



MATHS

BOOKS - RS AGGARWAL MATHS (HINGLISH)

ALGEBRAIC EXPRESSION

Example

1. Write the following using numbers. Literals and signs of basic operations

(i) 3 more than a number x

(ii) y less than 6

(iii) One-third of the sum of x and y

(iv) 5 less than the quotient of x by y

(v) The quotient of x by y added to the product of x and y

(vi) 7 taken away from the sum of x and y



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2. Write the following statement using numbers, literals and signs of basic operations: 7 times a number x is y less than a number z '



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3. Write the following in the exponential form:

(i) $a \times a \times a \times \dots$ 12 times (ii) $5 \times x \times x \times x \times y \times y$



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4. Write down each of the following in the product form:

(i) a^2b^7 (ii) $9b^3C$ (iii) $6a^2b^3c^4$



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5. If $x = 1$, $y = -2$ and $z = 3$. find the value of

(i) $x^3 + y^3 + z^3 - 3xyz$ (ii) $3xy^4 - 15x^2y + 4z$

A. 38, 90

B. 28, 90

C. 38, 80

D. 28, 80

Answer: A

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6. Identify monomials, binomials and trinomials from the following expression:

(i) $-3xyz$ (ii) $4x^2yz + 9 - 5x^3$ (iii) -7

(iv) $x^2 + y^2 + z^2 - p^2$ (v) $x + 5$ (vi) $6a^3b$

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7. Write down the coefficient of

(i) x in $9xy$ (ii) a in $-7abc$ (iii) xyz in $-xyz$ (iv) b in $-abc$



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8. Add $6xy^2$, $-4xy^2$, xy^2 , $5xy^2$



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9. collect the like terms and simplify:

$$5x^2 - 2x + 7 - 9 + 7x - 3x^2 + 4x^2 - x - 1$$



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10. Add the following expressions:

$$5x^2 + 7y - 6z^2, 4y + 3x^2, 9x^2 + 2z^2 - 9y \text{ and } 2y - 2x^2$$



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11. Subtract $6xy - 4x^2 - y^2 - 2$ from $x^2 - 3xy + 7y^2 + 5$

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12. From the sum of $6x^4 - 3x^3 + 7x^2 - 5x + 1$ and $-3x^4 + 5x^3 - 9x^2 + 7x - 2$ subtract $2x^4 - 5x^3 + 2x^2 - 6x - 8$

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13. Simplify $(a^2 - 8ab - 5) + (3ab - 4a^2 + 8)$

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14. Simplify: $(x^2 - y^2 + 2xy + 1) - (x^2 + y^2 + 4xy - 5)$

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15. simplify: $3x - [3y - \{2x - (y - x)\}]$



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16. Simplify: $2a - [3b - \{a - (2c - 3b) + 4c - 3(a - b - 2c)\}]$

A. $3b + 8c$

B. $2b + 8c$

C. $3b + 15c$

D. $3b + 7c$

Answer: A



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1. Write the following using literals numbers and signs of basic operations:

(i) x increased by 12

(ii) y decreased by 7

(iii) The difference of a and b , when $a > b$

(iv) The product of x and y added to their sum

(v) 5 times x added to 7 times y

(vii) sum of x and the quotient of y by 5

(viii) x taken away from 4

(ix) 2 less than the quotient of x by y

(x) x multiplied by itself

(ix) Twice x increased by y

(xii) Thrice x added to y squared

(xiii) x minus twice y

(xiv) x cubed less than y cubed

(xv) The quotient of x by 8 is multiplied by y

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2. Ranjit scores 80 marks in English and x marks in Hindi. What is his total score in the two subjects?

A. $x = 80$

B. $x + 80$

C. $80 - x$

D. None of these

Answer: B

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3. Write the following in the exponential form:

(i) $b \times b \times b \times \dots$ 15 times

(ii) $y \times y \times y \times \dots$ 20 times

(iii) $14 \times a \times a \times a \times a \times a \times b \times b \times b$

(iv) $6 \times x \times x \times y \times y$

(v) $3 \times z \times z \times z \times y \times y \times x$



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4. Write down the following in the product form:

(i) x^2y^2

(ii) $6y^5$

(iii) $9xy^2z$

(iv) $10a^3b^3c^3$



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Exercise 8 B

1. If $a = 2$ and $b = 3$, find the value of

(i) $a + b$

(ii) $a^2 + ab$

(iii) $ab - a^2$

(iv) $2a - 3b$

(v) $5a^2 - 2ab$

(vi) $a^3 - b^3$



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2. If $x = 1$, $y = 2$ and $z = 5$, find the value of (i) $3x - 2y + 4z$ (ii)

$x^2 + y^2 + z^2$ (iii) $2x^2 - 3y^2 + z^3$ (iv) $xy + yz - zx$ (v) $2x^2y - 5yz + xy^2$

(vi) $x^3 - y^3 - z^3$



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3. If $p = -2$, $q = -1$ and $r = 3$, find the value of

(i) $p^2 + q^2 - r^2$

(ii) $2p^2 - q^2 + 3r^2$

(iii) $p - q - r$

(iv) $p^3 + q^3 + r^3 + 3pqr$

(v) $3p^2q + 5pq^2 + 2pqr$

(vi) $p^4 + q^4 - r^4$



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4. Write the coefficient of

(i) x in $13x$

(ii) y in $-5y$

(iii) a in $6ab$

(iv) z in $-7xz$

(v) p in $-2pqr$

(vi) y^2 in $8xy^2z$

(vii) x^3 in x^3

(viii) x^2 in $-x^2$



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5. Write the numerical coefficient of

(i) ab

(ii) $-6bc$

(iii) $7xyz$

(iv) $-2x^3y^2z$



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6. Write the constant term of

(i) $3x^2 + 5x + 8$

(ii) $2x^2 - 9$

(iii) $4y^2 - 5y + \frac{3}{5}$

(iv) $z^3 - 2z^2 + z - \frac{8}{3}$



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7. Identify the monomials binomials and trinomials in the following: (i)

- $2xyz$ (ii) $5 + 7x^3y^3z^3$ (iii) $-5x^3$ (iv) $a + b - 2c$ (v) $xy + yz - zx$ (vi) x^5 (vii)

$ax^3 + bx^2 + cx + d$ (viii) - 14 (ix) $2x + 1$

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8. Write all the terms of the algebraic expressions:

(i) $4x^5 - 6y^4 + 7x^2y - 9$

(ii) $9x^3 - 5z^4 + 7x^3y - xyz$

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9. Identify the like terms in the following:

(i) $a^2, b^2, -2a^2, c^2, 4a$

(ii) $3x, 4xy, -yz, \frac{1}{2}zy$

(iii) $-2xy^2, x^2y, 5y^2x, x^2z$

(iv) ' $abc, ab^2c, abc^2, c^2ab, b^2ac, a^2bc, cab^2$ '



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Exercise 8 C

1. Add:

(i) $3x, 7x$

(ii) $7y, -9y$

(iii) $2xy, 5xy, -xy$

(iv) $3x, 2y$

(v) $2x^2, -3x^2, 7x^2$

(vi) $7xyz, -5xyz, 9xyz, -8xyz$

(vii) $6a^3, -4a^3, 10a^3, -8a^3$

(viii) $x^2 - a^2, -5x^2 + 2a^2, -4x^2 + 4a^2$



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2. Add the following :

$$\begin{array}{r} \text{(i)} \quad x - 3y - 2z \\ \quad 5x + 7y - z \\ \quad -7x - 2y + 4z \\ \hline \end{array}$$

$$\begin{array}{r} \text{(ii)} \quad m^2 - 4m + 5 \\ \quad -2m^2 + 6m - 6 \\ \quad -m^2 - 2m - 7 \\ \hline \end{array}$$

$$\begin{array}{r} \text{(iii)} \quad 2x^2 - 3xy + y^2 \\ \quad -7x^2 - 5xy - 2y^2 \\ \quad 4x^2 + xy - 6y^2 \\ \hline \end{array}$$

$$\begin{array}{r} \text{(iv)} \quad 4xy - 5yz - 7zx \\ \quad -5xy + 2yz + zx \\ \quad -2xy - 3yz + 3zx \\ \hline \end{array}$$

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3. Add:

(i) $3a - 2b + 5c, 2a + 5b - 7c, -a - b + c$

(ii) $8a - 6ab + 5b, -6a - ab - 8b, -4a + 2ab + 3b$

(iii) $2x^3 - 3x^2 + 7x - 8, -5x^3 + 2x^2 - 4x + 1, 3 - 6x + 5x^2 - x^3$

(iv)

$$2x^2 - 8xy + 7y^2 - 8xy^2, 2xy^2 + 6xy - y^2 + 3x^2, 4y^2 - xy - x^2 + xy^2$$

(v)

$$x^3 + y^3 - z^3 + 3xyz, -x^3 + y^3 + z^3 - 6xyz, -x^3 - y^3 - z^3 - 8xyz$$

(vi)

$$2 + x - x^2 + 6x^3 - 6 - 2x + 4x^2 - 3x^3 \cdot 2 + x^2 \cdot 3 - x^3 + 4x - 2x^2$$



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4. Subtract:

(i) $5x$ from $2x$

(ii) $-xy$ from $6xy$

(iii) $3a$ from $5b$

(iv) $-7x$ from $9y$

(v) $10x^2$ from $-7x^2$

(vi) $a^2 - b^2$ from $b^2 - a^2$



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5. Subtract:

(i) $5a + 7b - 2c$ from $3a - 7b + 4c$

(ii) $a - 2b - 3c$ from $-2a + 5b - 4c$

(iii) $5x^2 - 3xy + y^2$ from $7x^2 - 2xy - 4y^2$

(iv) $6x^3 - 7x^2 + 5x - 3$ from $4 - 5x + 6x^2 - 8x^3$

(v) $x^3 + 2x^2y + 6xy^2 - y^3$ from $y^3 - 3xy^2 - 4x^2$

(vi) $-11x^2y^2 + 7xy - 6$ from $9x^2y^2 - 6xy + 9$

(vii) $-2a + b + 6d$ from $5a - 2b - 3c$

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6. simplify:

(i) $2p^3 - 3p^2 + 4p - 5 - 6p^3 + 2p^2 - 8p - 2 + 6p + 8$

(ii) $2x^2 - xy + 6x - 4y + 5xy - 4x + 6x^2 + 3y$

(iii) $x^4 - 6x^3 + 2x - 7 + 7x^3 - x + 5x^2 + 2 - x^4$

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7. From the sum of $3x^2 - 5x + 2$ and $-5x^2 - 8x + 6$ subtract $4x^2 - 9x + 7$

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8. If $A = 7x^2 + 5xy - 9y^2$, $B = -4x^2 + xy + 5y^2$ and $C = 4y^2 - 3x^2 - 6xy$ then show that $A + B + C = 0$

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9. what must be added to $5x^3 - 2x^2 + 6x + 7$ to make the sum $x^3 - x + 1$?

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10. If $P = a^2 - b^2 + 2ab$, $Q = a^2 + 4b^2 - 6ab$, $R = b^2 + b$, $S = a^2 - 4ab$ and $T = -2a^2 + b^2 - ab + a$. Find $P + Q + R + S - T$.

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11. What must be subtracted from $a^3 - 4a^2 + 5a - 6$ to obtain $a^2 - 2a + 1$?

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12. How much is $a + 2b - 3c$ greater than $2a - 3b + c$?

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13. How much less than $x - 2y + 3z$ is $2x - 4y - z$?

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14. By how much does $3x^2 - 5x + 6$ exceed $x^3 - x^2 + 4x - 1$?

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15. Subtract the sum of $5x - 4y + 6z$ and $-8x + y - 2z$ from the sum of $12x - y + 3z$ and $-3x + 5y - 8z$

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16. By how much is $2x - 3y + 4z$ greater than $2x + 5y - 6z + 2$?

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17. By how much does 1 exceed $2x - 3y - 4$?

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Exercise 8 D

1. $a - (b - 2a)$

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2. $4x - (3y - x + 2z)$



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3. solve: $(a^2 + b^2 + 2ab) - (a^2 + b^2 - 2ab)$

A. $6ab$

B. $5ab$

C. $4ab$

D. $3ab$

Answer: C



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4. $-3(a + b) + 4(2a - 3b) - (2a - b)$

A. $3a - 15b$

B. $3a - 14b$

C. $4a - 12b$

D. $5b - 6a$

Answer: B



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5. solve : $-4x^2 + \{ (2x^2 - 3) - (4 - 3x^2) \}$



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6. solve: $-2(x^2 - y^2 + xy) - 3(x^2 + y^2 - xy)$



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$$7. a - [2b - \{3a - (2b - 3c)\}]$$

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$$8. -x + [5y - \{x - (5y - 2x)\}]$$

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$$9. 86 - [15x - 7(6x - 9) - 2\{10x - 5(2 - 3x)\}]$$

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$$10. 12x - [3x^2 + 5x^2 - \{7x^2 - (4 - 3x - x^3) + 6x^3\} - 3x]$$

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$$11. 5a - [a^2 - \{2a(1 - a + 4a^2) - 3a(a^2 - 5a - 3)\}] - 8a$$

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$$12. 3 - [x - \{2y - (5x + y - 3) + 2x^2\} - (x^2 - 3y)]$$

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$$13. xy - [yz - zx - \{yx - (3y - xz) - (xy - zy)\}]$$

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$$14. 2a - 3b - [3a - 2b - \{a - c - (a - 2b)\}]$$

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15. $-a - [a + \{a + b - 2a - (a - 2b)\} - b]$

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16. $2a - 3b - [4a - 3b - \{a - 2c - (a - 2b - c)\}]$

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17. $3x - [4y - \{7x - (3z - 2y) + 4z - 3(x + 3y - 2z)\}]$

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