
# NCERT Solutions for 7th Class Maths: Chapter 12-Algebraic Expressions



# NCERT Solutions for 7th Class Maths: Chapter 12-Algebraic Expressions

Class 7: Maths Chapter 12 solutions. Complete Class 7 Maths Chapter 12 Notes.

## NCERT Solutions for 7th Class Maths: Chapter 12-Algebraic Expressions

NCERT 7th Maths Chapter 12, class 7 Maths Chapter 12 solutions

**Exercise 12.1**

**1. Get the algebraic expressions in the following cases using variables, constants, and arithmetic operations:**

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**(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 m and n.**

**(vii) A product of numbers y and z subtracted from 10.**

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

**Answer**

(i) $y - z$

(ii) $(x + y)/2$

(iii) $z^2$

(iv) $pq/4$

(v) $x^2 + y^2$

(vi) $3mn + 5$

(vii) $10 - yz$

(viii) $ab - (a + b)$

**2. (i) Identify the terms and their factors in the following expressions, show the terms and factors by tree diagram:**

**(a) x – 3**

**(b) $1 + x + x^2$**

**(c) $y – y^3$**

**(d) $5xy^2 + 7x^2y$**

**(e) $-ab + 2b^2 – 3a^2$**

**Answer**

(a) Expression $x - 3$

Terms $x$, $-3$

(b) Expression $1 + x + x^2$

Terms $1$, $x$, $x^2$

Factors of $x^2$: $x$, $x$

(c) Expression $y - y^3$

Terms $y$, $-y^3$

Factors of $y$: $y$, $1$

Factors of $-y^3$: $-1$, $y$, $y$, $y$

(d) Expression $5xy^2 + 7x^2y$

Terms $5xy^2$, $7x^2y$

Factors of $5xy^2$: $5$, $x$, $y$, $y$

Factors of $7x^2y$: $7$, $x$, $x$, $y$

(e) Expression $-ab + 2b^2 - 3a^2$

Terms $-ab$, $2b^2$, $-3a^2$

Factors of $-ab$: $-a$, $b$

Factors of $2b^2$: $2$, $b$, $b$

Factors of $-3a^2$: $-3$, $a$, $a$

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(ii) Identify the terms and factors in the expressions given below:

(a) -4x + 5

(b) -4x + 5y

(c) $5y + 3y^2$

(d) $xy + 2x2y^2$

(e) pq + q

(f) 1.2ab - 2.4b + 3.6a

$(g)\frac{3}{4}x + \frac{1}{4}$

(a) -4x+ 5

Terms: -4x,5

Factors: -4,x ; 5

(b) -4x + 5y

Terms: -4x, 5y

Factors: -4,x ; 5,y

(c) $5y + 3y^2$

Terms: $5y,3y^2$

Factors: 5, y ; 3,y,y

(d) $xy+2x^2y^2$

Terms: $xy,2x^2y^2$

Factors: x,y ; 2x,x,y,y

(e) pq+q

Terms: pq,q

Factors: p,q ; q

(f) 1.2ab-2.4b+3.6a

Terms: 1,2ab.-2.4b,3 6a

Factors: 1.2.a.b ; -2.4,6 ; 3.6,a

$(g)\frac{3}{4}x+\frac{1}{4}$

Terms: $\frac{3}{4}x, \frac{1}{4}$

Factors: $\frac{3}{4}$, x, $\frac{1}{4}$

(h) $0.1p^2+0.2q^2$

Terms: 0.1 $p^2$,$0.2q^2$

Factors: 0. 1,p,p, ; 0.2, q,q

**3. Identify the numerical coefficients of terms (other than constants) in the following expressions:**

**(i) 5 - $3t^2$**

**(ii) 1 + t + $t^2$ + $t^2$**

**(iii) x + 2xy + 3y**

**(iv) 100m + 1000n**

**(v) -$p^2q^2$ + 7pq**

**(vi) 1.2a + 0.8b**

**(vii) 3.14 $r^2$**

**(viii) 2(l+b)**

**(ix) $0.1y + 0.01y^2$**

**Answer**

| S.No. | Expression | Terms | Numerical Coefficient |
|---|---|---|---|
| (i) | $5-3t^2$ | $-3t^1$ | -3 |
| (ii) | $1+t+t^2+t^3$ | t | 1 |
| | | $t^2$ | 1 |
| | | $t^3$ | 1 |
| (iii) | x + 2xy + 3y | x | 1 |
| | | 2xy | 2 |
| | | 3y | 3 |
| (iv) | 100m+1000n | 100 m | 100 |
| | | 1000 n | 1000 |
| (v) | $-p^2q^2+7$ pq | $-p^2q^2$ | -1 |
| | | 7 pq | 7 |
| (vi) | 1.2a+0.8b | 1.2 a | 1.2 |
| | | 0.8b | 0.8 |
| (vii) | 3.14 $r^2$ | 3.14 $r^2$ | 3.14 |
| (viii) | 2 (l + b) = 2l+ 2b | 2l | 2 |
| | | 2b | 2 |

| | | | |
|---|---|---|---|
| (ix) | $0.1y + 0.01y^2$ | $0.1y$ | $0.1$ |
| | | $0.01y^2$ | $0.01$ |

**4. (a) 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**

**(v) 1 + x + xy**

**(vi) $12xy^2 + x25$**

**(vii) $7x + xy^2$**

**(b) Identify terms which contain $y^2$ and give the coefficient of $y^2$.**

**(i) 8 - xy2**

**(ii) $5y^2 + 7x$**

**(iii) $2x^2y - 15xy^2 + 7y^2$**

**Answer**

| S.No. | Expression | Term with factor x | Coefficient of x |
|---|---|---|---|
| (i) | y2x + y | $y^2$ x | y |
| (ii) | $13y^2$ -8yx | -8 yx | -8 y |
| (iii) | x + y + 2 | x | 1 |

| | | | |
|---|---|---|---|
| (iv) | 5 + z + zx | zx | z |
| (v) | 1 + x + xy | x | 1 |
| | | xy | 1 |
| (vi) | $12xy^2$ +25 | 12 $xy^2$ | $12y^2$ |
| (vii) | $7x+xy^2$ | $xy^2$ | $y^2$ |
| | | 7x | 7 |

| S. No. | Expression | Term containing $y^2$ | Coefficient of $y^2$ |
|---|---|---|---|
| (i) | $8-xy^2$ | $-xy^2$ | -x |
| (ii) | 5y+7x | $5y^2$ | 5 |
| (iii) | $2x^2y-15xy^2 + 7y^2$ | $-15xy^2$ | -15x |
| | | $7y^2$ | 7 |

**5. Classify into monomials, binomials and trinomials:**

**(i) 4y - 7x**

**(ii) $y^2$**

**(iii) x + y - xy**

**(iv) 100**

**(v) ab - a - b**

**(vi) 5 - 3t**

**(vii) $4p^2q - 4pq^2$**



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**(viii) 7mn**

**(ix) $z^2 - 3z + 8$**

**(x) $a^2 + b^2$**

**(xi) $z^2 + z$**

**(xii) $1 + x + x^2$**

**Answer**

| S.No. | Expression | Type of Polynomial |
|---|---|---|
| (i) | 4y-7z | Binomial |
| (ii) | $y^2$ | Monomial |
| (iii) | x+y-xy | Trinomial |
| (iv) | 100 | Monomial |
| (v) | ab-a-b | Trinomial |
| (vi) | 5-3t | Binomial |
| (vii) | $4p^2q-4pq^2$ | Binomial |
| (viii) | 7mn | Monomial |
| (ix) | $z^2-3z + 8$ | Trinomial |
| (x) | $a^2 + b^2$ | Binomial |
| (xi) | $z^2 +z$ | Binomial |
| (xii) | $1 + x + x^2$ | Trinomial |

**6. State whether a given pair of terms is of like or unlike terms:**

**(i) 1,100**

**(ii)** $-7x, \frac{5}{2}x$

**(iii) -29x, -29y**

**(iv) 14xy, 42 yx**

**(v) $4m^2p$, $4mp^2$**

**(vi) $12xz$, $12x^2 z^2$**

**Answer**

| S.No. | Pair of terms | Like / Unlike terms |
|---|---|---|
| (i) | 1, 100 | Like terms |
| (ii) | $-7x, \frac{5}{2}x$ | Like terms |
| (iii) | -29x,-29y | Unlike terms |
| (iv) | 14xy,42yx | Like terms |
| (v) | $4m^2p$,$4mp^2$ | Unlike terms |
| (vi) | $12xz$,$12x^2z^2$ | Unlike terms |

**7. Identify like terms in the following:**

**(a) $-xy^2$, $-4yx^2$, $8x^2$, $2xy^2$, 7y, -11x2 - 100x, - 11yx, $20x^2y$, $-6x^2$, y, 2xy, 3x**

**Answer**

(i) $-xy^2$,$2\ xy^2$

(ii) $-4yx^2$ , $20x^2y$



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(iii) $8x^2$,$-11x^2$,$-6x^2$

(iv) 7y, y

(v) -100x, 3x

(vi) -11yx, 2xy

**(b) 10pq, 7p, 8q, $-p^2q^2$, -7qp, -100q, -23, $12q^2p^2$, $-5p^2$, 41,2405 p, 78qp, $13p^2q$, $qp^2$, $701p^2$**

**Answer**

(i) 10 pq - 7 pq,78 pq

(ii) 7p, 2405 p

(iii) 8q,- 100q

(iv) $-p^2q^2$, $12p^2q^2$

(v) -12,41

(vi) $-5p^2$,$701p^2$

(vii) 13 $p^2q$,$qp^2$

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**Exercise 12.2**

**1. Simplify combining like terms:**

**(i) 21b – 32 + 7b – 20b**

**Answer**

When term have the same algebraic factors, they are like terms.

Then,

= (21b + 7b – 20b) – 32

= b (21 + 7 – 20) – 32

= b (28 - 20) – 32

= b (8) - 32

= 8b - 32

**(ii) – $z^2$ + 13$z^2$ – 5z + 7z3 – 15z**

**Answer**

When term have the same algebraic factors, they are like terms.

Then,

= $7z^3$ + (-$z^2$ + 13$z^2$) + (-5z – 15z)

= $7z^3$ + z2 (-1 + 13) + z (-5 - 15)

= $7z^3$ + z2 (12) + z (-20) + 7z3

= $7z^3$ + 12$z^2$ – 20z + $7z^3$

**(iii) p – (p – q) – q – (q – p)**

**Answer**

When term have the same algebraic factors, they are like terms.

Then,

= p – p + q – q – q + p

= p – q

**(iv) 3a – 2b – ab – (a – b + ab) + 3ab + b – a**

**Answer**

When term have the same algebraic factors, they are like terms.

Then,

= 3a – 2b – ab – a + b – ab + 3ab + b – a

= 3a – a – a – 2b + b + b – ab – ab + 3ab

= a (1 – 1- 1) + b (-2 + 1 + 1) + ab (-1 -1 + 3)

= a (1 - 2) + b (-2 + 2) + ab (-2 + 3)

= a (1) + b (0) + ab (1)

= a + ab

**(v) $5x^2y – 5x^2 + 3yx^2 – 3y^2 + x^2 – y^2 + 8xy^2 – 3y2$**

**Answer**

When term have the same algebraic factors, they are like terms.

Then,

= $5x^2y + 3yx^2 – 5x^2 + x^2 – 3y^2 – y^2 – 3y^2$

= $x^2y (5 + 3) + x^2 (- 5 + 1) + y^2 (-3 – 1 -3) + 8xy^2$

= $x^2y (8) + x^2 (-4) + y^2 (-7) + 8xy^2$

= $8x^2y - 4x^2 – 7y^2 + 8xy^2$

**(vi) $(3y^2 + 5y – 4) – (8y – y^2 – 4)$**

**Answer**

When term have the same algebraic factors, they are like terms.

Then,

= $3y^2 + 5y – 4 – 8y + y^2 + 4$

= $3y^2 + y2 + 5y – 8y – 4 + 4$

= $y^2 (3 + 1) + y (5 - 8) + (-4 + 4)$

= $y^2 (4) + y (-3) + (0)$

= $4y^2 – 3y$.

**2. Add:**

**(i) 3mn, – 5mn, 8mn, – 4mn**

**Answer**

When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

= 3mn + (-5mn) + 8mn + (- 4mn)

= 3mn – 5mn + 8mn – 4mn

= mn (3 – 5 + 8 - 4)

= mn (11 - 9)

= mn (2)

= 2mn

**(ii) t – 8tz, 3tz – z, z – t**

**Answer**

When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

= t – 8tz + (3tz - z) + (z - t)

= t – 8tz + 3tz – z + z - t

= t – t – 8tz + 3tz – z + z

= t (1 - 1) + tz (- 8 + 3) + z (-1 + 1)

= t (0) + tz (- 5) + z (0)

= - 5tz



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**(iii) – 7mn + 5, 12mn + 2, 9mn – 8, – 2mn – 3**

**Answer**

When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

= - 7mn + 5 + 12mn + 2 + (9mn - 8) + (- 2mn - 3)

= - 7mn + 5 + 12mn + 2 + 9mn – 8 - 2mn - 3

= - 7mn + 12mn + 9mn – 2mn + 5 + 2 – 8 – 3

= mn (-7 + 12 + 9 - 2) + (5 + 2 – 8 - 3)

= mn (- 9 + 21) + (7 - 11)

= mn (12) – 4

= 12mn - 4

**(iv) a + b – 3, b – a + 3, a – b + 3**

**Answer**

When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

= a + b – 3 + (b – a + 3) + (a – b + 3)

= a + b – 3 + b – a + 3 + a – b + 3

= a – a + a + b + b – b – 3 + 3 + 3

= a (1 – 1 + 1) + b (1 + 1 - 1) + (-3 + 3 + 3)

= a (2 -1) + b (2 -1) + (-3 + 6)

= a (1) + b (1) + (3)

= a + b + 3



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**(v) 14x + 10y – 12xy – 13, 18 – 7x – 10y + 8xy, 4xy**

**Answer**

When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

= 14x + 10y – 12xy – 13 + (18 – 7x – 10y + 8xy) + 4xy

= 14x + 10y – 12xy – 13 + 18 – 7x – 10y + 8xy + 4xy

= 14x – 7x + 10y– 10y – 12xy + 8xy + 4xy – 13 + 18

= x (14 - 7) + y (10 - 10) + xy(-12 + 8 + 4) + (-13 + 18)

= x (7) + y (0) + xy(0) + (5)

= 7x + 5

**(vi) 5m – 7n, 3n – 4m + 2, 2m – 3mn – 5**

**Answer**

When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

= 5m – 7n + (3n – 4m + 2) + (2m – 3mn - 5)

= 5m – 7n + 3n – 4m + 2 + 2m – 3mn – 5

= 5m – 4m + 2m – 7n + 3n – 3mn + 2 – 5

= m (5 - 4 + 2) + n (-7 + 3) – 3mn + (2 - 5)

= m (3) + n (-4) – 3mn + (-3)

= 3m – 4n – 3mn - 3

**(vii) $4x^2y$, $– 3xy^2$, $–5xy^2$, $5x^2y$**

**Answer**

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When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

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

= $4x^2y + 5x^2y – 3xy^2 – 5xy^2$

= $x^2y\ (4 + 5) + xy^2\ (-3 - 5)$

= $x^2y\ (9) + xy^2\ (- 8)$

= $9x^2y – 8xy^2$

**(viii) $3p^2q^2 – 4pq + 5, – 10\ p^2q^2, 15 + 9pq + 7p^2q^2$**

**Answer**

When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

= $3p^2q^2 – 4pq + 5 + (- 10p^2q^2) + 15 + 9pq + 7p^2q^2$

= $3p^2q^2 – 10p^2q^2 + 7p^2q^2 – 4pq + 9pq + 5 + 15$

= $p^2q^2\ (3 -10 + 7) + pq\ (-4 + 9) + (5 + 15)$

= $p^2q^2\ (0) + pq\ (5) + 20$

= $5pq + 20$

**(ix) ab – 4a, 4b – ab, 4a – 4b**

**Answer**

When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

= $ab – 4a + (4b – ab) + (4a – 4b)$

= $ab – 4a + 4b – ab + 4a – 4b$

= ab – ab – 4a + 4a + 4b – 4b

= ab (1 -1) + a (4 - 4) + b (4 - 4)

= ab (0) + a (0) + b (0)

= 0

**(x) $x^2 – y^2 – 1$, $y^2 – 1 – x^2$, $1 – x^2 – y2$**

**Answer**

When term have the same algebraic factors, they are like terms.

Then, we have to add the like terms

= $x^2 – y^2 – 1 + (y^2 – 1 – x^2) + (1 – x^2 – y^2)$

= $x^2 – y^2 – 1 + y^2 – 1 – x^2 + 1 – x^2 – y^2$

= $x^2 – x^2 – x^2 – y^2 + y^2 – y^2 – 1 – 1 + 1$

= $x^2 (1 – 1- 1) + y^2 (-1 + 1 - 1) + (-1 -1 + 1)$

= $x^2 (1 - 2) + y^2 (-2 +1) + (-2 + 1)$

= $x^2 (-1) + y^2 (-1) + (-1)$

= $-x^2 – y^2 -1$

**3. Subtract:**

**(i) $-5y^2$ from $y^2$**

**Answer**

$y^2 - (-5y^2) = y^2 + 5y^2 = 6y^2$

**(ii) 6xy from -12xy**

**Answer**

-12xy -(6xy) = -12xy - 6xy = -18xy

**(iii) (a - b) from (a + b)**

**Answer**

(a + b)-(a -b) = a + b -a + b

= a - a + b + b = 2b

**(iv) a (b - 5) from b (5 - a)**

**Answer**

= b (5 - a)-a (b -5)

= 5b - ab - ab + 5a

= 5b - 2ab+5a

= 5a + 5b -2ab

**(v) $-m^2 + 5mn$ from $4m^2 - 3mn + 8$**

**Answer**

= $4m^2 - 3mn + 8 - (- m^2 + 5mn)$

= $4m^2 - 3mn + 8 + m^2 - 5mn$

= $4m^2 + m^2 - 3mn - 5mn + 8$

= $5m^2 - 8mn + 8$

**(vi) $-x^2 +10x - 5$ from $5x-10$**

**Answer**

= $5x – 10 – (-x^2 + 10x - 5)$

= $5x – 10 + x^2 – 10x + 5$

= $x^2 + 5x – 10x – 10 + 5$

= $x^2 – 5x - 5$



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**(vii) $5a^2 - 7ab + 5b^2$ from $3ab - 2a^2 - 2b^2$**

**Answer**

= $3ab – 2a^2 – 2b^2 – (5a2 – 7ab + 5b2)$

= $3ab – 2a2 – 2b2 – 5a2 + 7ab – 5b^2$

= $3ab + 7ab – 2a^2 – 5a^2 – 2b^2 – 5b^2$

= $10ab – 7a^2 – 7b^2$

**(viii) $4pq - 5q^2 - 3p^2$ from $5p^2 + 3q^2 - pq$**

**Answer**

= $5p^2 + 3q^2 – pq – (4pq – 5q^2 – 3p^2)$

= $5p^2 + 3q^2 – pq – 4pq + 5q^2 + 3p^2$

= $5p^2 + 3p^2 + 3q^2 + 5q^2 – pq – 4pq$

= $8p^2 + 8q^2 – 5pq$

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

**Answer**

Let p should be added.

Then according to question,

$x^2 + xy + y^2 + p = 2x^2 + 3xy$

$\Rightarrow p = 2x^2 + 3xy - (x^2 + xy + y^2)$

$\Rightarrow p = 2x^2 + 3xy - x^2 - xy - y^2$

$\Rightarrow p = 2x^2 - x^2- y^2 +3xy - xy$

$\Rightarrow p = x^2 - y^2 + 2xy$

Hence, $x^2 - y^2 + 2xy$ should be added.

**(b) What should be subtracted from 2a + 8b+10 to get -3a + 7b + 16?**

**Answer**

Let q should be subtracted.

Then according to question, 2a + 8b + 10-q = -3a + 7b + 16

⇒ -q = -3a +7b + 16 - (2a + 8b + 10)

⇒ -q = -3a + 7b + 16 - 2a - 8b - 10

⇒ - q = -3a - 2a + 7b - 8b + 16 - 10

⇒ -q = -5a - b + 6

⇒ q = - (- 5a - b + -6)

⇒ q = 5a + b - 6

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

**Answer**

Let q should be subtracted.

Then according to question,

$3x^2 - 4y^2 + 5xy + 20 - q = -x^2 - y^2 + 6xy + 20$

$\Rightarrow q = 3x^2 - 4y^2 + 5xy + 20 - (-x^2 - y^2 + 6xy + 20)$

$\Rightarrow q = 3x^2 - 4y^2 + 5xy + 20 + x^2 + y^2 - 6xy - 20$

$\Rightarrow q = 3x^2 + x^2 - 4y^2 + y2 + 5xy - 6xy + 20-20$

$\Rightarrow q = 4x^2 - 3y^2 - xy + 0$

Hence, $4x^2 - 3y^2 - xy$ should be subtracted.

**6. (a) From the sum of 3x - y + 11 and - y - 11, subtract 3x - y - 11.**

**Answer**

First we have to find out the sum of 3x – y + 11 and – y – 11

= 3x – y + 11 + (-y - 11)

= 3x – y + 11 – y – 11

= 3x – y – y + 11 – 11

= 3x – 2y

Now, subtract 3x – y – 11 from 3x – 2y

= 3x – 2y – (3x – y - 11)

= 3x – 2y – 3x + y + 11

= 3x – 3x – 2y + y + 11

= -y + 11

**(b) From the sum of 4 + 3x and 5 - 4x + $2x^2$, subtract the sum of $3x^2$ - 5x and $-x^2$ + 2x + 5.**

**Answer**

First we have to find out the sum of 4 + 3x and 5 – 4x + $2x^2$

= 4 + 3x + (5 – 4x + $2x^2$)

= 4 + 3x + 5 – 4x + $2x^2$

= 4 + 5 + 3x – 4x + $2x^2$

= 9 - x + $2x^2$

= $2x^2$ – x + 9 … [equation 1]

Then, we have to find out the sum of $3x^2$ – 5x and – $x^2$ + 2x + 5.

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**1. If m = 2, find the value of:**

**(i) m - 2**

**(ii) 3m - 5**

**(iii) 9 - 5m**

**(iv) 3m2 - 2m - 7**

**(v)** $\frac{5m}{2} - 4$

**Answer**

(i) m - 2 = 2 - 2 [Putting m = 2]

= 0

(ii) 3m - 5 = 3 x 2 - 5 [Putting m = 2]

= 6 - 5 = 1

(iii) 9 - 5m = 9 - 5 x 2 [Putting m = 2]

= 9 - 10 = - 1

(iv) 3m2 - 2m - 7

= 3(2)2 - 2 (2) - 7 [Putting m = 2]

=3 × 4 - 2 × 2 - 7

= 12-4-7

= 12- 11 = 1

(v) $\frac{5m}{2} - 4 = \frac{5 \times 2}{2} - 4$ [Putting m = 2]

= 5 - 4 = 1

https://www.indcareer.com/schools/ncert-solutions-for-7th-class-maths-chapter-12-algebraic-expressions/

**2. If p = -2, find the value of:**

**(i) 4p + 7**

**(ii) - $3p^2$ + 4p + 7**

**(iii) -$2p^3$ - $3p^2$ +4/7 + 7**

**Answer**

(i) 4p + 7 = 4 (- 2) + 7  [Putting p= -2]

= -8 + 7 = -1

(ii) -$3p^2$+4p + 7

= -3 $(-2)^2$+ 4 (-2) + 7  [Putting p = - 2]

= - 3 × 4 - 8 + 7

= - 12 - 8 + 7

= -20 + 7 = -13

(iii) - $2p^3$ - $3p^2$ +4p + 7

= - 2 $(-2)^3$ - 3$(-2)^2$ + 4 (-2) + 7  [Putting p = - 2]

= -2 ×(-8)-3 ×4 -8 + 7

= 16-12-8 + 7

= -20 + 23 = 3

NCERT 7th Maths Chapter 12, class 7 Maths Chapter 12 solutions

**3. Find the value of the following expressions, when x = -1:**

**(i) 2x - 7**

**(ii) -x + 2**

**(iii) $x^2$ + 2x  + 1**

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**(iv) $2x^2$- x - 2**

**Answer**

(i) 2x - 7 = 2 (-1) - 7 [Putting x= - 1]

= - 2 - 7 = - 9

(ii) - x + 2 = - (-1) + 2 [Putting x= - 1]

= 1 + 2 = 3

(iii) $x^2$ + 2 x + 1 = (-1)2 + 2 (-1) + 1 [Putting x= - 1]

= 1 - 2 + 1

= 2 - 2 = 0

(iv) $2x^2$- x - 2 = 2 (-1)2 - (-1) - 2 [Putting x= - 1]

= 2x 1 + 1-2

= 2 + 1 - 2

= 3 - 2 = 1

**4. If a = 2,b = -2, find the value of:**

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

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

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

**Answer**

(i) $a^2 + b^2$ $( 2)^2 + (- 2)^2$ [Putting a = 2. b = - 2 ]

= 4 + 4 = 8

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

= (2) + ( 2) (- 2) +(-2)2 [Putting a = 2. b = - 2 ]



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= 4 - 4 + 4 = 4

(iii) $a^2 - b^2 = (2)^2 - (-2)^2$ [Putting a = 2,b = - 2]

= 4 - 4 = 0

NCERT 7th Maths Chapter 12, class 7 Maths Chapter 12 solutions

**5. When a = 0, b = -1, find the value of the given expressions:**

**(i) 2a + 2b**

**(ii) $2a^2+b^2+1$**

**(iii) $2a^2b + 2ab^2 +ab$**

**(iv) $a^2+ab+2$**

**Answer**

(i) 2a + 2b = 2 (0) + 2 (-1) [Putting a - 0,b = - 1]

= 0 - 2 = -2

(ii) $2a^2 + b^2 + 1 = 2 (0)^2 + (-1)^2 + 1$ [Putting a - 0,b = - 1]

= 2 x 0 + 1+ 1 = 0 + 2 = 2

(iii) $2a^2b + 2ab^2 + ab = 2(0)^2 (-1) + 2 (0 )(-1)^2 + (0 )(-1)$ [Putting a - 0,b = - 1]

= 0 + 0 + 0 = 0

(iv) $a^2 +ab + 2 - (0)^2 + (0) (-1) + 2$ [Putting a - 0,b = - 1]

= 0 + 0 + 2 = 2

NCERT 7th Maths Chapter 12, class 7 Maths Chapter 12 solutions

**6. 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**

**Answer**

(i) x + 7 + 4(x- 5) = x + 7 + 4x - 20 = x + 4 x + 7 - 20

= 5 x - 13 = 5 x 2 - 13 [Putting x = 2]

= 10-13 = -3

(ii) 3 (x+ 2) + 5x - 7 = 3x + 6 + 5x -7 = 3x + 5x + 6 - 7

= 8x - 1 = 8 x 2-1 [Putting x = -1]

= 16 - 1 = 15

(iii) 6x + 5 (x - 2) = 6x + 5x -10 = 11x - 10

= 11 x 2 - 10 [Putting x = -1]

= 22 - 10 = 12

(iv) 4(2x - 1) + 3x + 11 = 8x - 4 + 3x +11 = 8x + 3a - 4 + 11

= 11a + 7 = 11 x 2 + 7 [Putting x = - 1]

= 22+7 = 29

NCERT 7th Maths Chapter 12, class 7 Maths Chapter 12 solutions

**7. Simplify these expressions and find their values if x = 3,a = -1, b = - 2 :**

**(i) 3x - 5 - x + 9**

**(ii) 2 - 8x + 4x + 4**

**(iii) 3a + 5 - 8a + 1**

**(iv) 10 - 3b - 4 - 5b**

**(v) 2a - 2b - 4 - 5 + a**

**Answer**

(i) 3a - 5 - x + 9 = 3x - x - 5 + 9 = 2x + 4

= 2x3+4 [Putting a = 3]

= 6 + 4 = 10

(ii) 2 - 8x + 4x + 4 = - 8x + 4x + 2 + 4 = -4x + 6

= - 4 x 3 + 6 [Putting a = 3]

= -12 + 6 =12

(iii) 3a + 5 - 8a + 1 = 3a - 8a + 5 + 1 = - 5a + 6

= -5(- 1) + 6 [Putting a = - 1]

= 5 + 6 = 11

(iv) 10 - 3b - 4 - 5b = - 3b - 5b + 10 - 4 = -8b+6

= -8 (-2)+ 6 [Putting b = -2]

= 16 + 6 = 22

(v) 2a - 2b - 4 - 5 + a = 2a + a - 2b - 4 - 5

= 3a - 2b - 9 = 3 (-1)-2 (-2) -9 [Putting a = -1 , b = - 2]

= -3 + 4 -9 = -8

NCERT 7th Maths Chapter 12, class 7 Maths Chapter 12 solutions

**8. (i) If z = 10, find the value of $z^3$ - 3 (z - 10).**

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

**Answer**

(i) $z^3$ -3(z-10) = $(10)^3$-3(10 - 10) [Putting z = 10]

= 1000 - 3 x 0 = 1000- 0



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= 1000

(ii) $p^2 - 2p - 100 = (-10)^2 - 2(-10) - 100$ (Putting p = - 10]

= 100+ 20 - 100 = 20

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

**Answer**

Given: $2x^2 + x - a = 5$

$\Rightarrow 2(0)^2 + 0 - a = 5$ [Putting x = 0]

$\Rightarrow 0 + 0 - a = 5$

$\Rightarrow a = -5$

Hence, the value of a is -5.

NCERT 7th Maths Chapter 12, class 7 Maths Chapter 12 solutions

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

**Answer**

Given $2(a^2 + ab) + 3 - ab$

$\Rightarrow 2a^2 + 2ab + 3 - ab$

$\Rightarrow 2a^2 + 2ab - ab + 3$

$\Rightarrow 2a^2 + ab + 3$

$\Rightarrow 2(5)^2 + (5)(-3) + 3$ [Putting a = 5 , b = -3]

$\Rightarrow 2 \times 25 - 15 + 3$

$\Rightarrow 50 - 15 + 3$

$\Rightarrow 38.$

# Chapterwise NCERT Solutions for Class 7 Maths :


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