

## Exercise 12.1

1. Get the algebraic expressions in the following case using variables, constant and arithmetic operations.

(i) Subtraction of  $z$  from  $y$ .

Ans:-  $y - z$

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

Ans:-  $\frac{1}{2}(x+y)$

(iii) The number  $z$  multiplied by itself.

Ans:-  $z^2$

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

Ans:-  $\frac{1}{4}pq$

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

Ans:-  $x^2 + y^2$

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

Ans:-  $5 + 3mn$

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

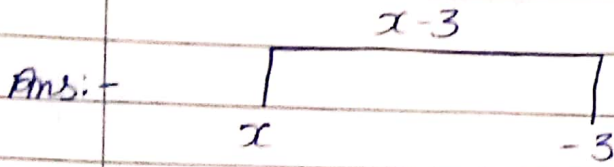
Ans:-  $10 - yz$

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

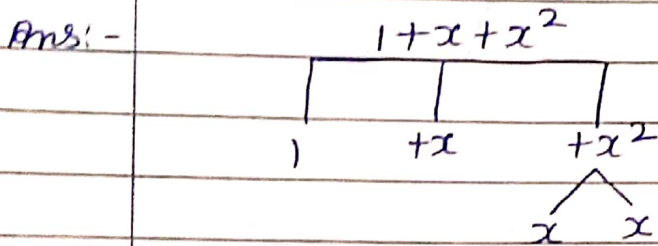
Ans:-  $ab - (a+b)$

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

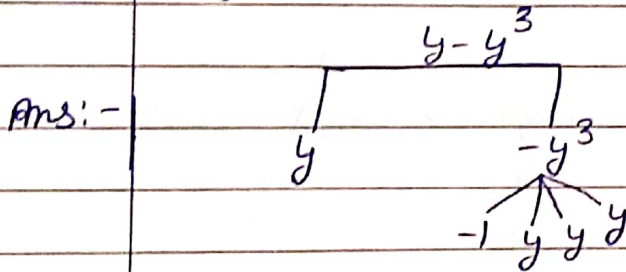
(a)  $x - 3$



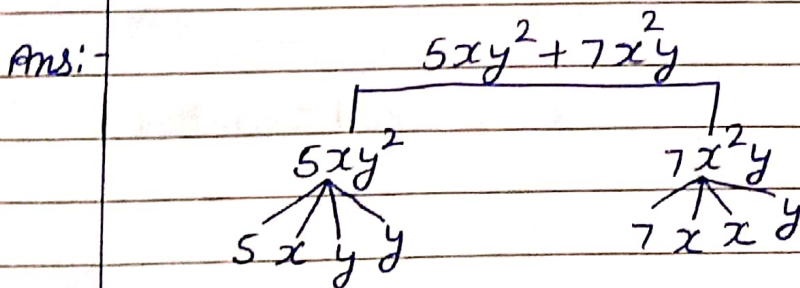
(b)  $1 + x + x^2$



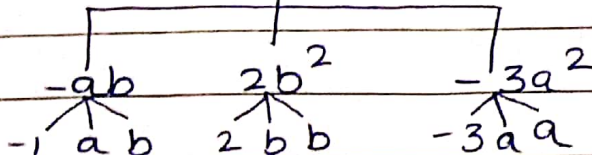
(c)  $y - y^3$



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



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





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

(a)  $-4x + 5$

Sr. No	Expressions	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)	$\frac{3x+1}{4}$	$\frac{3x}{4}$ $\frac{1}{4}$	$\frac{3}{4}, x, \frac{1}{4}$
(h)	$0.1p^2 + 0.2q^2$	$0.1p^2$ $+0.2q^2$	$0.1, p, p$ $0.2, q, q$

③ Identify the numerical coefficients of terms in the following expressions:

Ser. No	Expressions	Term	Factors
(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



④ (a) Identify terms which contain  $x$  and give the coefficient of  $x$ .

Serial No	Expressions	coefficient of $x$	Factor 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)	$7 + xy^2$	$xy^2$	$y^2$

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

Serial No	Expressions	coefficient of $y$	Factor of $y$
(i)	$8 - xy^2$	$-xy^2$	$-x$
(ii)	$5y^2 + 7x$	$5y^2$	$5$
(iii)	$2x^2y - 15xy^2 + 7y^2$	$-15xy^2$ $7y^2$	$-15x$ $7$

⑤ Classify into monomials, binomials and trinomials.

(i)  $4y - 7z$

Binomials

(ii)  $y^2$

Monomials

(iii)  $x + y - xy$

Trinomials

(iv)  $100$

Monomials

(v)  $ab - a - b$

Trinomials

(vi)  $5 - 3t$

Binomials

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

Binomials

(viii)  $7mn$

Monomials

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

Trinomials

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

Binomials

(xi)  $z^2 + z$

Binomials

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

Trinomials



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

(i) 1, 100	Like Term
(ii) $-7x, \frac{5x}{2}$	Like Term
(iii) $-29x, -29y$	UnLike Term
(iv) $14xy, 42xy$	Like Term
(v) $4m^2p, 4mp^2$	UnLike Term
(vi) $12xz, 12x^2z^2$	UnLike Term

⑦ Identify like terms in the following:

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

Ans:  $(-xy^2, 2xy^2), (-4yx^2, 20xy^2), (8x^2, -11x^2, -6x^2)$

$(7y, y), (-100x, 3x), (-11yx, 2yx)$

(b)  $10Pq, 7P, 8q, -P^2q^2, -7Pq, -100q, -23, 12P^2q^2, -5P^2, 41, 2405P, 78Pq, 13P^2q, P^2q, 701P^2$

Ans:  $(10Pq, -7Pq, 78Pq), (7P, 2405P), (8q, -100q), (-P^2q^2, 12P^2q^2), (-23, 41), (-5P^2, 701P^2), (13P^2q, P^2q)$