

Exercise :- 11 (B)

4) Fill in the blanks :-

(i) $8x + 5x = 13x$

(ii) $8x - 5x = 3x$

(iii) $6xy^2 + 9xy^2 = 15xy^2$

(iv) $6xy^2 - 9xy^2 = -3xy^2$

(v) The sum of $8a$, $6a$ and $5b =$
 $8a + 6a + 5b$
 $= 14a + 5b$

(vi) The addition of 5 , $7xy$, 6 and $3xy$

~~5 + 6 + 7xy + 3xy~~
 $5 + 7xy + 6 + 3xy$
 $= 5 + 6 + 7xy + 3xy$
 $= 11 + 10xy$

(vii) $4a + 3b - 7a + 4b$

$$= 4a - 7a + 3b + 4b$$

$$= -3a + 7b$$

$$= 7b - 3a$$

(viii) $-15x + 13x + 8$

$$= -2x + 8$$

$$= 8 - 2x$$

$$\begin{aligned}
 \text{(a)} \quad & 6x^2y + 13xy^2 - 4x^2y + 2xy^2 \\
 &= 6x^2y - 4x^2y + 13xy^2 + 2xy^2 \\
 &= 2x^2y + 15xy^2
 \end{aligned}$$

$$\begin{aligned}
 \text{(b)} \quad & 16x^2 - 9x^2 = 7x^2 \text{ and} \\
 & 25xy^2 - 17xy^2 = \underline{8xy^2}
 \end{aligned}$$

2) Add

$$\begin{aligned}
 \text{(i)} \quad & -9x, 3x \text{ and } 4x \\
 &= -9x + 3x + 4x \\
 &= \cancel{9x} - 9x + 7x \\
 &= -2x
 \end{aligned}$$

$$\begin{aligned}
 \text{(ii)} \quad & 23y^2 + 8y^2 \text{ and } -12y^2 \\
 &= 23y^2 + 8y^2 - 12y^2 \\
 &= 31y^2 - 12y^2 \\
 &= 19y^2
 \end{aligned}$$

$$\begin{aligned}
 \text{(iii)} \quad & 18pq, -15pq, 3pq \\
 &= 18pq - 15pq + 3pq \\
 &= 18pq + 3pq - 15pq \\
 &= 21pq - 15pq = 6pq
 \end{aligned}$$

3) simplify

$$(i) 3m + 12m - 5m$$

$$= 3m + 15m - 5m$$

$$= 10m$$

$$(ii) 7n^2 - 9n^2 + 3n^2$$

$$= 7n^2 + 3n^2 - 9n^2$$

$$= 10n^2 - 9n^2$$

$$= n^2$$

$$(iii) 25zy - 8zy - 6zy$$

$$= 25zy - 14zy$$

$$= 11zy$$

$$(iv) -5ax^2 + 7ax^2 - 12ax^2$$

$$= 7ax^2 - 5ax^2 - 12ax^2$$

$$= 7ax^2 - 17ax^2$$

$$= -10ax^2$$

$$\begin{aligned}
 \text{v)} \quad & -16am + 4mx + 4am - 15mx + 5am \\
 & = -16am + 4am + 5am + 4mx - 15mx \\
 & = -16am + 9am + -11mx \\
 & = -7am - 11mx
 \end{aligned}$$

vi) order

$$\text{e) } a + b \text{ and } 2a + 3b$$

$$\begin{aligned}
 & = a + b + 2a + 3b \\
 & = a + 2a + b + 3b \\
 & = 3a + 4b
 \end{aligned}$$

$$\text{ii) } 2x + y \text{ and } 3x - 4y$$

$$\begin{aligned}
 & = 2x + y + 3x - 4y \\
 & = 2x + 3x + y - 4y \\
 & = 5x - 3y
 \end{aligned}$$

$$\text{iii) } -3a + 2b \text{ and } 3a + b$$

$$\begin{aligned}
 & = -3a + 2b + 3a + b \\
 & = -3a + 3a + 2b + b \\
 & = 3b
 \end{aligned}$$

$$(2) 4+x, 5-2x \text{ and } 6x$$

$$= 4+x+5-2x+6x$$

$$= 4+5+x-2x+6x$$

$$= 9+7x-2x$$

$$= 9+5x$$

5) Find the sum of

$$(i) 3x+8y+7z, 6y+4z-2x \text{ and } 3y-4x+6z$$

$$= 3x+8y+7z+6y+4z-2x+3y-4x+6z$$

$$= 3x-2x-4x+8y+6y+3y+7z+4z+6z$$

$$= 3x-6x+17y+17z$$

$$= -3x+17y+17z$$

$$(ii) 3a+5b+2c, 2a+3b-c \text{ and } a+b+c$$

$$= 3a+5b+2c+2a+3b-c+a+b+c$$

$$= 3a+2a+a+5b+3b+b+2c+c-c$$

$$= 6a+9b+2c$$

$$(iii) 4x^2+8xy-2y^2 \text{ and } 8xy-5y^2+x^2$$

$$= 4x^2+8xy-2y^2+8xy-5y^2+x^2$$

$$= 4x^2+x^2+8xy+8xy-2y^2-5y^2$$

$$= 5x^2+16xy-7y^2$$

$$(iv) 9x^2 - 6x + 7, 5 - 4x \text{ and } 6 - 3x^2$$

$$= 9x^2 - 6x + 7 + 5 - 4x + 6 - 3x^2$$

$$= 9x^2 - 3x^2 - 6x - 4x + 7 + 5 + 6$$

$$= 6x^2 - 10x + 18$$

$$(v) 5x^2 - 2xy + 3y^2, -2x^2 + 5xy + 9y^2$$

$$\text{and } 3x^2 - xy - 4y^2$$

$$= 5x^2 - 2xy + 3y^2 + -2x^2 + 5xy + 9y^2$$

$$+ 3x^2 - xy - 4y^2$$

$$= 5x^2 - 2x^2 + 3x^2 - 2xy + 5xy - xy + 3y^2 + 9y^2 - 4y^2$$

$$= 6x^2 + 2xy + 8y^2$$

$$(vi) a^2 + b^2 + 2ab, 2b^2 + c^2 + 2bc \text{ and } 4c^2 - a^2 + 2ac$$

$$= a^2 + b^2 + 2ab + 2b^2 + c^2 + 2bc + 4c^2 - a^2 + 2ac$$

$$= a^2 - a^2 + b^2 + 2b^2 + c^2 + 4c^2 + 2ab + 2bc + 2ac$$

$$= 3b^2 + 5c^2 + 2ab + 2bc + 2ac$$

(ii) $9ax - 6bx + 8$, $4ax + 8bx - 7$ and $-6ax - 4bx - 3$

$$= 9ax - 6bx + 8 + 4ax + 8bx - 7 + (-6ax - 4bx - 3)$$

$$= 9ax - 6bx + 8 + 4ax + 8bx - 7 - 6ax - 4bx - 3$$

$$= 9ax + 4ax - 6ax - 6bx + 8bx - 4bx + 8 - 7 - 3$$

$$= 7ax - 2bx - 2$$

(iii) $abc + 2ba + 3ac$, $4ca - 4ab + 2bca$ and $2ab - 3abc - 6ac$

$$= abc + 2ba + 3ac + 4ca - 4ab + 2bca + 2ab - 3abc - 6ac$$

$$= abc + 2abc - 3abc + 2ba - 4ab + 2ab + 3ac + 4ac - 6ac$$

$$= 0 + 0 + 0$$

$$= 0$$

(iv) $4a^2 + 5b^2 - 6ab$, $3ab$, $6a^2 - 2b^2$ and $4b^2 - 5ab$

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

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

$$= 10a^2 + 7b^2 - 8ab$$

Date _____
Page _____

$$(2x) \quad x^2 + x - 2, 2x - 3x^2 + 5 \text{ and } 2x^2 - 5x + 7$$

$$= x^2 + x - 2 + 2x - 3x^2 + 5 + 2x^2 - 5x + 7$$

$$= x^2 - 3x^2 + 2x^2 + x + 2x - 5x - 2 + 5 + 7$$

$$= 3x^2 - 3x^2 + 3x - 5x - 2 + 12$$

$$= 0 + 2x + 10$$

$$= 10 - 2x$$

Q1) $4x^3 + 2x^2 - x + 1$, $2x^3 - 5x^2 - 3x + 6$,
 $x^2 + 8$ and $5x^3 - 7x$

$$= 4x^3 + 2x^2 - x + 1 + 2x^3 - 5x^2 - 3x + 6 +$$

$$\textcircled{a} x^2 + 8 + 5x^3 - 7x$$

$$= 4x^3 + 2x^3 + 5x^3 + 2x^2 - 5x^2 + x^2 - x - 3x - 7x + 1 + 6 + 8$$

$$= 11x^3 - 2x^2 - 11x + 15$$

3) Find the sum of

i) x and $3y$

$$= x + 3y$$

(v) x^3 , $3x^2y$ and $2y^2$

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

ii) $-2a$ and $+5$

$$= -2a + 5$$

(vi) 11 and $-by$

$$= 11 + (-by)$$

iii) $-4x^2$ and $+7x$

$$= -4x^2 + 7x$$

$$= 11 - by$$

iv) $+4a$ and $-7b$

$$= 4a + (-7b)$$

$$= 4a - 7b$$

7) The sides of a triangle are

$$2x + 3y, x + 5y, 7x - 2y$$

perimeter = sum of three sides of the triangle

$$= 2x + 3y + x + 5y + 7x - 2y$$

$$= 2x + x + 7x + 3y + 5y - 2y$$

$$= 10x + 8y - 2y$$

$$= 10x + 6y$$

8) The sides of a rectangle are $6a + 9b$ and $8a - 4b$

$$\text{Let length} = 6a + 9b$$

$$\text{and breadth} = 8a - 4b$$

$$\therefore \text{perimeter} = 2(\text{length} + \text{breadth})$$

$$= 2(6a + 9b + 8a - 4b)$$

$$= 2(14a + 5b)$$

$$= 28a + 10b$$

9) Subtract the second expression from the first:

(i) $2a + b, a + b$

$$\begin{aligned} &= 2a + b - a - b \\ &= 2a - a + b - b \\ &= a + 0 = a \end{aligned}$$

(ii) $-2b + 2c, b + 3c$

$$\begin{aligned} &= -2b + 2c - b - 3c \\ &= -2b - b + 2c - 3c \\ &= -3b - 3c \end{aligned}$$

(iii) $5a + b, -6b + 2a$

$$= 5a + b - (-6b + 2a)$$

$$= 5a + b + 6b - 2a$$

$$= 5a - 2a + b + 6b$$

$$= 3a + 7b$$

(iv) $a^3 - 1 + a, 3a - 2a^2$

$$= a^3 - 1 + a - (3a - 2a^2)$$

$$= a^3 - 1 + a - 3a + 2a^2$$

$$= a^3 + 2a^2 - 2a - 1$$

$$(v) p+2, 1$$

$$= p+2-1$$

$$= p+1$$

$$(vi) x+2y+z, -x-y-3z$$

$$= x+2y+z - (-x-y-3z)$$

$$= x+2y+z + x+y+3z$$

$$= x+x+2y+y+z+3z$$

$$= 2x+3y+4z$$

$$(vii) 3a^2-8ab-2b^2, 3a^2-4ab+6b^2$$

$$= 3a^2-8ab-2b^2 - (3a^2-4ab+6b^2)$$

$$= 3a^2-8ab-2b^2 - 3a^2+4ab-6b^2$$

$$= 3a^2-3a^2-8ab+4ab-2b^2-6b^2$$

$$~~3a^2-3a^2-8ab+4ab-2b^2-6b^2~~$$

$$= -4ab-8b^2$$

$$(viii) 4pq-6p^2-2q^2, 9p^2$$

$$= 4pq-6p^2-2q^2-9p^2$$

$$= 4pq-6p^2-9p^2-2q^2$$

$$= 4pq-15p^2-2q^2$$

$$(ix) 10abc, 2a^2+2abc-4b^2$$

$$= 10abc - (2a^2+2abc-4b^2)$$

$$= 10abc - 2a^2 - 2abc + 4b^2$$

$$= 10abc - 2abc - 2a^2 + 4b^2$$

$$= 8abc - 2a^2 + 4b^2$$

$$x) a^2 + ab + c^2, a^2 - d^2$$

$$= a^2 + ab + c^2 - (a^2 - d^2)$$

$$= a^2 + ab + c^2 - a^2 + d^2$$

$$= a^2 - a^2 + ab + c^2 + d^2$$

$$= 0 + ab + c^2 + d^2$$

$$= ab + c^2 + d^2$$

9) ~~Subtract~~

~~(i) $4x$ from $8 - x$~~

~~$$= 4x - (8 - x)$$~~

~~$$= 4x - 8 + x$$~~

~~$$= 5x - 8$$~~

10) Subtract

(e) $4x$ from $8 - x$

$$= (8 - x) - 4x$$

$$= 8 - x - 4x$$

$$= 8 - 5x$$

(w) $-8c$ from $c + 3d$

$$= (c + 3d) - (-8c)$$

$$= c + 3d + 8c$$

$$= 3d + 9c$$

$$(iii) -5a - 2b \text{ from } b + 6c$$

$$= b + 6c - (-5a - 2b)$$

$$= b + 6c + 5a + 2b$$

$$= b + 2b + 6c + 5a$$

$$= 3b + 6c + 5a$$

$$(iv) 4p + p^2 \text{ from } 3p^2 - 8p$$

$$= ~~4p + p^2~~ 3p^2 - 8p - (4p + p^2)$$

$$= 3p^2 - 8p - 4p - p^2$$

$$= 3p^2 - p^2 - 8p - 4p$$

$$= 2p^2 - 12p$$

$$(v) 5a - 3b + 2c \text{ from } 4a - b - 2c$$

$$= 4a - b - 2c - (5a - 3b + 2c)$$

$$= 4a - b - 2c - 5a + 3b - 2c$$

$$= 4a - 5a - b + 3b - 2c - 2c$$

$$= -a + 2b - 4c$$

$$(vi) -xy + yz - zx \text{ from } xy - yz + zx$$

$$= xy - yz + zx - (-xy + yz - zx)$$

$$= xy - yz + zx + xy - yz + zx$$

$$= xy + xy - yz - yz + zx + zx$$

$$= 2xy - 2yz + 2zx$$

$$(iv) -5a - 2b \text{ from } b + 6c$$

$$= b + 6c - (-5a - 2b)$$

$$= b + 6c + 5a + 2b$$

$$= b + 2b + 6c + 5a$$

$$= 3b + 6c + 5a$$

$$(v) 4p + p^2 \text{ from } 3p^2 - 8p$$

$$= 3p^2 - 8p - (4p + p^2)$$

$$= 3p^2 - 8p - 4p - p^2$$

$$= 3p^2 - p^2 - 8p - 4p$$

$$= 2p^2 - 12p$$

$$(v) 5a - 3b + 2c \text{ from } 4a - b - 2c$$

$$= 4a - b - 2c - (5a - 3b + 2c)$$

$$= 4a - b - 2c - 5a + 3b - 2c$$

$$= 4a - 5a - b + 3b - 2c - 2c$$

$$= -a + 2b - 4c$$

$$(vi) -xy + yz - zx \text{ from } xy - yz + zx$$

$$= xy - yz + zx - (-xy + yz - zx)$$

$$= xy - yz + zx + xy - yz + zx$$

$$= xy + xy - yz - yz + zx + zx$$

$$= 2xy - 2yz + 2zx$$

$$\text{vii) } 2x^2 - 7xy - y^2 \text{ from } 3x^2 - 5xy + 3y^2$$

$$= 3x^2 - 5xy + 3y^2 - (2x^2 - 7xy - y^2)$$

$$= 3x^2 - 5xy + 3y^2 - 2x^2 + 7xy + y^2$$

$$= 3x^2 - 2x^2 - 5xy + 7xy + 3y^2 + y^2$$

$$= x^2 + 2xy + 4y^2$$

$$\text{viii) } a^2 - 3ab - 6b^2 \text{ from } 2b^2 - a^2 + 2ab$$

$$= 2b^2 - a^2 + 2ab - (a^2 - 3ab - 6b^2)$$

$$= 2b^2 - a^2 + 2ab - a^2 + 3ab + 6b^2$$

$$= 2b^2 + 6b^2 - a^2 - a^2 + 2ab + 3ab$$

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

$$\text{ix) } 4x^2 - 5x^2y + y^2 \text{ from } -3y^2 + 5xy^2 - 7x^2 - 9x^2y$$

$$= (-3y^2 + 5xy^2 - 7x^2 - 9x^2y) - (4x^2 - 5x^2y + y^2)$$

$$= -3y^2 + 5xy^2 - 7x^2 - 9x^2y - 4x^2 + 5x^2y - y^2$$

$$= -3y^2 - y^2 + 5xy^2 - 7x^2 - 4x^2 - 9x^2y + 5x^2y$$

$$= -4y^2 + 5xy^2 - 11x^2 - 4x^2y$$

$$\textcircled{x} \quad 6m^3 + 4m^2 + 7m - 3 \text{ from } 3m^3 + 4$$

$$= 3m^3 + 4 - (6m^3 + 4m^2 + 7m - 3)$$

$$= 3m^3 + 4 - 6m^3 - 4m^2 - 7m + 3$$

$$\cancel{= 3m^3 + 4} - \cancel{(6m^3)}$$

$$= 3m^3 - 6m^3 + 4 + 3 - 4m^2 - 7m$$

$$= -3m^3 + 7 - 4m^2 - 7m$$