

Exercise 11 (C)

classmate

Date
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1) Multiply

(i) $3x, 5x^2y$ and $2y$

$$3x, 5x^2y \text{ and } 2y$$

$$= 3x \times 5x^2y \times 2y$$

$$= 3 \times 5 \times 2 \times x \times x^2 \times y \times y$$

$$= 30x^3y^2$$

(ii) Product of 5, $30a$ and $2ab^2$

$$= 5 \times 30a \times 2ab^2$$

$$= 5 \times 3 \times 2 \times a \times ab^2$$

$$= 30a^2b^2$$

(iii) Product of $5x+2y$ and $3xy$

$$= 3xy(5x+2y)$$

$$= 3xy \times 5x + 3xy \times 2y$$

$$= 15x^2y + 6xy^2$$

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(iv) Product of $6a-5b$ and $-2a$

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

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

$$= -12a^2 + 10ab$$

(v) Product of $4a+5b$ and $4a-5b$

$$= (4a+5b)(4a-5b)$$

$$= (4a+5b) \times (4a-5b)$$

$$= 16a^2 + 20ab - 20ab - 25b^2$$

$$= 16a^2 - 25b^2$$

(vi) Product of $9xy + 2y^2$ and $2x - 3y$

$$\begin{aligned} & (9xy + 2y^2) \times (2x - 3y) \\ &= 9xy \times 2x - 27xy^2 + 4xy^2 - 6y^3 \\ &= 18x^2y - 27xy^2 + 4xy^2 - 6y^3 \\ &= 18x^2y - 23xy^2 - 6y^3 \end{aligned}$$

(vii) Product of $-3m^2n + 5mn - 4mn^2$ and $6m^2n$

$$\begin{aligned} &= 6m^2n (-3m^2n + 5mn - 4mn^2) \\ &= 6m^2n \times (-3m^2n) + 6m^2n \times 5mn + 6m^2n \times (-4mn^2) \\ &= -18m^4n^2 + 30m^3n^2 - 24m^3n^3 \end{aligned}$$

(viii) Product of $6xy^2 - 7x^2y^2 + 10x^3$ and $-3x^2y^3$

$$\begin{aligned} &= -3x^2y^3 (6xy^2 - 7x^2y^2 + 10x^3) \\ &= -3x^2y^3 \times 6xy^2 + (-3x^2y^3) \times (-7x^2y^2) + (-3x^2y^3) \times 10x^3 \\ &= -18x^3y^5 + 21x^4y^5 - 30x^5y^3 \end{aligned}$$

2) (i)

$$\begin{array}{r} 3a + 2b \\ \times \quad -3xy \\ \hline -9axy - 6bxy \end{array}$$

(ii)

$$\begin{array}{r} 9x - 5y \\ \times \quad -3xy \\ \hline -27x^2y + 15xy^2 \end{array}$$

(iii)

$$\begin{array}{r} 3xy - 2x^2 - 6x \\ \quad - 5x^2y \\ \hline -15x^3y^2 + 10x^4y + 30x^3y \end{array}$$

$$\textcircled{iv}) \quad \begin{array}{r} a+b \\ \times a+b \\ \hline \end{array}$$

$$\begin{aligned} & a^2 + ab + ab + b^2 \\ & = a^2 + 2ab + b^2 \end{aligned}$$

$$\textcircled{v}) \quad \begin{array}{r} ax - b \\ \times 2ax + 2b^2 \\ \hline \end{array}$$

$$\begin{aligned} & = 2a^2x^2 - 2abx + \\ & \quad 2ab^2x - 2b^3 \end{aligned}$$

$$\textcircled{vi}) \quad \begin{array}{r} 2a - b + 3c \\ \times 2a - 4b \\ \hline \end{array}$$

$$\begin{aligned} & = 4a^2 - 2ab + 6ac - 8ab + 4b^2 - 12bc \\ & = 4a^2 - 10ab + 6ac + 4b^2 - 12bc \end{aligned}$$

$$\textcircled{vii}) \quad \begin{array}{r} 3m^2 + 6m - 2n \\ \times 5n - 3m \\ \hline \end{array}$$

$$\begin{aligned} & = 15m^2n + 30mn - 10n^2 - 9m^3 - 18m^2 + 6mn \\ & = 15m^2n + 36mn - 10n^2 - 9m^3 - 18m^2 \end{aligned}$$

$$\textcircled{viii}) \quad \begin{array}{r} 6 - 3x + 2x^2 \\ \times 1 + 5x - x^2 \\ \hline \end{array}$$

$$\begin{aligned} & = 6 - 3x + 2x^2 + 30x - 15x^2 + 10x^3 - 6x^2 \\ & \quad + 3x^3 - 2x^4 \end{aligned}$$

$$= 6 + 27x - 19x^2 + 13x^3 - 2x^4$$

$$\textcircled{ix}) \quad \begin{array}{r} 4x^3 - 10x^2 + 6x - 8 \\ \times 3 + 2x - x^2 \\ \hline \end{array}$$

$$\begin{aligned} & = 12x^3 - 30x^2 + 18x - 24 + 8x^4 - 20x^3 + 12x^2 - 16x \\ & \quad - 4x^5 + 10x^4 - 6x^3 + 8x^2 \end{aligned}$$

$$\begin{aligned} & = 12x^3 - 20x^3 + 6x^3 - 30x^2 + 12x^2 + 8x^2 + 18x + 16x \\ & \quad - 24 + 8x^4 + 10x^4 - 4x^5 - 4x^5 \end{aligned}$$

$$= 4x^5 + 18x^4 - 14x^3 - 10x^2 + 2x - 24$$