be the value of a if the value of $2x^2 + x - a$ equals to 5, when $x = 0$?

A. -5

B. 5

C. 0

D. Not define

Answer: A

3. If $z = 10$ find the value of $z^3 - 3(z - 10)$. (ii) If $p = -10$, find the value of $p^2 - 2p - 100$

4. If $m = 2$ find the value of : (i) $m - 2$ (ii) $3m - 5$ (iii) $9 - 5m$ (iv) $3m^2 - 2m - 7$

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5. Find the value of the following expressions, when $x = -1$ (i) $2x - 7$ (ii) $-x + 2$ (iii) $x^2 + 2x + 1$ (iv) $2x^2 - x - 2$

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6. If $p = -2$, find the value of : (i) $4p + 7$ (ii) $-3p^2 + 4p + 7$ (iii) $-2p^3 - 3p^2 + 4p + 7$

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7. When $a = 0$ and $b = -1$ find the value of the given expressions :

i) 2a+2b

ii) 2a²+b²+1

iii) 2a²b+ab²+ab

8. If $a = 2$ and $b = -2$, find the value of :

$(i)\ a^2 + b^2$

$(ii)\ a^2 + ab + b^2$

$(iii)\ a^2 - b^2$

9. Simplify these expressions and find their values if $x = 3, a - 1$ and $b = -2$ **(i)** $3x - 5 - x + 9$

10. Simplify the expressions and find the value if x is equal to 2 (i)

$x + 7 + 4(x - 5)$ **(ii)** $3(x + 2) + 5x - 7$ **(iii)** $6x + 5(x_2)$ **(iv)**

$4(2x - 1) + 3x + 11$

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Solved Examples

1. Identify, in the following expressions, terms which are not constants.

Give   their   numerical   coefficients:

$xy + 4, 13 - y^2, 13 - y + 5y^2, 4p^2q - 3pq^2 + 5$

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2. What are the coefficients of x in the following expressions ?

$4x - 3y, 8 - x + y, y^2x - y, 2z - 5xz$ **(b) what are the coefficients of** y

in the following expressions ? $4x - 3y, 8 - yz, yz^2 + 5, my + m$

3. State with reasons, which of the following pairs of terms are of like terms and which are of unlike terms : **(i)** $7x, 12y$ **(ii)** $15x - 21x$ **(iii)** $4ab, 7ba$

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4. Collect like terms and simplify the expression : $12m^2 - 9m + 5m - 4m^2 - 7m + 10$

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5. **Subtract** $24ab - 10b - 18a$ **from** $30ab - 12b + 14a$.

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6. From the sum of $2y^2 + 3yz$, $-y^2 - yz - z^2$ and $yz + 2z^2$, **subtract** the sum of $3y^2 - z^2$ and $-y^2 + yz + z^2$

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7. Find the values of the following expressions for $x = 2$. **(i)** $x + 4$ **(ii)** $4x - 3$ **(iii)** $19 - 5x^2$ **(iv)** $100 - 10x^3$

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8. Find the value of the following expressions for x=2i) x+4 ii) 4x-3 iii) $19 - 5x^2$ iv) $100 - 10x^3$

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9. Find the value of the following expressions for $a = 3, b = 2$. **(i)** $a + b$ **(ii)** $7a - 4b$ **(iii)** $a^2 + 2ab + b^2$ **(iv)** $a^3 - b^2$

Exercise 12 1

1. Identify the numerical coefficients of terms (other than constants) in the following expressions : (i) $5 - 3t^2$ (ii) $1 + t + t^2 + t^3$ (iii) $x + 2xy + 3y$ (iv) $100m + 100n$

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2. Identify the terms and their factors in the following expressions Show the terms and factors by tree diagrams. (a) $x - 3$ (b) $1 + x + x^2$ (c) $y - y^3$ (d) $5xy^2 + 7x^2y$

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3. Get the algebraic expressions in the following cases using variables, constants andarithmetic operations.(i) Subtraction of z from y.(ii) One-

half of the sum of numbers x and y.(iii) The number z multiplied by itself.

(iv) One-fourth of the product of numbers p and q.(v) Numbers x and y

both squared and added.(vi) Number 5 added to three times the product

of numbers m and n.(vii) Product of numbers y and z subtracted from 10.

(viii) Sum of numbers a and b subtracted from their product.

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4.   Identify   like   terms   in   the   following   :   (a)

$-xy^2$, $-4yx^2$, $8x^2$, $2xy^2$, $7y$, $-11x^2$, $-100x$, $-11yx$, $20x^2y$, $-6x^2$, y, 2

(b)

$10pq$, $7p$, $8q$, $-p^2q^2$, $-7qp$, $-100q$, -23, $12q^2p^2$, $-5p^2$, 41, $2405p$, $78qp$,

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5. State whether a given pair of terms is of like or unlike terms. (i) 1100 (ii)

$-7x$, $\dfrac{5}{2}x$ (iii) $-29x$, $29y$ (iv) $14xy$, $42yx$

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6. Classify into monomials, binomials and trinomials. (i) $4y - 7z$ **(ii)** y^2 **(iii)** $x + y - xy$ **(iv)** 100

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7. Identify terms which contain x and give the coefficient of x. (i) $y^2x + y$ **(ii)** $13y^2 - 8yx$ **(iii)** $x + y + 2$ **(iv)** $5 + z + zx$

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Exercise 12 2

1. Add :

(i) $3mn - 5mn, 8mn - 4mn$

(ii) $t - 8tz, 3tz - z, z - t$

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2. Subtract : **(i)** $-5y^2$ **from** y^2 **(ii)** $6xy$ **from (iii)** $(a-b)$ **from** $(a+b)$

3. From the sum of $3x-y+11$ **and** $-y-11$ **subtract** $3x-y-11.$

4. What should be added to x^2+xy+y^2 **to obtain** $2x^2+3xy$ **?**

5. What should be taken away from $3x^2-4y^2+5xy+20$ **to obtain** $-x^2-y^2+6xy+20$ **?**