

NCERT Solutions for Class 7 Maths Chapter 12

Algebraic Expressions Ex 12.1

Ex 12.1 Class 7 Maths Question 1.

Get the algebraic expressions in the following cases using variables, constants and arithmetic 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 number m and n .
- (vii) Product of numbers y and z subtracted from 10.
- (viii) Sum of numbers a and b subtracted from their product.

Solution:

- (i) Subtraction of z from y

Expression: $y - z$

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

Expression: $\frac{1}{2}(x + y)$ or $\frac{x+y}{2}$

- (iii) The number z multiplied by itself.

Expression: $z \times z = z^2$

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

Expression: $\frac{1}{4}pq$ or $\frac{pq}{4}$

- (v) Numbers x and y both squared and added

Expression: $x^2 + y^2$

- (vi) Number 5 added to three times the product of number m and n

Expression: $3mn + 5$

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

Expression: $10 - yz$

(viii) Sum of numbers a and 6 subtracted from their product

Expression: Sum = $a + b$, Product = ab

$\therefore$ Required expression

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

$$= ab - a - b$$

Ex 12.1 Class 7 Maths Question 2.

(i) Identify the terms and their factors in the following expressions show the terms and factors by tree diagrams.

(a) $x - 3$

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

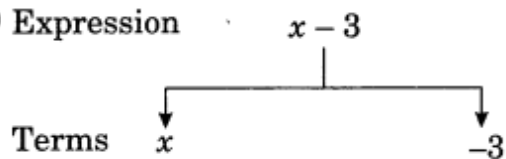
(c) $y - y^3$

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

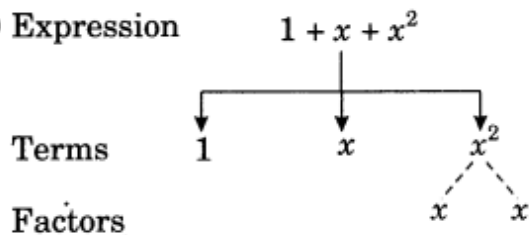
(e) $-ab + 2b^2 - 3a^2$

Solution:

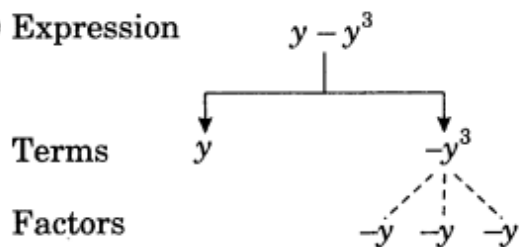
(a) Expression

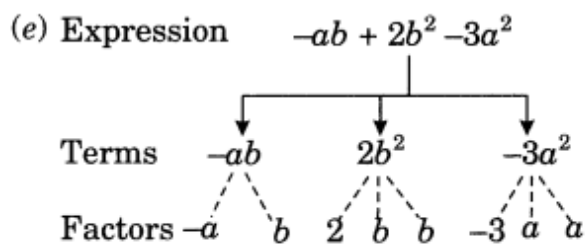
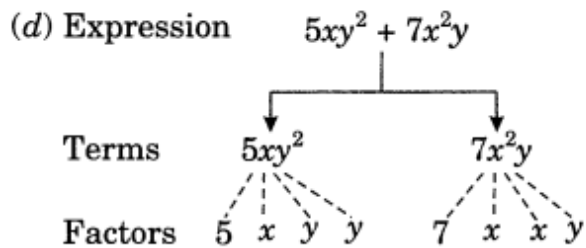


(b) Expression



(c) Expression





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

(a) $-4x + 5$

(b) $-4x + 5y$

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

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

(e) $pq + q$

(f) $1.2ab - 2.4b + 3.6a$

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

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

Solution:

Expressions	Terms	Factors
(a) $-4x + 5$	$-4x$ 5	-4 and x 5
(b) $-4x + 5y$	$-4x$ $5y$	-4 and x 5 and y
(c) $5y + 3y^2$	$5y$ $3y^2$	5 and y 3 , y and y
(d) $xy + 2x^2y^2$	xy $2x^2y^2$	x and y 2 , x , x , y and y
(e) $pq + q$	pq q	p and q q
(f) $1.2ab - 2.4b + 3.6a$	$1.2ab$ $2.4b$ $3.6a$	1.2 , a and b 2.4 and b 3.6 and a
(g) $\frac{3}{4}x + \frac{1}{4}$	$\frac{3}{4}x$ $\frac{1}{4}$	$\frac{3}{4}$ and x $\frac{1}{4}$
(h) $0.1p^2 + 0.2q^2$	$0.1p^2$ $0.2q^2$	0.1 , p and p 0.2 , q and q

Ex 12.1 Class 7 Maths Question 3.

Identify the numerical coefficients of terms (other than constants) in the following:

(i) $5 - 3t^2$

(ii) $1 + t + t^2 + t^3$

(iv) $100m + 1000n$

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

(vi) $1.2a + 0.86$

(vii) $3.14r^2$

(viii) $2(l + b)$

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

Solution:

Expressions	Terms	Coefficients
(i) $5 - 3t^2$	$-3t^2$	-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) $100m + 1000n$	$100m$	100
	$1000n$	1000
(v) $-p^2q^2 + 7pq$	$-p^2q^2$	-1
	$7pq$	7
(vi) $1.2a + 0.8b$	$1.2a$	1.2
	$0.8b$	0.8
(vii) $3.14r^2$	$3.14r^2$	3.14
(viii) $2(l + b)$	$2l$	2
	$2b$	2
(ix) $0.1y + 0.01y^2$	$0.1y$	0.1
	$0.01y^2$	0.01

Ex 12.1 Class 7 Maths Question 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:

(a)

Expressions	Terms with x	Coefficient of x
(i) $y^2x + y$	y^2x	y^2
(ii) $13y^2 - 8yx$	$-8yx$	$-8y$
(iii) $x + y + 2$	x	1
(iv) $5 + z + zx$	zx	z
(v) $1 + x + xy$	xy	y
	x	1
(vi) $12xy^2 + 25$	$12xy^2$	$12y^2$
(vii) $7x + xy^2$	$7x$	7
	xy^2	y^2

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

(i) $8 - xy^2$

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

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

Solution:

Expressions	Terms with y^2	Coefficient of y^2
(i) $8 - xy^2$	$-xy^2$	$-x$
(ii) $5y^2 + 7x$	$5y^2$	5
(iii) $2x^2y - 15xy^2 + 7y^2$	$-15xy^2$	$-15x$
	y^2	1
	$7y^2$	7

Ex 12.1 Class 7 Maths Question 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) $4p^2q - 4pq^2$

(viii) $7mn$

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

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

(xi) $z^2 + z$

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

Solution:

(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

Ex 12.1 Class 7 Maths Question 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) $14xy, 42yx$

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

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

Solution:

(i) $1, 100$ – Like

(ii) $-7x, \frac{5}{2}x$ – Like

(iii) $-29x, -29y$ – Unlike

(iv) $14xy, 42yx$ – Like

(v) $4m^2p, 4mp^2$ – Unlike

(vi) $12xz, 12x^2z^2$ – Unlike

Ex 12.1 Class 7 Maths Question 7.

Identify like terms in the following:

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

(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:

(a) Like terms are:

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

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

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

(iv) $7y$, y

(v) $-100x$, $3x$

(vi) $-11yx$, $2xy$

(b) Like terms are:

(i) $10pq$, $-7qp$, $78qp$

(ii) $7p$, $2405p$

(iii) $8q$, $-100q$

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

(v) -23 , 41

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

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