CW
26/07/21

Chapter - 19

Fundamental Concepts

$2+3=5$, $2x+3x=5x$

$7-5=2$, $7a-5a=2a$

$12-9=3$, $12x^2-9x^2=3x^2$

$20-13=7$, $20xy-13xy=7xy$

$3+2=5$, $3a^2b+2a^2b=5a^2b$

$6+9=15$, $6a+9b=$ $6a+9b$

$8+7=15$, $8ab+7a=8ab+7a$

$6x^2y+3xy=6x^2y+3xy$

Exercise - 19 (A)

1) 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 $1x^2y+3x^2y^2=1x^2y+3xy^2$

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

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

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

vii) $28-13=$ 15 and $28ax^2-13a^2x=$ $28ax^2-13a^2x$

2) i) The sum of -2 and $-5=$ -7 and the sum of $-2x$ and $-5x=$ $-7x$.

ii) The sum of 8 and $-3=$ 5 and the sum of $8ab$ and $-3ab=$ $5ab$.

iii) The sum of -15 and $-4=$ -19 and the sum of $-15x$ and $-4y=$ $-15x-4y$.

iv) $15+8+3=$ 26 and $15x+8y+3x=$ $18x+8y$.

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

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

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

3 i) $8xy+3xy=11xy$.

ii) $2xyz+xyz+6xyz=(2+1+6)xyz=9xyz$

iii) $2a+3a+4b=(2+3)a+4b=5a+4b$.

iv) $3x+2y=3x+2y$

v) $5m+3n+4p=5m+3n+4p$

vi) $6a+3a+9ab=(6+3)a+9ab=9a+9ab$

vii) $3p+4q+9q=3p+(4+9)q=3p+13q$.

viii) $5ab+4ba+6b=9ab+6b$

ix) $50pq + 30pq + 10pr = (50+30)pq + 10pr = 80pq + 10pr$

x) $-2y + -y + -3y = (-2 + -1 + -3) = -6y$.

xi) $-3b + -b = (-3 + -1)b = -4b$.

xii) $5b + -4b + -10b = -9b$.

xiii) $(-2c) + (-c) + (-5c) = (-2+1+5)c = -8c$

4) i) $6a - a - 5a - 2a = (6-1-5-2)a = 6a - 8a = -2a$

ii) $2b - 3b - b + 4b = 2b + 4b - (3+1)b = 6b - 4b = 2b$

iii) $3x - 2x - 4x + 7x = 3x + 7x - 2x - 4x = (3+7)x - (2+4)x$
$= 10x - 6x = 4x$.

iv) $5ab + 2ab - 6ab + ab = 5ab + 2ab + ab - 6ab = 8ab - 6ab = 2ab$.

v) $8x - 5y - 3x + 10y = 8x - 3x + 10y - 5y = 5x + 5y$.

5) i) $-7x + 9x + 2x - 2x = 9x + 2x - (7x) - (-2x) = 11x - 9x = 2x$

ii) $5ab - 2ab - 8ab + 6ab = 5ab + 6ab - 2ab - 8ab = 11ab - 10ab$
$= ab$

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

iv) $19abc - 11abc - 12abc + 14abc = abc(19 - 11 - 12 + 14) = abc$
$(33 - 23) = 10abc$

Continued Exercise - 19 (A)

6) Subtract the first term from the second:

i) $4ab, 6ba$

$= 6ba - 4ab = 2ab$

ii) $4 \cdot 8b, 6 \cdot 8b$

$= 6 \cdot 8b - 4 \cdot 8b = 2b$

iii) $3 \cdot 5\,abc, 10 \cdot 5\,abc$

$= 10 \cdot 5\,abc - 3 \cdot 5\,abc = 7abc$

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

$= 8\frac{1}{2}nm - 3\frac{1}{2}nm = \frac{17}{2}nm - \frac{7}{2}mn = \frac{17mn - 7m}{2} = \frac{10m}{2}$

$= 5mn$

7) Simplify:

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

$= 2a^2b^2 + 8a^2b^2 + 5ab^2 - 3ab^2$

$= 10a^2b^2 + 2ab^2$

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

$= 4a - 2a + 3b - b = 2a + 2b$.

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

$= 2xy + 5xy - 6xy + 4yz + 3yz = 7xy - 6xy + 7yz$
$= xy + 7yz$.

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

$= ab + 15ab - 11ab - 2ab = 16ab - 13ab = 3ab$.

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

$= 6a^2 + 2a^2 - 4a^2 + 5b^2 - 3b^2$
$= 4a^2 + 2b^2$.

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

$= 8abc - 4abc + 2ab + ab = 4abc + 3ab$.

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

$= 9xyz + 15yxz - 10zyx - 2zxy = 9xyz + 15yxy - 10zyx - 2zxy$
$= 24xyz - 12xyz = 12xyz$

VIII) $13fqrt + 2p + 4q - 6fqrt + 5fqrt$

$= 13fqrt - 6fqrt + 5fqrt + 2p + 4q = 7fqrt + 5fqrt + 2p + 4q =$
$12fqrt + 2p + 4q$.

ix) $4ab + 0 - 2ba$

$= 4ab - 2ba + 0 = 2ab$

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

$= 6x^2y + 5x^2y - 2xy^2 - xy^2 = 11x^2y - 3xy^2$.