CHAPTER-19

FUNDAMENTAL OPERATIONS

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Exercise 19 (A)

1. Fill in the blanks.

i) $5+4 = \underline{9}$ and $5x+4x = \underline{9x}$

ii) $12+18 = \underline{30}$ and $12x^2y + 18x^2y = \underline{30x^2y}$

iii) $7+16 = \underline{23}$ and $7a+16b = \underline{7a+16b}$

iv) $1+3 = \underline{4}$ and $x^2y + \cancel{3xy^2}\ 3xy^2 = x^2y + 3xy^2$

v) $7-4 = \underline{3}$ and $7ab - 4ab = \underline{3ab}$

vi) $12-5 = \underline{7}$ and $\cancel{7ab}\ 12x - 5y = \underline{12x-5y}$

vii) $35-16 = \underline{19}$ and $35ab - 16ba = \underline{\cancel{35ab-16ba}\ 19ab}$

viii) $28-13 = \underline{15}$ and $28ax^2 - 13a^2x = \underline{\cancel{28ax^2-13a^2x}\ 15a^2x}$

2. Fill in the blanks.

i) The sum of -2 and $-5 = \underline{-7}$ and the sum of $-2x$ and $-5x = \underline{-7x}$

ii) The sum of $8x$ and $-3 = \underline{5}$ and the sum of $8ab$ and $-3ab = \underline{5ab}$

iii) The sum of -15 and $-4 = \underline{-19}$ and the sum of $-15x$ and $-4y = \underline{-15x + -4y}$ ~~the sum of~~

iv) $15+8+3 = \underline{26}$ and $15x + 8y + 3x = \underline{18x+8y}$

v) $12-9+15 = 18$ and $12ab-9ab+15ba = 18ba$

vi) $25-7-9 = 9$ and $25xy-7xy-9yx = 9yx$

vii) $-4-6-5 = -15$ and $-4ax-6ax-5ay = -10ax-5ay$

3. Add:

i) $8xy$ and $3xy$

Ans⇒ $8xy+3xy = 11xy$

ii) $2xyz, xyz$ and $6yz$

Ans⇒ $2xyz+xyz+6yz = 2xyz+1xyz+6yz$
$= 9xyz$

iii) $2a, 3a$ and $4b$

Ans⇒ $2a+3a+4b = 5a+4b$

iv) $3x$ and $2y$

Ans⇒ $3x+2y = 3x+2y$

v) $5m, 3n$ and $4p$

Ans⇒ $5m+3n+4p = 5m+3n+4p$

vi) $6a, 3a$ and $9ab$

Ans⇒ $6a+3a+9ab = 9a+9ab$

vii) $3p, 4q$ and $9q$

Ans⇒ $3p + 4q + 9q = 3p + 13q$

viii) $5ab, 4ba$ and $6b$

Ans⇒ $5ab + 4ba + 6b = 9ab + 6b$

ix) $50pq, 30pq$ and $10pf$

Ans⇒ $50pq + 30pq + 10pf = 80pq + 10pf$

x) $-2y, -y$ and $-3y$

Ans⇒ $-2y + -1y + -3y = -2y + -1y + -3y$
$= -2y - 1y - 3y$
$= -6y$

xi) $-3b$ and $-b$

Ans⇒ $-3b + -b = -3b + -1b$
$= -3b - 1b$
$= -4b$

xii) $5b, -4b$ and $-10b$

Ans⇒ $5b + -4b + -10b = 5b - 4b - 10b$
$= -9b$

xiii) $-2c, -c$ and $-5c$

Ans⇒ $-2c - c + -5c = -2c - 1c - 5c$
$= -2c - 1c - 5c$
$= -8c$

4. Evaluate:

i) $6a - a - 5a - 2a$

Ans⇒ $6a - a - 5a - 2a = 6a - 1a - 5a - 2a$
$= -2a$

ii) $2b - 3b - b + 4b$

Ans⇒ $2b - 3b - b + 4b = 2b - 3b - 1b + 4b$
$= 2b$

iii) $3x - 2x - 4x + 7x$

Ans⇒ $3x - 2x - 4x + 7x = 4x$

iv) $5ab + 2ab - 6ab + ab$

Ans⇒ $5ab + 2ab - 6ab + ab = 5ab + 2ab - 6ab + 1ab$
$= 2ab$

v) $8xy - 5y - 3x + 10y$

Ans⇒ $8x - 5xy - 3x + 10y = 8x - 3x - 5xy + 10y$
$= 5x + 10y - 5y$
$= 5x + 5y$

5. Evaluate:

i) $-7x+9x+2x-2x$

Ans⇒ $-7x+9x+2x-2x=2x$

ii) $5ab-2ab-8ab+6ab$

Ans⇒ $5ab+6ab-2ab-8ab=$
$=11ab-2ab-8ab$
$=11ab-10ab$
$=1ab$

iii) $-8a-3a+12a+13a-6a$

Ans⇒ $-8a-3a+12a+13a-6a$
$=12a+13a-8a-3a-6a$
$=25a-(8a+3a+6a)$
$=25a-17a$
$=8a$

iv) $19abc-11abc-12abc+14abc$

Ans⇒ $19abc-11abc-12abc+14abc$
~~$=19+1$~~
$=19abc+14abc-11abc-12abc$
$=33abc-(11abc+12abc)$
$=33abc-23abc$
$=10abc$

6. Subtract the first term from the second:

i) $4ab, 6ba$

Ans⇒ $6ba - 4ab = 2ba$

ii) $4.8b, 6.8b$

Ans⇒ $6.8b - 4.8b = 2.0b$

iii) $3.5abc, 10.5abc$

Ans⇒ $10.5abc - 3.5abc = 7.0abc$

iv) $3\frac{1}{2}mn, 8\frac{1}{2}nm$

Ans⇒ $8\frac{1}{2}nm - 3\frac{1}{2}mn = 5mn$

7. Simplify:

i) $2a^2b^2 + 5ab^2 + 8a^2b^2 + 3ab^2$

Ans⇒ $2a^2b^2 + 5ab^2 + 8a^2b^2 + 3ab^2$
$= 2a^2b^2 + 8a^2b^2 + 5ab^2 + 3ab^2$
$= 10a^2b^2 + 8ab^2$

ii) $4a + 3b - 2a - b$

Ans⇒ $4a + 3b - 2a - b$
$= 4a - 2a + 3b - b$
$= 4a - 2a + 3b - 1b$
$= 2a + 2b$

iii) $2xy + 4yz + 5xy + 3yz - 6xy$

Ans⇒ $2xy + 4yz + 5xy + 3yz - 6xy$
$= 2xy + 5xy - 6xy + 4yz + 3yz$
$= 1xy + 7yz$

iv) $ab + 15ab - 11ab - 2ab$

Ans⇒ $ab + 15ab - 11ab - 2ab$
$= 1ab + 15ab - 11ab - 2ab$
$= 3ab$

v) $6a^2 - 3b^2 + 2a^2 + 5b^2 - 4a^2$

Ans⇒ $6a^2 - 3b^2 + 2a^2 + 5b^2 - 4a^2$
$= 6a^2 + 2a^2 - 4a^2 - 3b^2 + 5b^2$
$= 12a^2 - (3b^2 + 5b^2)$
$= 12a^2 - 8b^2$

vi) $8abc + 2ab - 4abc + ab$

Ans⇒ $8abc + 2ab - 4abc + ab$
$= 8abc + 2ab - 4abc + 1ab$
$= 8abc - 4abc + 2ab + 1ab$
$= 4abc + 3ab$

vii) $9xyz + 15yxz - 10zyx - 2zxy$

Ans⇒ $9xyz + 15yxz - 10zyx - 2zxy$
$= 24xyz - (10zyx - 2zxy)$
$= 24xyz - 12zyx$
$= 12zyx$

viii) $13pqr + 2p + 4q - 6pqr + 5pqr$

Ans⇒ $13pqr + 2p + 4q - 6pqr + 5pqr$

$= 13pqr - 6pqr + 5pqr - 6pqr + 2p + 4q$

$= 24pqr + 2p + 4q$ $12pqr + 2p + 4q$

ix) $4ab + 0 - 2ba$

Ans⇒ $4ab + 0 - 2ba$

$= 4ab - 2ba + 0$

$= 2ba + 0$

$= 2ba$

x) $6x^2y - 2xy^2 + 5x^2y - xy^2$

Ans⇒ $6x^2y - 2xy^2 + 5x^2y - xy^2$

$= 6x^2y + 5x^2y - 2xy^2 - 1xy^2$

$= 11x^2y + -(2xy^2 + 1xy^2)$

$= 11x^2y - 3xy^2$