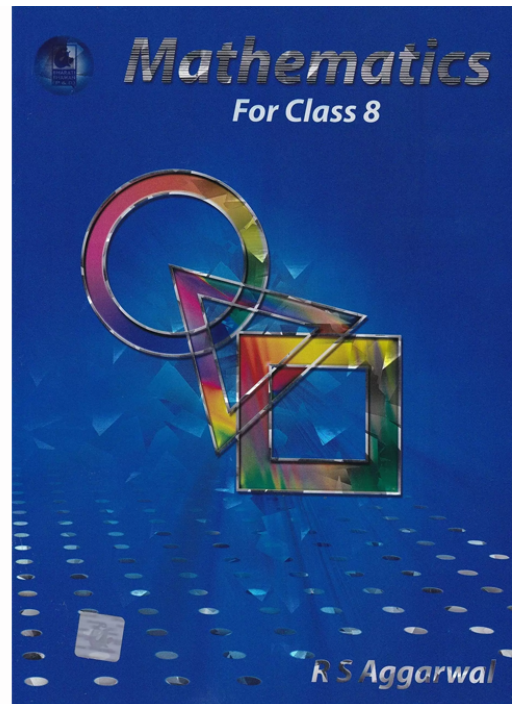


RS Aggarwal Solutions for Class 8

Maths Chapter 6–Operations on Algebraic Expressions

Class 8 - Chapter 6 Operations on Algebraic Expressions



For any clarifications or questions you can write to info@indcareer.com

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RS Aggarwal Solutions for Class 8 Maths Chapter 6–Operations on Algebraic Expressions

Class 8: Maths Chapter 6 solutions. Complete Class 8 Maths Chapter 6 Notes.

RS Aggarwal Solutions for Class 8 Maths Chapter 6–Operations on Algebraic Expressions

RS Aggarwal 8th Maths Chapter 6, Class 8 Maths Chapter 6 solutions

Ex 6A

Q1

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and adding column-wise, we get:

$$\begin{array}{r} 8ab \\ - 5ab \\ 3ab \\ - ab \\ \hline 5ab \end{array}$$

Q2

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and adding column-wise, we get:

$$\begin{array}{r} 7x \\ - 3x \\ 5x \\ - x \\ - 2x \\ \hline 6x \end{array}$$

Q3

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and adding column-wise, we get:

$$\begin{array}{r} 3a - 4b + 4c \\ 2a + 3b - 8c \\ a - 6b + c \\ \hline 6a - 7b - 3c \end{array}$$

Q4

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and adding column-wise, we get:

$$\begin{array}{r} 5x - 8y + 2z \\ - 2x - 4y + 3z \\ - x + 6y - z \\ 3x - 3y - 2z \\ \hline 5x - 9y + 2z \end{array}$$

Q5

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and adding column-wise, we get:

$$\begin{array}{r} 6ax - 2by + 3cz \\ - 11ax + 6by - cz \\ - 2ax - 3by + 10cz \\ \hline - 7ax + by + 12cz \end{array}$$

Q6

Answer :

On arranging the terms of the given expressions in the descending powers of x and adding column-wise:

$$\begin{array}{r} 2x^3 - 9x^2 + 0x + 8 \\ 0x^3 + 3x^2 - 6x - 5 \\ 7x^3 + 0x^2 - 10x + 1 \\ - 4x^3 - 5x^2 + 2x + 3 \\ \hline 5x^3 - 11x^2 - 14x + 7 \end{array}$$

Q7

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Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and adding column-wise:

$$\begin{array}{r} 6p + 4q - r + 3 \\ -5p + 0q + 2r - 6 \\ -7p + 11q + 2r - 1 \\ 0p + 2q - 3r + 4 \\ \hline -6p + 17q + 0r + 0 \\ = -6p + 17q \end{array}$$

Q8

Answer :

On arranging the terms of the given expressions in the descending powers of x and adding column-wise:

$$\begin{array}{r} 4x^2 + 4y^2 - 7xy - 3 \\ x^2 + 6y^2 - 8xy + 0 \\ 2x^2 - 5y^2 - 2xy + 6 \\ \hline 7x^2 + 5y^2 - 17xy + 3 \end{array}$$

Q9

Answer :

On arranging the terms of the given expressions in the descending powers of x and subtracting:

$$\begin{array}{r} -5a^2b \\ 3a^2b \\ \hline -8a^2b \end{array}$$

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Q10

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and subtracting column-wise:

$$\begin{array}{r} 6pq \\ - 8pq \\ + \\ \hline 14pq \end{array}$$

Q11

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and subtracting column-wise:

$$\begin{array}{r} - 8abc \\ - 2abc \\ + \\ \hline - 6abc \end{array}$$

Q12

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and subtracting column-wise:

$$\begin{array}{r} - 11p \\ - 16p \\ + \\ \hline 5p \end{array}$$

Q13

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Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and subtracting column-wise:

$$\begin{array}{r} 3a - 4b - c + 6 \\ 2a - 5b + 2c - 9 \\ - \quad + \quad - \quad + \\ \hline a + b - 3c + 15 \end{array}$$

Q14

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and subtracting column-wise:

$$\begin{array}{r} p - 2q - 5r - 8 \\ - 6p + q + 3r + 8 \\ + \quad - \quad - \quad - \\ \hline 7p - 3q - 8r - 16 \end{array}$$

Q15

Answer :

On arranging the terms of the given expressions in the descending powers of x and subtracting column-wise:

$$\begin{array}{r} 3x^3 - x^2 + 2x - 4 \\ x^3 + 3x^2 - 5x + 4 \\ - \quad - \quad + \quad - \\ \hline 2x^3 - 4x^2 + 7x - 8 \end{array}$$

Q16

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

Arranging the terms of the given expressions in the descending powers of x and subtracting column-wise:

$$\begin{array}{r} 4y^4 - 2y^3 - 6y^2 - y + 5 \\ 5y^4 - 3y^3 + 2y^2 + y - 1 \\ - \quad + \quad - \quad - \quad + \\ \hline -y^4 + y^3 - 8y^2 - 2y + 6 \end{array}$$

Q17

Answer :

Writing the terms of the given expressions (in the same order) in the form of rows with like terms below each other and subtracting column-wise:

$$\begin{array}{r} 3p^2 - 4q^2 - 5r^2 - 6 \\ 4p^2 + 5q^2 - 6r^2 + 7 \\ - \quad - \quad + \quad - \\ \hline -p^2 - 9q^2 + r^2 - 13 \end{array}$$

Q18

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

Let the required number be x .

$$\begin{aligned}(3a^2 - 6ab - 3b^2 - 1) - x &= 4a^2 - 7ab - 4b^2 + 1 \\ (3a^2 - 6ab - 3b^2 - 1) - (4a^2 - 7ab - 4b^2 + 1) &= x\end{aligned}$$

$$\begin{array}{r} 3a^2 - 6ab - 3b^2 - 1 \\ 4a^2 - 7ab - 4b^2 + 1 \\ - \quad + \quad + \quad - \\ \hline -a^2 + ab + b^2 - 2 \end{array}$$

$$\therefore \text{Required number} = -a^2 + ab + b^2 - 2$$

Q19

Answer :

Sides of the rectangle are l and b .

$$l = 5x^2 - 3y^2$$

$$b = x^2 + 2xy$$

Perimeter of the rectangle is $(2l + 2b)$.

$$\begin{aligned}\text{Perimeter} &= 2 \left(5x^2 - 3y^2 \right) + 2 \left(x^2 + 2xy \right) \\ &= 10x^2 - 6y^2 + 2x^2 + 4xy\end{aligned}$$

$$\begin{array}{r} 10x^2 - 6y^2 \\ 2x^2 \quad + 4xy \\ \hline 12x^2 - 6y^2 + 4xy \end{array}$$

Hence, the perimeter of the rectangle is $12x^2 - 6y^2 + 4xy$.

Q20

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Answer :

Let a , b and c be the three sides of the triangle.

$$\therefore \text{Perimeter of the triangle} = (a + b + c)$$

$$\text{Given perimeter of the triangle} = 6p^2 - 4p + 9$$

$$\text{One side } (a) = p^2 - 2p + 1$$

$$\text{Other side } (b) = 3p^2 - 5p + 3$$

$$\text{Perimeter} = (a + b + c)$$

$$(6p^2 - 4p + 9) = (p^2 - 2p + 1) + (3p^2 - 5p + 3) + c$$

$$6p^2 - 4p + 9 - p^2 + 2p - 1 - 3p^2 + 5p - 3 = c$$

$$(6p^2 - p^2 - 3p^2) + (-4p + 2p + 5p) + (9 - 1 - 3) = c$$

$$2p^2 + 3p + 5 = c$$

Thus, the third side is $2p^2 + 3p + 5$.

Ex 6B

Q1

Answer :

By horizontal method:

$$(5x + 7) \times (3x + 4)$$

$$= 5x(3x + 4) + 7(3x + 4)$$

$$= 15x^2 + 20x + 21x + 28$$

$$= 15x^2 + 41x + 28$$

Q2

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

By horizontal method:

$$\begin{aligned}(4x + 9) \times (x - 6) \\&= 4x(x - 6) + 9(x - 6) \\&= 4x^2 - 24x + 9x - 54 \\&= 4x^2 - 15x - 54\end{aligned}$$

Q3

Answer :

By horizontal method:

$$\begin{aligned}(2x + 5) \times (4x - 3) \\&= 2x(4x - 3) + 5(4x - 3) \\&= 8x^2 - 6x + 20x - 15 \\&= 8x^2 + 14x - 15\end{aligned}$$

Q4

Answer :

By horizontal method:

$$\begin{aligned}(3y - 8) \times (5y - 1) \\&= 3y(5y - 1) - 8(5y - 1) \\&= 15y^2 - 3y - 40y + 8 \\&= 15y^2 - 43y + 8\end{aligned}$$

Q5

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Answer :

By horizontal method:

$$\begin{aligned}(7x + 2y) \times (x + 4y) \\&= 7x(x + 4y) + 2y(x + 4y) \\&= 7x^2 + 28xy + 2xy + 8y^2 \\&= 7x^2 + 30xy + 8y^2\end{aligned}$$

Q6

Answer :

By horizontal method:

$$\begin{aligned}(9x + 5y) \times (4x + 3y) \\&= 9x(4x + 3y) + 5y(4x + 3y) \\&= 36x^2 + 27xy + 20xy + 15y^2 \\&= 36x^2 + 47xy + 15y^2\end{aligned}$$

Q7

Answer :

By horizontal method:

$$\begin{aligned}(3m - 4n) \times (2m - 3n) \\&= 3m(2m - 3n) - 4n(2m - 3n) \\&= 6m^2 - 9mn - 8mn + 12n^2 \\&= 6m^2 - 17mn + 12n^2\end{aligned}$$

Q8

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Answer :

By horizontal method:

$$\begin{aligned}(x^2 - a^2) \times (x - a) \\&= x^2(x - a) - a^2(x - a) \\&= x^3 - ax^2 - a^2x + a^3 \\&\text{i.e. } (x^3 + a^3) - ax(x - a)\end{aligned}$$

Q9

Answer :

By horizontal method:

$$\begin{aligned}(x^2 - y^2) \times (x + 2y) \\&= x^2(x + 2y) - y^2(x + 2y) \\&= x^3 + 2x^2y - xy^2 - 2y^3 \\&\text{i.e. } (x^3 - 2y^3) + xy(2x - y)\end{aligned}$$

Q10

Answer :

By horizontal method:

$$\begin{aligned}(3p^2 + q^2) \times (2p^2 - 3q^2) \\&= 3p^2(2p^2 - 3q^2) + q^2(2p^2 - 3q^2) \\&= 6p^4 - 9p^2q^2 + 2p^2q^2 - 3q^4 \\&\text{i.e. } 6p^4 - 7p^2q^2 - 3q^4\end{aligned}$$

Q11

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

By horizontal method:

$$\begin{aligned}(2x^2 - 5y^2) \times (x^2 + 3y^2) \\&= 2x^2(x^2 + 3y^2) - 5y^2(x^2 + 3y^2) \\&= 2x^4 + 6x^2y^2 - 5x^2y^2 - 15y^4 \\&= 2x^4 + x^2y^2 - 15y^4\end{aligned}$$

Q12

Answer :

By horizontal method:

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

Q13

Answer :

By horizontal method:

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

Q14

Answer :

By horizontal method:

$$\begin{aligned} & \left(x^4 + \frac{1}{x^4}\right) \times \left(x + \frac{1}{x}\right) \\ &= x^4 \left(x + \frac{1}{x}\right) + \frac{1}{x^4} \left(x + \frac{1}{x}\right) \\ &= x^5 + x^3 + \frac{1}{x^3} + \frac{1}{x^5} \\ & \text{i.e. } x^3 \left(x^2 + 1\right) + \frac{1}{x^3} \left(1 + \frac{1}{x^2}\right) \end{aligned}$$

Q15

Answer :

By horizontal method:

$$\begin{aligned} & (x^2 - 3x + 7) \times (2x + 3) \\ &= 2x(x^2 - 3x + 7) + 3(x^2 - 3x + 7) \\ &= 2x^3 - 6x^2 + 14x + 3x^2 - 9x + 21 \\ &= 2x^3 - 3x^2 + 5x + 21 \end{aligned}$$

Q16

Answer :

By horizontal method:

$$\begin{aligned} & (3x^2 + 5x - 9) \times (3x - 5) \\ &= 3x(3x^2 + 5x - 9) - 5(3x^2 + 5x - 9) \\ &= 9x^3 + 15x^2 - 27x - 15x^2 - 25x + 45 \\ &= 9x^3 - 52x + 45 \end{aligned}$$

Q17

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Answer :

By horizontal method:

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

Q18

Answer :

By horizontal method:

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

Q19

Answer :

By horizontal method:

$$\begin{aligned} & (x^3 - 2x^2 + 5) \times (4x - 1) \\ &= 4x(x^3 - 2x^2 + 5) - 1(x^3 - 2x^2 + 5) \\ &= 4x^4 - 8x^3 + 20x - x^3 + 2x^2 - 5 \\ &= 4x^4 - 9x^3 + 2x^2 + 20x - 5 \end{aligned}$$

Q20

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

By horizontal method:

$$\begin{aligned}(9x^2 - x + 15) \times (x^2 - 3) \\&= x^2(9x^2 - x + 15) - 3(9x^2 - x + 15) \\&= 9x^4 - x^3 + 15x^2 - 27x^2 + 3x - 45 \\&= 9x^4 - x^3 - 12x^2 + 3x - 45\end{aligned}$$

Q21

Answer :

By horizontal method:

$$\begin{aligned}(x^2 - 5x + 8) \times (x^2 + 2) \\&= x^2(x^2 - 5x + 8) + 2(x^2 - 5x + 8) \\&= x^4 - 5x^3 + 8x^2 + 2x^2 - 10x + 16 \\&= x^4 - 5x^3 + 10x^2 - 10x + 16\end{aligned}$$

Q22

Answer :

By horizontal method:

$$\begin{aligned}(x^3 - 5x^2 + 3x + 1) \times (x^2 - 3) \\&= x^2(x^3 - 5x^2 + 3x + 1) - 3(x^3 - 5x^2 + 3x + 1) \\&= x^5 - 5x^4 + 3x^3 + x^2 - 3x^3 + 15x^2 - 9x - 3 \\&= x^5 - 5x^4 + 16x^2 - 9x - 3\end{aligned}$$

Q23

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Answer :

By horizontal method:

$$\begin{aligned}& (3x + 2y - 4) \times (x - y + 2) \\& x(3x + 2y - 4) - y(3x + 2y - 4) + 2(3x + 2y - 4) \\& = 3x^2 + 2xy - 4x - 3xy - 2y^2 + 4y + 6x + 4y - 8 \\& = 3x^2 - 2y^2 - xy + 2x + 8y - 8\end{aligned}$$

Q24

Answer :

By horizontal method:

$$\begin{aligned}& (x^2 - 5x + 8) \times (x^2 + 2x - 3) \\& = x^2(x^2 - 5x + 8) + 2x(x^2 - 5x + 8) - 3(x^2 - 5x + 8) \\& = x^4 - 5x^3 + 8x^2 + 2x^3 - 10x^2 + 16x - 3x^2 + 15x - 24 \\& = x^4 - 3x^3 - 5x^2 + 31x - 24\end{aligned}$$

Q25

Answer :

By horizontal method:

$$\begin{aligned}& (2x^2 + 3x - 7) \times (3x^2 - 5x + 4) \\& = 2x^2(3x^2 - 5x + 4) + 3x(3x^2 - 5x + 4) - 7(3x^2 - 5x + 4) \\& = 6x^4 - 10x^3 + 8x^2 + 9x^3 - 15x^2 + 12x - 21x^2 + 35x - 28 \\& = 6x^4 - x^3 - 28x^2 + 47x - 28\end{aligned}$$

Q26

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Answer :

By horizontal method:

$$\begin{aligned}(9x^2 - x + 15) \times (x^2 - x - 1) \\&= x^2(9x^2 - x + 15) - x(9x^2 - x + 15) - 1(9x^2 - x + 15) \\&= 9x^4 - x^3 + 15x^2 - 9x^3 + x^2 - 15x - 9x^2 + x - 15 \\&= 9x^4 - 10x^3 + 7x^2 - 14x - 15\end{aligned}$$

Ex 6C

Q1

Answer :

(i) $24x^2y^3$ by $3xy$

$$\begin{aligned} & \frac{24x^2y^3}{3xy} \\ & \Rightarrow \left(\frac{24}{3}\right)(x^{2-1})(y^{3-1}) \\ & \Rightarrow 8xy^2. \end{aligned}$$

Therefore, the quotient is $8xy^2$.

(ii) $36xyz^2$ by $-9xz$

$$\begin{aligned} & \frac{36xyz^2}{-9xz} \\ & \Rightarrow \left(\frac{36}{-9}\right)(x^{1-1})(y^{1-0})(z^{2-1}) \\ & \Rightarrow -4yz \end{aligned}$$

Therefore, the quotient is $-4yz$.

(iii)

$$-72x^2y^2z \text{ by } -12xyz$$

$$\frac{-72x^2y^2z}{-12xyz}$$

$$\Rightarrow \left(\frac{-72}{-12}\right)(x^{2-1})(y^{2-1})(z^{1-1})$$

$$\Rightarrow 6xy$$

Therefore, the quotient is $6xy$.

(iv) $-56mnp^2$ by $7mnp$

$$\frac{-56mnp^2}{7mnp}$$

$$\Rightarrow \left(\frac{-56}{7}\right)(m^{1-1})(n^{1-1})(p^{2-1})$$

$$\Rightarrow -8p$$

Therefore, the quotient is $-8p$.

Q2

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

(i) $5m^3 - 30m^2 + 45m$ by $5m$

$$\begin{aligned} & (5m^3 - 30m^2 + 45m) \div 5m \\ & \Rightarrow \frac{5m^3}{5m} - \frac{30m^2}{5m} + \frac{45m}{5m} \\ & \Rightarrow m^2 - 6m + 9 \end{aligned}$$

Therefore, the quotient is $m^2 - 6m + 9$.

(ii) $8x^2y^2 - 6xy^2 + 10x^2y^3$ by $2xy$

$$\begin{aligned} & (8x^2y^2 - 6xy^2 + 10x^2y^3) \div 2xy \\ & \Rightarrow \frac{8x^2y^2}{2xy} - \frac{6xy^2}{2xy} + \frac{10x^2y^3}{2xy} \\ & \Rightarrow 4xy - 3y + 5xy^2 \end{aligned}$$

Therefore, the quotient is $4xy - 3y + 5xy^2$.

(iii) $9x^2y - 6xy + 12xy^2$ by $-3xy$

$$\begin{aligned} & \left(9x^2y - 6xy + 12xy^2 \right) \div -3xy \\ & \Rightarrow \frac{9x^2y}{-3xy} - \frac{6xy}{-3xy} + \frac{12xy^2}{-3xy} \\ & \Rightarrow -3x + 2 - 4y \end{aligned}$$

Therefore, the quotient is $-3x + 2 - 4y$.

(iv) $12x^4 + 8x^3 - 6x^2$ by $-2x^2$

$$\begin{aligned} & (12x^4 + 8x^3 - 6x^2) \div -2x^2 = -6x^2 - 4x + 3 \\ & \Rightarrow \frac{12x^4}{-2x^2} + \frac{8x^3}{-2x^2} - \frac{6x^2}{-2x^2} \\ & \Rightarrow -6x^2 - 4x + 3 \end{aligned}$$

Therefore the quotient is $-6x^2 - 4x + 3$.

Q3

Answer :

$$\begin{array}{r} (x^2 - 4x + 4) \div (x - 2) \\ x - 2 \overline{) x^2 - 4x + 4} \\ \underline{x^2 - 2x} \\ -2x + 4 \\ \underline{-2x + 4} \\ 0 \end{array}$$

Therefore, the quotient is $(x - 2)$ and the remainder is 0.

Q4

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-on-algebraic-expressions/>

Answer :

$$\begin{array}{r}
 x+2 \overline{) x^2 - 4} \quad (x-2 \\
 \underline{x^2 + 2x} \\
 -2x - 4 \\
 \underline{-2x - 4} \\
 + + \\
 \hline
 \times
 \end{array}$$

Therefore, the quotient is $x-2$ and the remainder is 0.

Q5

Answer :

$(x^2 + 12x + 35)$ by $(x + 7)$

$$\begin{array}{r}
 x+7 \overline{) x^2 + 12x + 35} \quad (x+5 \\
 \underline{x^2 + 7x} \\
 5x + 35 \\
 \underline{5x + 35} \\
 \hline
 \times
 \end{array}$$

Therefore, the quotient is $(x + 5)$ and the remainder is 0.

Q6

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

$$\begin{array}{r}
 3x + 2 \overline{) 15x^2 + x - 6} \\
 \underline{15x^2 + 10x} \\
 - 9x - 6 \\
 \underline{- 9x - 6} \\
 + + \\
 \hline
 \times
 \end{array}$$

Therefore, the quotient is $(5x - 3)$ and the remainder is 0.

Q7

Answer :

$$\begin{array}{r}
 7x - 9 \overline{) 14x^2 - 53x + 45} \\
 \underline{14x^2 - 18x} \\
 - 35x + 45 \\
 \underline{- 35x + 45} \\
 + - \\
 \hline
 \times
 \end{array}$$

Therefore, the quotient is $(2x - 5)$ and the remainder is 0.

Q8

Answer :

$$\begin{array}{r}
 2x - 5 \overline{) 6x^2 - 31x + 47} \\
 \underline{6x^2 - 15x} \\
 - 16x + 47 \\
 \underline{- 16x + 40} \\
 + - \\
 \hline
 7
 \end{array}$$

Therefore, the quotient is $(3x - 8)$ and the remainder is 7.

Q9

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

$$\begin{array}{r}
 2x+3 \overline{) \begin{array}{l} 2x^3 + x^2 - 5x - 2 \\ 2x^3 + 3x^2 \end{array} } \begin{array}{l} x^2 - x - 1 \\ \\ \end{array} \\
 \underline{ - 2x^2 - 5x} \\
 - 2x^2 - 5x \\
 \underline{ + +} \\
 - 2x - 2 \\
 - 2x - 3 \\
 \underline{ + +} \\
 1
 \end{array}$$

Therefore, the quotient is $(x^2 - x - 1)$ and the remainder is 1.

Q10

Answer :

$$\begin{array}{r}
 x+1 \overline{) \begin{array}{l} x^3 + 1 \\ x^3 x^2 \end{array} } \begin{array}{l} x^2 - x + 1 \\ \\ \end{array} \\
 \underline{ - x^2 + 1} \\
 - x^2 - x \\
 \underline{ + +} \\
 x+1 \\
 x+1 \\
 \underline{ - -} \\
 0
 \end{array}$$

Therefore, the quotient is $x^2 - x + 1$ and the remainder is 0.

Q11

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

$$\begin{array}{r}
 x^2 + x + 1 \overline{) x^4 - 2x^3 + 2x^2 + x + 4} \quad (x^2 - 3x + 4 \\
 \underline{x^4 + x^3 + x^2} \\
 - 3x^3 + x^2 + x \\
 \underline{- 3x^3 - 3x^2 - 3x} \\
 4x^2 + 4x + 4 \\
 \underline{4x^2 + 4x + 4} \\
 0 \\
 \times
 \end{array}$$

Therefore, the quotient is $(x^2 - 3x + 4)$ and remainder is 0.

Q12

Answer :

$$\begin{array}{r}
 x^2 - 5x + 6 \overline{) x^3 - 6x^2 + 11x - 6} \quad (x - 1 \\
 \underline{x^3 - 5x^2 + 6x} \\
 - 1x^2 + 5x - 6 \\
 \underline{- 1x^2 + 5x - 6} \\
 0 \\
 \times
 \end{array}$$

Therefore, the quotient is $(x-1)$ and the remainder is 0.

Q13

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

$$\begin{array}{r}
 x^2 - 3x + 4 \overline{) 5x^3 - 12x^2 + 12x + 13} \left(5x + 3 \right. \\
 \underline{x^3 - 15x^2 + 20x} \\
 3x^2 - 8x + 13 \\
 \underline{3x^2 - 9x + 12} \\
 x + 1
 \end{array}$$

Therefore, the quotient is $(5x + 3)$ and the remainder is $(x + 1)$.

Q14

Answer :

$$\begin{array}{r}
 2x^2 - 3x + 5 \overline{) 2x^3 - 5x^2 + 8x - 5} \left(x - 1 \right. \\
 \underline{2x^3 - 3x^2 + 5x} \\
 -2x^2 + 3x - 5 \\
 \underline{-2x^2 + 3x - 5} \\
 0
 \end{array}$$

Therefore, the quotient is $(x - 1)$ and the remainder is 0.

Q15

Answer :

$$\begin{array}{r}
 2x^2 + x - 1 \overline{) 8x^4 + 10x^3 - 5x^2 - 4x + 1} \left(4x^2 + 3x - 2 \right. \\
 \underline{8x^4 + 4x^3 - 4x^2} \\
 6x^3 - x^2 - 4x + 1 \\
 \underline{6x^3 + 3x^2 - 3x} \\
 -4x^2 - x + 1 \\
 \underline{-4x^2 - 2x + 2} \\
 + + \\
 \hline
 x - 1
 \end{array}$$

Therefore, the quotient is $(4x^2 + 3x - 2)$ and the remainder is $(x - 1)$.

Ex 6D

Q1

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-6-operation-s-on-algebraic-expressions/>

Answer :

(i) We have:

$$\begin{aligned} & (x+6)(x+6) \\ &= (x+6)^2 \\ &= x^2 + 6^2 + 2 \times x \times 6 \quad \left[\text{using } (a+b)^2 = a^2 + b^2 + 2ab \right] \\ &= x^2 + 36 + 12x \end{aligned}$$

(ii) We have:

$$\begin{aligned} & (4x+5y)(4x+5y) \\ &= (4x+5y)^2 \\ &= (4x)^2 + (5y)^2 + 2 \times 4x \times 5y \quad \left[\text{using } (a+b)^2 = a^2 + b^2 + 2ab \right] \\ &= 16x^2 + 25y^2 + 40xy \end{aligned}$$

(iii) We have:

$$\begin{aligned} & (7a + 9b)(7a + 9b) \\ &= (7a + 9b)^2 \\ &= (7a)^2 + (9b)^2 + 2 \times 7a \times 9b \quad \left[\text{using } (a + b)^2 = a^2 + b^2 + 2ab \right] \\ &= 49a^2 + 81b^2 + 126ab \end{aligned}$$

(iv) We have:

$$\begin{aligned} & \left(\frac{2}{3}x + \frac{4}{5}y \right) \left(\frac{2}{3}x + \frac{4}{5}y \right) \\ &= \left(\frac{2}{3}x + \frac{4}{5}y \right)^2 \\ &= \left(\frac{2}{3}x \right)^2 + \left(\frac{4}{5}y \right)^2 + 2 \times \frac{2}{3}x \times \frac{4}{5}y \quad \left[\text{using } (a + b)^2 = a^2 + b^2 + 2ab \right] \\ &= \frac{4}{9}x^2 + \frac{16}{25}y^2 + \frac{16}{15}xy \end{aligned}$$



(v) We have:

$$\begin{aligned} & (x^2 + 7)(x^2 + 7) \\ &= (x^2 + 7)^2 \\ &= (x^2)^2 + 7^2 + 2 \times x^2 \times 7 \quad \left[\text{using } (a + b)^2 = a^2 + b^2 + 2ab \right] \\ &= x^4 + 49 + 14x^2 \end{aligned}$$

(vi) We have:

$$\begin{aligned} & \left(\frac{5}{6}a^2 + 2 \right) \left(\frac{5}{6}a^2 + 2 \right) \\ &= \left(\frac{5}{6}a^2 + 2 \right)^2 \\ &= \left(\frac{5}{6}a^2 \right)^2 + (2)^2 + 2 \times \frac{5}{6}a^2 \times 2 \quad \left[\text{using } (a + b)^2 = a^2 + b^2 + 2ab \right] \\ &= \frac{25}{36}a^4 + 4 + \frac{10}{3}a^2 \end{aligned}$$



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He was born on January 2, 1946 in a village of Delhi. He graduated from Kirori Mal College, University of Delhi. After completing his M.Sc. in Mathematics in 1969, he joined N.A.S. College, Meerut, as a lecturer. In 1976, he was awarded a fellowship for 3 years and joined the University of Delhi for his Ph.D. Thereafter, he was promoted as a reader in N.A.S. College, Meerut. In 1999, he joined M.M.H. College, Ghaziabad, as a reader and took voluntary retirement in 2003. He has authored more than 75 titles ranging from Nursery to M. Sc. He has also written books for competitive examinations right from the clerical grade to the I.A.S. level.

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