NCERT Solutions For Class 7 Maths Algebraic Expressions Exercise 12.1

Q1. 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.

Ans:

(i) $y - z$

(ii) $\frac{1}{2}(x+y)$

(iii) z^2

(iv) $\frac{1}{4}(pq)$

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

(vi) $5 + 3\,(mn)$

(vii) $10 - yz$

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

Q2. (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) $-ab + 2b^2 - 3a^2$

(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) $pq + q$

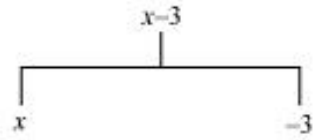
(f) 1.2 ab - 2.4 b + 3.6 a (g) $\frac{3}{4}x+\frac{1}{4}$

(h) $0.1p_2 + 0.2\ q_2$

Ans:

(i)

(a)



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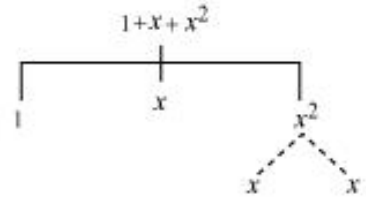

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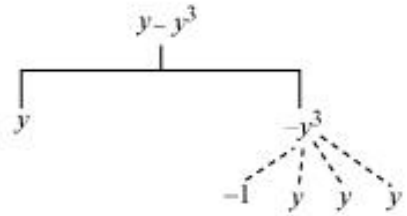

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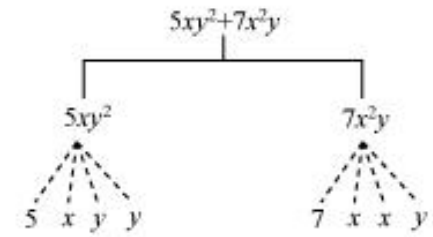

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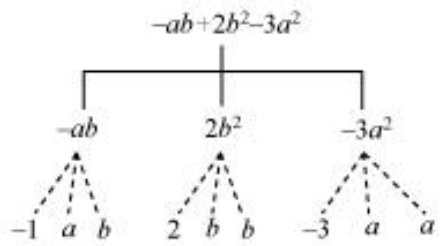

(ii)

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

Q3. 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) $1.2a + 0.8b$

(vii) $3.14\, r^2$ (viii) $2(l + b)$ (ix) $0.1y + 0.01\, y^2$

Ans:

Row	Expression	Terms	Coefficients
(i)	$5 - 3t^2$	$-3t^2$	-3
(ii)	$1 + t + t^2 + t^3$	t t^2 t^3	1 1 1
(iii)	$x + 2xy + 3y$	x $2xy$ $3y$	1 2 3
(iv)	$100m + 1000n$	$100m$ $1000n$	100 1000
(v)	$-p^2q^2 + 7pq$	$-p^2q^2$ $7pq$	-1 7
(vi)	$1.2a + 0.8b$	$1.2a$ $0.8b$	1.2 0.8
(vii)	$3.14\, r^2$	$3.14\, r^2$	3.14
(viii)	$2(l + b)$	$2l$ $2b$	2 2
(ix)	$0.1y + 0.01y^2$	$0.1y$ $0.01y^2$	0.1 0.01

Q4. (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) $7x + xy^2$

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

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

Ans:

(a)

Row	Expression	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)	$1 + x + xy$	x xy	1 y
(vi)	$12xy^2 + 25$	$12xy^2$	$12y^2$
(vii)	$7x + xy^2$	$7x$ xy^2	7 y^2

(b)

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

Q5. Classify into monomials, binomials and trinomials.

(i) $4y - 7z$ (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) $1 + x + x^2$

Ans:

The monomials, binomials, and trinomials have 1, 2, and 3 unlike terms in it respectively.

(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

Q6. 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, 12 x^2z^2

Ans: The terms which have the same algebraic factors are called like terms. However, when the terms have different algebraic factors, these are called unlike terms.

(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

Q7. 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

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

Ans:

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

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

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

$7y$, y

$-100x$, $3x$

$-11xy$, $2xy$

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

$7p$, $2405p$

$8q$, $-100q$

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

-23, 41

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

$13p^2q$, qp^2

********** END **********