

Jender Heart High School, Sec-33B, Chd.

Class - VI

Date - 14.10.2024

Subject - Mathematics

Teacher - Ms. Sushma

Chapter - 12

Exercise 12E

Q1. Add :

$$(i) \quad 9x + 7x = 16x$$

$$(ii) \quad 13p + 6p + 2p = 21p$$

$$(iii) \quad 5y + (-13y) = 5y - 13y = -8y$$

$$(iv) \quad 3a^2b + (-5a^2b) = 3a^2b - 5a^2b = -2a^2b$$

$$(v) \quad \frac{1}{2}mn + \frac{2}{1}mn = \left(\frac{1}{2} + \frac{2}{1}\right)mn$$

$$= \left(\frac{1+4}{2}\right)mn = \frac{5}{2}mn$$

$$(vi) \quad \frac{1}{3}x^2y + 3x^2y = \left(\frac{1}{3} + \frac{3}{1}\right)x^2y = \left(\frac{1+9}{3}\right)x^2y$$

$$= \frac{10}{3}x^2y$$

Q2. Add:-

$$(i) \quad 5a + (-3a) + 4a = 5a - 3a + 4a \\ = 9a - 3a = 6a$$

$$(ii) \quad 6xy^2 + (-8xy^2) + (-3xy^2) \\ = 6xy^2 - 8xy^2 - 3xy^2 \\ = 6xy^2 - 11xy^2 \\ = -5xy^2$$

$$\begin{aligned}
 \text{iii)} \quad & 4m^2n + (-m^2n) + (-6m^2n) \\
 &= 4m^2n - m^2n - 6m^2n \\
 &= 4m^2n - 7m^2n \\
 &= -3m^2n
 \end{aligned}$$

3. Add:-

$$(i) \quad -6x + (-9x) = -6x - 9x = -15x$$

$$\begin{aligned}
 (ii) \quad & -8xy + (-4xy) + 6xy \\
 &= -8xy - 4xy + 6xy \\
 &= -12xy + 6xy \\
 &= -6xy
 \end{aligned}$$

$$\begin{aligned}
 (iii) \quad & \frac{1}{2}yz + 2yz + (-yz) \\
 &= \frac{1}{2}yz + 2yz - yz \\
 &= \left(\frac{1}{2} + 2 - 1\right)yz \\
 &= \left(\frac{1+4-2}{2}\right)yz \\
 &= \left(\frac{5-2}{2}\right)yz = \frac{3}{2}yz
 \end{aligned}$$

$$\begin{aligned}
 (iv) \quad & -\frac{1}{2}a^2 + \left(-\frac{1}{3}a^2\right) + 2a^2 \\
 &= -\frac{1}{2}a^2 - \frac{1}{3}a^2 + 2a^2 \\
 &= \left(-\frac{1}{2} - \frac{1}{3} + \frac{2}{1}\right)a^2 = \left(\frac{-3-2+12}{6}\right)a^2 = \left(\frac{-5+12}{6}\right)a^2 \\
 &= \frac{7}{6}a^2
 \end{aligned}$$

Q4. $8a - 3b + 11c + 5b - 6a + 7c + 9c + 2a - 8b$
 $= 8a - 6a + 2a - 3b + 5b - 8b + 11c + 7c + 9c$
 $= 10a - 6a - 11b + 5b + 27c$
 $= 4a - 6b + 27c$

Q5 $3y + 4z - 6x + 2x - 4y + z + 5z - 8y - x$
 $= 3y - 4y - 8y + 4z + 1z + 5z + 2x - 6x - x$
 $= 3y - 12y + 10z + 2x - 7x$
 $= -9y + 10z - 5x$
 $= -5x - 9y + 10z$

Q6 $3x^2 - \frac{1}{5}x + \frac{7}{3} + \left(-\frac{1}{4}x^2 + \frac{1}{3}x - \frac{1}{6}\right) + \left(-2x^2 - \frac{1}{2}x + \frac{1}{5}\right)$
 $= 3x^2 - \frac{1}{5}x + \frac{7}{3} - \frac{1}{4}x^2 + \frac{1}{3}x - \frac{1}{6} - 2x^2 - \frac{1}{2}x + \frac{1}{5}$
 $= 3x^2 - \frac{1}{4}x^2 - 2x^2 - \frac{1}{5}x + \frac{1}{3}x - \frac{1}{2}x + \frac{7}{3} - \frac{1}{6} + \frac{1}{5}$
 $= \frac{12x^2 - 1x^2 - 8x^2}{4} - \frac{6x + 10x - 15x}{30} + \frac{70 - 5 + 6}{30}$
 $= \frac{12x^2 - 9x^2}{4} - \frac{21x + 10x}{30} + \frac{76 - 5}{30} = \frac{3x^2 - 11x + 71}{30}$
 $\frac{45x^2 + 22x + 42}{60} = \frac{3x^2}{4} - \frac{11x}{30} + \frac{71}{30} \text{ Ans.}$

Ques $6m^2n + 3mn - 2n^2 + n^2 - mn - m^2n + mn - 3n^2 - 4m^2n$

$$= 6m^2n - m^2n - 4m^2n + 3mn - mn + mn - 2n^2 + n^2 - 3n^2$$

$$= 6m^2n - 5m^2n + 3mn - 5n^2 + n^2$$

$$= 1m^2n + 3mn - 4n^2$$

Ques Simplify: -

(i) $2m^3 - 5m^2 + 3m - 6 - 5m^3 + 2m^2 - 8m + 2 + 6m + 5$

$$= -3m^3 - 3m^2 - 5m + 6m + 1$$

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

(ii) $3p^2 - 2pq + 5p - 4q + 5pq - 3p + 4p^2 + 3q$

$$= +7p^2 + 3pq + 2p - q$$

Exercise 12F

Q1 Subtract:

(i) $8x$ from $15x$

$$= 15x - 8x$$

$$= 7x$$

(ii) $3ab^2$ from $7ab^2$

$$= 7ab^2 - 3ab^2$$

$$= 4ab^2$$

$$\begin{aligned}
 \text{iii)} \quad & -3m^2n \text{ from } -7m^2n \\
 & = -7m^2n - (-3m^2n) \\
 & = -7m^2n + 3m^2n \\
 & = -4m^2n
 \end{aligned}$$

$$\begin{aligned}
 \text{iv)} \quad & \frac{1}{2}b \text{ from } -2b \\
 & = -2b - \frac{1}{2}b \\
 & = -\frac{2}{1} - \frac{1}{2}b \\
 & = \frac{-4b - 1b}{2} = -\frac{5b}{2}
 \end{aligned}$$

$$\begin{aligned}
 \text{(v)} \quad & -\frac{1}{3}c \text{ from } 3c \\
 & = 3c - \left(-\frac{1}{3}c\right) \\
 & = \frac{3c}{1} + \frac{1}{3}c \\
 & = \frac{9c + 1c}{3} = \frac{10}{3}c
 \end{aligned}$$

Q2. Subtract:-

$$\begin{aligned}
 \text{(i)} \quad & a + 2b - c \text{ from } 3a - b + 2c \\
 & = 3a - b + 2c - (a + 2b - c) \\
 & = 3a - b + 2c - a - 2b + c \\
 & = 2a - 3b + 3c
 \end{aligned}$$

$$(ii) -3a + b + 6c \text{ from } 5a - 3b - 4c$$

$$= 5a - 3b - 4c - (-3a + b + 6c)$$

$$= 5a - 3b - 4c + 3a - b - 6c$$

$$= 8a - 4b - 10c$$

$$(iii) \frac{1}{2}p - \frac{1}{3}q - \frac{3}{2}r - (-\frac{1}{2}p + q - r)$$

$$= \frac{1}{2}p - \frac{1}{3}q - \frac{3}{2}r + \frac{1}{2}p - q + r$$

$$= \frac{1}{2}p + \frac{1}{2}p - \frac{1}{3}q - 1q - \frac{3}{2}r + \frac{r}{1}$$

$$= 1p - \frac{q - 3q}{3} - \frac{3r + 2r}{2}$$

$$= 1p - \frac{4q}{3} - \frac{r}{2}$$

$$= 1p - \frac{4}{3}q - \frac{1}{2}r$$

Q.3. Subtract

$$(i) 3x^2 - 5x + 6 \text{ from } 5x^2 - x - 3$$

$$= 5x^2 - x - 3 - (3x^2 - 5x + 6)$$

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

$$= 2x^2 + 4x - 9$$

$$(ii) a^2 + a - 1 \text{ from } a - a^2$$

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

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

Q4. Subtract :-

$$\begin{aligned}
 \text{(i)} \quad & p^2 - 2pq + q^2 \text{ from } p^2 + 2pq - q^2 \\
 &= p^2 + 2pq - q^2 - (p^2 - 2pq + q^2) \\
 &= p^2 + 2pq - q^2 - p^2 + 2pq - q^2 \\
 &= 4pq - 2q^2
 \end{aligned}$$

$$\begin{aligned}
 \text{(ii)} \quad & 5xy - 3x^2 - 2y^2 - 3 \text{ from } x^2 - 2xy + 6y^2 + 8 \\
 &= x^2 - 2xy + 6y^2 + 8 - (5xy - 3x^2 - 2y^2 - 3) \\
 &= x^2 - 2xy + 6y^2 + 8 - 5xy + 3x^2 + 2y^2 + 3 \\
 &= 4x^2 + 8y^2 - 7xy + 11 \\
 &= 4x^2 - 7xy + 8y^2 + 11
 \end{aligned}$$

Q5. How much is $a + 2b$ greater than $b - a$?

Soln:- According to question,

$$\begin{aligned}
 &= a + 2b - (b - a) \\
 &= a + 2b - b + a \\
 &= 2a + b \quad \text{Ans.}
 \end{aligned}$$

Q6. How much does $3x^2 - 4x + 3$ exceed $x^3 - x^2 + 2x - 1$?

Soln:- A/Q.

$$\begin{aligned}
 &= 3x^2 - 4x + 3 - (x^3 - x^2 + 2x - 1) \\
 &= 3x^2 - 4x + 3 - x^3 + x^2 - 2x + 1 \\
 &= -x^3 + 4x^2 - 6x + 3
 \end{aligned}$$

Q7. How much is $p - 2q + 3r$ less than $3r + 5$?

Soln:-

$$\begin{aligned}
 &= 3r + 5 - (p - 2q + 3r) \\
 &= 3r + 5 - p + 2q - 3r \\
 &= 5 - p + 2q \text{ Ans.}
 \end{aligned}$$

Q8. What must be subtracted from $2x + 3y$ to get $y - 3x$?

Soln:-

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

Q9. What must be added to $5x^2 + 6x - 3$ to get $3x + 2$?
 A/q.

$$\begin{aligned}
 &= 3x + 2 - 5x^2 - 6x + 3 \\
 &= -5x^2 - 3x + 5
 \end{aligned}$$

So, $-5x^2 - 3x + 5$ must be added.

Q10. Subtract $3y^2 - 5y - 4$ from the sum of $y - 5y^2 + 1$ and $3y + 4y^2 - 5$

Soln:-

A/q $[(y - 5y^2 + 1) + (3y + 4y^2 - 5)] - (3y^2 - 5y - 4)$

$$\begin{aligned}
 &= (4y - y^2 - 4) - 3y^2 + 5y + 4 \\
 &= 9y - 4y^2
 \end{aligned}$$