NCERT Solutions for Class 7 Maths Chapter 12: Here are the NCERT solutions for Class 7 Maths Chapter 12 Algebraic Expressions. When a student is having trouble answering a question from NCERT Solutions for Class 7 Maths Chapter 12, they may refer to the solutions.

The NCERT Solutions for Class 7 Maths Chapter 12 are available for download in PDF format, allowing students to study offline as well. When it comes to practice question banks, these books are among the best resources. The following are the subjects addressed in this chapter.

NCERT Solutions for Class 7 Maths Chapter 12

Below we have provided NCERT Solutions for Class 7 Maths Chapter 12 for students to help them understand the NCERT Solutions for Class 7 Maths Chapter 12 better and to score good marks in their examination.

Exercise 12.1 Page: 234

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

(i) Subtraction of z from y.

Solution:-

= Y – z

(ii) One-half of the sum of numbers x and y.

Solution:-

= ½ (x + y)

= (x + y)/2

(iii) The number z multiplied by itself.

Solution:-

= z × z

= z^2

(iv) One-fourth of the product of numbers p and q.

Solution:-

= ¼ (p × q)

= pq/4

(v) Numbers x and y, both squared and added.

Solution:-

= $x^2 + y^2$

(vi) Number 5 added to three times the product of numbers m and n.

Solution:-

= 3mn + 5

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

Solution:-

= 10 – (y × z)

= 10 – yz

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

Solution:-

= (a × b) – (a + b)

= ab – (a + b)

2. (i) Identify the terms and their factors in the following expressions.

Show the terms and factors by tree diagrams.

(a) x – 3

Solution:-

Expression: x – 3

Terms: x, -3

Factors: x; -3

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

Solution:-

Expression: $1 + x + x^2$

Terms: 1, x, x^2

Factors: 1; x; x,x

(c) $y - y^3$

Solution:-

Expression: $y - y^3$

Terms: y, $-y^3$

Factors: y; -y, -y, -y

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

Solution:-

Expression: $5xy^2 + 7x^2y$

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

Factors: 5, x, y, y; 7, x, x, y

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

Solution:-

Expression: $-ab + 2b^2 - 3a^2$

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

Factors: -a, b; 2, b, b; -3, a, a

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

(a) – 4x + 5 (b) – 4x + 5y (c) $5y + 3y^2$ (d) $xy + 2x^2y^2$

(e) pq + q (f) 1.2 ab – 2.4 b + 3.6 a (g) ¾ x + ¼

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

Solution:-

Expressions are defined as numbers, symbols and operators (such as +. – , × and ÷) grouped together that show the value of something.

In algebra, a term is either a single number or variable or numbers and variables multiplied together. Terms are separated by + or – signs or sometimes by division.

Factors are defined as numbers we can multiply together to get another number.

Sl.No.	Expression	Terms	Factors
(a)	– 4x + 5	-4x5	-4, x5
(b)	– 4x + 5y	-4x5y	-4, x5, y
(c)	5y + $3y^2$	5y$3y^2$	5, y3, y, y
(d)	xy + $2x^2y^2$	xy$2x^2y^2$	x, y2, x, x, y, y
(e)	pq + q	pqq	P, qQ
(f)	1.2 ab – 2.4 b + 3.6 a	1.2ab-2.4b	1.2, a, b-2.4, b
		3.6a	3.6, a
(g)	¾ x + ¼	¾ x¼	¾, x¼
(h)	0.1 p^2 + 0.2 q^2	0.1$p^2$0.2q^2	0.1, p, p0.2, 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^3 (iii) x + 2xy + 3y (iv) 100m + 1000n (v) – p^2q^2 + 7pq (vi) 1.2 a + 0.8 b (vii) 3.14 r^2 (viii) 2 (l + b)

(ix) 0.1 y + 0.01 y^2

Solution:-

Expressions are defined as numbers, symbols and operators (such as +. – , × and ÷) grouped together that show the value of something.

In algebra, a term is either a single number or variable or numbers and variables multiplied together. Terms are separated by + or – signs or sometimes by division.

A coefficient is a number used to multiply a variable (2x means 2 times x, so 2 is a coefficient). Variables on their own (without a number next to them) actually have a coefficient of 1 (x is really 1x).

Sl.No.	Expression	Terms	Coefficients
(i)	5 – $3t^2$	– $3t^2$	-3
(ii)	1 + t + t^2 + t^3	tt^2	11
		t^3	1

(iii)	x + 2xy + 3y	x2xy 3y	12 3
(iv)	100m + 1000n	100m1000n	1001000
(v)	$– p^2q^2 + 7pq$	$-p^2q^27pq$	-17
(vi)	1.2 a + 0.8 b	1.2a0.8b	1.20.8
(vii)	$3.14\ r^2$	3.14^2	3.14
(viii)	2 (l + b)	2l2b	22
(ix)	$0.1\ y + 0.01\ y^2$	$0.1y0.01y^2$	0.10.01

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) $12xy^2 + 25$

(vii) $7x + xy^2$

Solution:-

Sl.No.	**Expression**	**Terms**	**Coefficient of x**
(i)	$y^2x + y$	y^2x	y^2
(ii)	$13y^2 – 8yx$	– 8yx	-8y
(iii)	x + y + 2	x	1
(iv)	5 + z + zx	xzx	1z
(v)	1 + x + xy	xy	y
(vi)	$12xy^2 + 25$	$12xy^2$	$12y^2$
(vii)	$7x + xy^2$	$7xxy^2$	$7y^2$

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

(i) $8 – xy^2$ (ii) $5y^2 + 7x$ (iii) $2x^2y – 15xy^2 + 7y^2$

Solution:-

Sl.No.	Expression	Terms	Coefficient of y^2
(i)	$8 - xy^2$	$- xy^2$	$- x$
(ii)	$5y^2 + 7x$	$5y^2$	5
(iii)	$2x^2y - 15xy^2 + 7y^2$	$- 15xy^2 7y^2$	$- 15x7$

5. Classify into monomials, binomials and trinomials.

(i) 4y – 7z

Solution:-

Binomial.

An expression which contains two unlike terms is called a binomial.

(ii) y^2

Solution:-

Monomial.

An expression with only one term is called a monomial.

(iii) x + y – xy

Solution:-

Trinomial.

An expression which contains three terms is called a trinomial.

(iv) 100

Solution:-

Monomial.

An expression with only one term is called a monomial.

(v) ab – a – b

Solution:-

Trinomial.

An expression which contains three terms is called a trinomial.

(vi) 5 – 3t

Solution:-

Binomial.

An expression which contains two unlike terms is called a binomial.

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

Solution:-

Binomial.

An expression which contains two unlike terms is called a binomial.

(viii) 7mn

Solution:-

Monomial.

An expression with only one term is called a monomial.

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

Solution:-

Trinomial.

An expression which contains three terms is called a trinomial.

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

Solution:-

Binomial.

An expression which contains two unlike terms is called a binomial.

(xi) $z^2 + z$

Solution:-

Binomial.

An expression which contains two unlike terms is called a binomial.

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

Solution:-

Trinomial.

An expression which contains three terms is called a trinomial.

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

(i) 1, 100

Solution:-

Like term.

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

(ii) –7x, (5/2)x

Solution:-

Like term.

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

(iii) – 29x, – 29y

Solution:-

Unlike terms.

The terms have different algebraic factors, they are unlike terms.

(iv) 14xy, 42yx

Solution:-

Like term.

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

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

Solution:-

Unlike terms.

The terms have different algebraic factors, they are unlike terms.

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

Solution:-

Unlike terms.

The terms have different algebraic factors, they are unlike terms.

7. Identify like terms in the following.

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

Solution:-

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

They are,

$-xy^2, 2xy^2$

$-4yx^2, 20x^2y$

$8x^2, -11x^2, -6x^2$

$7y, y$

$-100x, 3x$

$-11yx, 2xy$

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

$13p^2q, qp^2, 701p^2$

Solution:-

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

They are,

$10pq, -7qp, 78qp$

$7p, 2405p$

$8q, -100q$

$-p^2q^2, 12q^2p^2$

$-23, 41$

$-5p^2, 701p^2$

$13p^2q, qp^2$

Exercise 12.2 Page: 239

1. Simplify combining like terms.

(i) $21b - 32 + 7b - 20b$

Solution:-

When terms 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) $– z^2 + 13z^2 – 5z + 7z^3 – 15z$

Solution:-

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

Then,

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

= $7z^3 + z^2 (-1 + 13) + z (-5 – 15)$

= $7z^3 + z^2 (12) + z (-20)$

= $7z^3 + 12z^2 – 20z$

(iii) p – (p – q) – q – (q – p)

Solution:-

When terms 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

Solution:-

When terms 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) $5x^2y – 5x^2 + 3yx^2 – 3y^2 + x^2 – y^2 + 8xy^2 – 3y^2$

Solution:-

When terms 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) $(3y^2 + 5y – 4) – (8y – y^2 – 4)$

Solution:-

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

Then,

= $3y^2 + 5y – 4 – 8y + y^2 + 4$

= $3y^2 + y^2 + 5y – 8y – 4 + 4$

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

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

= $4y^2 – 3y$

2. Add:

(i) 3mn, – 5mn, 8mn, – 4mn

Solution:-

When terms 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

Solution:-

When terms 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

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

Solution:-

When terms 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

Solution:-

When terms 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

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

Solution:-

When terms 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

Solution:-

When terms 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) $4x^2y$, – $3xy^2$, –$5xy^2$, $5x^2y$

Solution:-

When terms 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) $3p^2q^2 – 4pq + 5$, – $10 p^2q^2$, $15 + 9pq + 7p^2q^2$

Solution:-

When terms 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

Solution:-

When terms 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) $x^2 – y^2 – 1$, $y^2 – 1 – x^2$, $1 – x^2 – y^2$

Solution:-

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

Then, we have to add the like terms.

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

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

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

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

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

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

= $-x^2 – y^2 -1$