RS Aggarwal Solutions for Class 8 Maths Chapter 6 Exercise 6.4: RS Aggarwal Solutions for Class 8 Maths Chapter 6 Exercise 6.4 prepared by subject experts of Physics Wallah provide detailed guidance and solutions for a range of problems related to operations on algebraic expressions.

By working through these solutions, students can gain a deeper understanding of algebraic expressions, clarify any doubts, and improve their problem-solving skills.

RS Aggarwal Solutions for Class 8 Maths Chapter 6 Exercise 6.4 Overview

Exercise 6.4 of RS Aggarwal Solutions for Class 8 Maths Chapter 6 focuses on complex operations involving algebraic expressions, including advanced techniques for multiplication and division. This exercise includes problems where students must apply the distributive property, combine like terms, and simplify expressions with multiple variables. The problems challenge students to work with more intricate algebraic structures and practice their skills in managing complex equations.

RS Aggarwal Solutions for Class 8 Maths Chapter 6 Exercise 6.4 PDF

RS Aggarwal Solutions for Class 8 Maths Chapter 6 Exercise 6.4 are available in the PDF link below. This resource provides detailed solutions and explanations for complex operations on algebraic expressions.

By using this PDF, students can access thorough, step-by-step guidance to tackle challenging problems helping them enhance their understanding of algebraic expressions. This will support effective study, clarify any doubts, and improve exam preparation and performance.

RS Aggarwal Solutions for Class 8 Maths Chapter 6 Exercise 6.4 PDF

RS Aggarwal Solutions for Class 8 Maths Chapter 6 Exercise 6.4 (Exercise 6D)

RS Aggarwal Solutions for Class 8 Maths Chapter 6 Exercise 6.4 are available below. This resource provide detailed solutions and explanations for problems related to operations on algebraic expressions.

(1) Find each of the following products:

(i) (x + 6) (x + 6)

= $x^2 + 6x + 6x + 36$

= $x^2 + 12x + 36$

= $x^2 + (2 \times x \times 6) + 6^2$

= $(x + 6)^2$

(ii) (4x + 5y) (4x + 5y)

= $16x^2 + 20xy + 20xy + 25y^2$

= $(4x)^2 + (2 \times 4x \times 5y) + (5y)^2$

= $(4x + 5y)^2$

(iii) (7a + 9b) (7a + 9b)

= $49a^2 + 63ab + 63ab + 81b^2$

= $(7a)^2 + (2 \times 7a \times 9b) + (9b)^2$

= $(7a + 9b)^2$

(v) (x² + 7) (x² + 7)

= $x^4 + 7x^2 + 7x^2 + 49$

= $(x^2)^2 + (2 \times x^2 \times 7) + 7^2$

= $(x^2 + 7)^2$

(2) Find each of the following products:

(i) (x − 4) (x − 4)

= $x^2 - 4x - 4x + 16$

= $x^2 - 8x + 16$

= $x^2 - (2 \times x \times 4) + 4^2$

= $(x - 4)^2$

(ii) (2x − 3y) (2x − 3y)

= $4x^2 - 6xy - 6xy + 9y^2$

= $(2x)^2 - 12xy + (3y)^2$

= $(2x)^2 - (2 \times 2x \times 3y) + (3y)^2$

= $(2x - 3y)^2$

(3) Expand:

(i) $(8a + 3b)^2$

= $(8a)^2 + 2 \times 8a \times 3b + (3b)^2$

= $64a^2 + 48ab + 9b^2$

(ii) $(7x + 2y)^2$

= $(7x)^2 + (2 \times 7x \times 2y) + (2y)^2$

= $49x^2 + 28xy + (2y)^2$

(iii) $(5x + 11)^2$

= $(5x)^2 + (2 \times 5x \times 11) + (11)^2$

= $25x^2 + 110x + 121$

(vi) $(9x - 10)^2$

= $(9x)^2 - (2 \times 9x \times 10) + (10)^2$

= $81x^2 - 180x + 100$

(vii) $(x^2y - yz^2)^2$

= $(x^2y)^2 - (2 \times x^2y \times yz^2) + (yz^2)^2$

= $x^4y^2 - 2x^2y^2z^2 + y^2z^4$

(viii) $\left(\dfrac{x}{y} - \dfrac{y}{x}\right)^2$

$= \left(\dfrac{x}{y}\right)^2 - \left(2 \times \dfrac{x}{y} \times \dfrac{y}{x}\right) + \left(\dfrac{y}{x}\right)^2$

$= \dfrac{x^2}{y^2} - 2 + \dfrac{y^2}{x^2}$

(ix) $\left(3m - \dfrac{4}{5}n\right)^2$

$= (3m)^2 - \left(2 \times 3m \times \dfrac{4}{5}n\right) + \left(\dfrac{4}{5}n\right)^2$

$= 9m^2 - \dfrac{24}{5}mn + \dfrac{16}{25}n^2$

(4) Find each of the following products:

(i) (x + 3) (x − 3)

$= x^2 + 3x - 3x - 9$

$= x^2 - 3^2$

(ii) (2x + 5) (2x − 5)

$= 4x^2 + 10x - 10x - 25$

$= (2x)^2 - 5^2$

(iii) (8 + x) (8 − x)

$= 64 + 8x - 8x - x^2$

$= 4^2 - x^2$

(iv) (7x + 11y) (7x − 11y)

$= 49x^2 + 77xy - 77xy - 121y^2$

$= (7x)^2 - (11y)^2$

(5) Using the formula for squaring a binomial, evaluate the following:

(i) $(54)^2$

$= (50 + 4)^2$

$= (50)^2 + (2 \times 50 \times 4) + (4)^2$

$= 2500 + 400 + 16$

$= 2916$

(ii) $(82)^2$

$= (80 + 2)^2$

$= (80)^2 + (2 \times 80 \times 2) + (2)^2$

$= 6400 + 320 + 4$

$= 6724$

(iii) $(103)^2$

$= (100 + 3)^2$

$= (100)^2 + (2 \times 100 \times 3) + (3)^2$

$= 10000 + 600 + 9$

$= 10609$

(iv) $(704)^2$

$= (700 + 4)^2$

$= (700)^2 + (2 \times 700 \times 4) + (4)^2$

$= 490000 + 5600 + 16$

$= 495616$

(6) Using the formula for squaring a binomial, evaluate the following:

(i) (69)²

= (70 – 1)²

= (70)² – (2 × 70 × 1) + 1

= 4900 – 140 + 1

= 4761

(ii) (78)²

= (80 – 2)²

= (80)² – (2 × 80 × 2) + (2)²

= 6400 – 320 + 4

= 6084

(iii) (197)²

= (200 – 3)²

= (200)² – (2 × 200 × 3) + (3)²

= 40000 – 1200 + 9

= 38809

(iv) (999)²

= (1000 – 1)²

= (1000)² – (2 × 1000 × 1) + 1

= 1000000 – 2000 + 1

= 998001

(7) Find the value of:

(i) (82)² – (18)²

= [(80+2)²] – [(20 – 2)²]

= [(80)² + (2 × 80 × 2) + 4] – [(20)² – (2 × 20 × 2) + 4]

= (6400 + 320 + 4) – (400 – 80 + 4)

= 6724 – 324

= 6400

(ii) $(128)^2 – (72)^2$

= $[(130 – 2)^2 – (70 + 2)^2]$

= $[(130)^2 – (2 × 130 × 2) + 4] – [(70)^2 + (2 × 70 × 2) + 4]$

= (16900 – 520 + 4) – (4900 + 280 + 4)

= 16384 – 5184

= 11200

(iii) 197 × 203

= (200 – 3) × (200 + 3)

= $(200)^2 – (3)^2$

= 40000 – 9

= 39991

(iv) $\dfrac{198×198−102×102}{96}$

$= \dfrac{(198)^2−(102)^2}{96}$

$= \dfrac{(198+102)(198−102)}{96}$

$= \dfrac{300×96}{96} = 300$

(v) (14.7 × 15.3)

= (15 – 0.3) × (15 + 0.3)

= $(15)^2 - (0.3)^2$

= 225 − 0.09

= 224.91

(vi) $(8.63)^2 - (1.37)^2$

= (8.63 + 1.37) (8.63 − 1.37)

= 10 × 7.26

= 72.6

(8) Find the value of the expression $(9x^2 + 24x + 16)$, when x = 12.

Solution: $9x^2 + 24x + 16$

= $[9 \times (12)^2] + (24 \times 12) + 16$

= (9 × 144) + 288 + 16

= 1296 + 288 + 16

= 1600

(9) Find the value of the expression $(64x^2 + 81y^2 + 144xy)$, when x = 11 and y = 4/3.

Solution: $64x^2 + 81y^2 + 144xy$

$$= \left[64 \times (11)^2\right] + \left[81 \times \left(\tfrac{4}{3}\right)^2\right] + \left(144 \times 11 \times \tfrac{4}{3}\right)$$

$$= (64 \times 11) + \left[81 \times \tfrac{16}{9}\right] + (48 \times 44)$$

$$= 704 + 144 + 2112$$

$$= 2960$$

(10) Find the value of the expression $(36x^2 + 25y^2 - 60xy)$, when x =2/3 and y = 1/5.

Solution: $(36x^2 + 25y^2 - 60xy)$

$= (6x)^2 - (2 \times 6x \times 5y) + (5y)^2$

$= (6x - 5y)^2$

$$= \left[\left(6 \times \frac{2}{3}\right) + \left(5 \times \frac{1}{5}\right)\right]^2$$

$= (4 + 1)^2 = 5^2 = 25$

(11) If $\left(x + \frac{1}{x}\right) = 4$, find the values of

(i) $\left(x^2 + \frac{1}{x^2}\right)$ and (ii) $\left(x^4 + \frac{1}{x^4}\right)$

Solution: (i) $\left(x + \frac{1}{x}\right)^2 = 4^2$

$\Rightarrow x^2 + 2 \times x \times \frac{x}{x} + \left(\frac{1}{x}\right)^2 = 16$

$\Rightarrow \left(x^2 + \frac{1}{x^2}\right) = 16 - 2$

$\Rightarrow x^2 + \frac{1}{x^2} = 14$

(ii) $\left(x^2 + \frac{1}{x^2}\right)^2 = (14)^2$

$\Rightarrow x^4 + 2 \times x^2 \times \frac{1}{x^2} + \frac{1}{x^4} = 196$

$\Rightarrow \left(x^4 + \frac{1}{x^4}\right) = 196 - 2$

$\Rightarrow \left(x^4 + \frac{1}{x^4}\right) = 194$

(12) If $\left(x - \dfrac{1}{x}\right) = 5$, find the values of

(i) $\left(x^2 + \dfrac{1}{x^2}\right)$ and (ii) $\left(x^4 + \dfrac{1}{x^4}\right)$

Solution: (i) $\left(x - \dfrac{1}{x}\right)^2 = 5^2$

$\Rightarrow x^2 - 2 \times x \times \dfrac{1}{x} + \left(\dfrac{1}{x}\right)^2 = 25$

$\Rightarrow \left(x^2 + \dfrac{1}{x^2}\right) = 25 + 2$

$\Rightarrow \left(x^2 + \dfrac{1}{x^2}\right) = 27$

(ii) $\left(x^2 + \dfrac{1}{x^2}\right)^2 = (27)^2$

$\Rightarrow x^4 + 2 \times x^2 \times \dfrac{1}{x^2} + \dfrac{1}{x^4} = 729$

$\Rightarrow \left(x^4 + \dfrac{1}{x^4}\right) = 729 - 2$

$\Rightarrow \left(x^4 + \dfrac{1}{x^4}\right) = 727$

(13) Find the continued product:

(i) (x + 1) (x − 1) (x² + 1)

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

$= x^4 - 1$

(ii) (x − 3) (x + 3) (x² + 9)

= [(x)^2 − (3)^2] (x^2 + 9)

= (x^2 − 9)(x^2 + 9)

= x^2 − 9^2 = x^2 − 81

(iii) (3x − 2y) (3x + 2y) (9x^2 + 4y^2)

= [(3x)^2 − (2y^2)] (9x^2 + 4y^2)

= (9x^2 − 4y^2) (9x^2 + 4y^2)

= (9x^2)^2 − (4y^2)^2

= 81x^4 − 16y^4

(iv) (2p + 3) (2p − 3) (4p^2 + 9)

= [(2p)^2 − (3)^2] (4p^2 + 9)

= (4p^2 − 9) (4p^2 + 9)

= (4p^2)^2 − (9)^2

= 16p^4 − 81

(14) If x + y = 12 and xy = 14, find the value of (x^2 + y^2).

Solution: x + y = 12

⇒ (x + y)^2 = (12)^2

⇒ x^2 + 2xy + y^2 = 144

⇒ (x^2 + y^2) + (2 × 14) = 144

⇒ (x^2 + y^2) = 144 − 28

⇒ (x^2 + y^2) = 116

(15) If x − y = 7 and xy = 9, find the value of (x^2 + y^2).

Solution: x − y = 7

⇒ (x − y)^2 = (7)^2

⇒ x^2 − 2xy + y^2 = 49

$\Rightarrow (x^2 + y^2) - (2 \times 9) = 49$

$\Rightarrow (x^2 + y^2) = 49 - 18$

$\Rightarrow (x^2 + y^2) = 31.$

Benefits of RS Aggarwal Solutions for Class 8 Maths Chapter 6 Exercise 6.4

- **Detailed Explanations**: These solutions provide clear and comprehensive explanations for each problem, making it easier for students to grasp complex concepts and operations on algebraic expressions.
- **Step-by-Step Guidance**: Each solution is broken down into detailed steps, which helps students understand the methodology and apply it to similar problems, boosting their problem-solving skills.
- **Concept Reinforcement**: By working through these exercises, students reinforce their understanding of algebraic expressions and operations, leading to a stronger grasp of the material.
- **Error Correction**: The solutions help identify and correct common mistakes, allowing students to learn from their errors and improve their accuracy.
- **Efficient Exam Preparation**: With these solutions, students can efficiently prepare for exams by practicing and reviewing key concepts, ultimately leading to better performance.