RS Aggarwal Solutions for Class 10 Maths Chapter 1 Exercise 1.5: The RS Aggarwal Solutions for Class 10 Maths Chapter 1, Exercise 1.5, help students understand important math concepts in an easy way. This exercise focuses on using Euclid's Division Lemma, the Fundamental Theorem of Arithmetic, and methods for finding the Highest Common Factor (HCF) and Least Common Multiple (LCM).

It also teaches how to find HCF and LCM using division and solve word problems related to these topics. Each solution is explained step-by-step, making it easier for students to follow and learn. By using these solutions, students can improve their problem-solving skills and feel more confident in math.

RS Aggarwal Solutions for Class 10 Maths Chapter 1 Exercise 1.5 Overview

The RS Aggarwal Solutions for Class 10 Maths Chapter 1, Exercise 1.5, are created by subject experts of Physics Wallah.

Each solution is explained step-by-step so that students can understand and solve problems confidently. These solutions are designed to make math more understandable and enjoyable for students.

RS Aggarwal Solutions for Class 10 Maths Chapter 1 Exercise 1.5 PDF

The PDF link provided below contains the RS Aggarwal Solutions for Class 10 Maths Chapter 1, Exercise 1.5.

This PDF is invaluable for students looking to strengthen their math skills and prepare effectively for exams.

RS Aggarwal Solutions for Class 10 Maths Chapter 1 Exercise 1.5 PDF

RS Aggarwal Solutions for Class 10 Maths Chapter 1 Real Numbers Exercise 1.5

Here we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 1 Exercise 1.5 for the ease of students so that they can prepare better for their exams.

Question 1.

Solution:

$x^2 - 6x + 3 = 0$

$\Rightarrow x^2 - 2 \times 3 \times x = -3$

Adding $(3)^2$ to both sides,

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

$\Rightarrow (x - 3)^2 = -3 + 9 = 6 = (\pm\sqrt{6})^2$

$\Rightarrow x - 3 = \pm\sqrt{6}$

$x = 3 \pm \sqrt{6}$

$\therefore x = (3 + \sqrt{6})$ or $(3 - \sqrt{6})$

Question 2.

Solution:

$x^2 - 4x + 1 = 0 \Rightarrow x^2 - 2 \times 2 \times x = -1$

Adding $(2)^2$ to both sides,

$\Rightarrow (x)^2 - 2 \times 2 \times x + (2)^2 = -1 + (2)^2$

$\Rightarrow (x - 2)^2 = -1 + 4 = 3 = (\pm\sqrt{3})^2$

$\Rightarrow x - 2 = \pm\sqrt{3} \Rightarrow x = 2 \pm \sqrt{3}$

$\therefore x = (2 + \sqrt{3})$ or $(2 - \sqrt{3})$

Question 3.

Solution:

$x^2 + 8x - 2 = 0 \Rightarrow x^2 + 2 \times 4 \times x = 0$

Adding $(4)^2$ to both sides,

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

$\Rightarrow (x + 4)^2 = 2 + 16 = 18 = (\pm 3\sqrt{2})^2$

$\Rightarrow x + 4 = \pm 3\sqrt{2}$

$\Rightarrow x = -4 \pm 3\sqrt{2}$

$\therefore x = (-4 + 3\sqrt{2})$ or $(-4 - 3\sqrt{2})$

Question 4.

Solution:

$$4x^2 + 4\sqrt{3}\,x + 3 = 0$$

$$\Rightarrow (2x)^2 + 2 \times 2x \times \sqrt{3} = -3$$

Adding $(\sqrt{3})^2$ to both sides,

$$\Rightarrow (2x)^2 + 2 \times 2x \times \sqrt{3} + (\sqrt{3})^2 = -3 + (\sqrt{3})^2$$

$$\Rightarrow (2x + \sqrt{3})^2 = -3 + \sqrt{3} = 0$$

$$\Rightarrow 2x + \sqrt{3} = 0 \Rightarrow 2x = -\sqrt{3}$$

$$\therefore\ x = \frac{-\sqrt{3}}{2}$$

Hence, $x = \frac{-\sqrt{3}}{2}, \frac{-\sqrt{3}}{2}$

Question 5.

Solution:

$$2x^2 + 5x - 3 = 0$$

$$x^2 + \frac{5}{2}x - \frac{3}{2} = 0 \qquad \text{(Dividing each by 2)}$$

$$(x)^2 + 2 \times x \times \frac{5}{4} = \frac{3}{2}$$

Adding $\left(\frac{5}{4}\right)^2$ to both sides

$$(x)^2 + 2 \times x \times \frac{5}{4} + \left(\frac{5}{4}\right)^2 = \frac{3}{2} + \left(\frac{5}{4}\right)^2$$

$$\left(x + \frac{5}{4}\right)^2 = \frac{3}{2} + \frac{25}{16} = \frac{24+25}{16}$$

$$= \frac{49}{16} = \left(\pm\frac{7}{4}\right)^2$$

$$\Rightarrow x + \frac{5}{4} = \pm\frac{7}{4}$$

$$x = \frac{7}{4} - \frac{5}{4} = \frac{2}{4} = \frac{1}{2}$$

$$\text{or } x = \frac{-7}{4} - \frac{5}{4} = \frac{-12}{4} = -3$$

Hence, $x = \frac{1}{2}$ or -3

Question 6.

Solution:

$3x^2 - x - 2 = 0$

Dividing each by 3,

$$\Rightarrow x^2 - \frac{1}{3}x - \frac{2}{3} = 0$$

$$\Rightarrow (x)^2 - 2 \times x \times \frac{1}{6} = \frac{2}{3}$$

Adding $\left(\frac{1}{6}\right)^2$ to both sides,

$$\Rightarrow x^2 - 2 \times x \times \frac{1}{6} + \left(\frac{1}{6}\right)^2 = \frac{2}{3} + \left(\frac{1}{6}\right)^2$$

$$\Rightarrow \left(x - \frac{1}{6}\right)^2 = \frac{2}{3} + \frac{1}{36}$$

$$\Rightarrow \frac{24+1}{36} = \frac{25}{36} = \left(\pm\frac{5}{6}\right)^2$$

$$\therefore x - \frac{1}{6} = \pm\frac{5}{6} \Rightarrow x = \frac{1}{6} \pm \frac{5}{6}$$

$$x = \frac{1}{6} + \frac{5}{6} = \frac{6}{6} = 1$$

$$\text{or } x = \frac{1}{6} - \frac{5}{6} = \frac{-4}{6} = \frac{-2}{3}$$

Hence, $x = 1$ or $\frac{-2}{3}$

Question 7.

Solution:

$8x^2 - 14x - 15 = 0$

Dividing each by 8,

$$(x)^2 - \frac{14}{8}x - \frac{15}{8} = 0$$

$$(x)^2 - 2 \times x \times \frac{7}{8} = \frac{15}{8}$$

Adding, $\left(\frac{7}{8}\right)^2$ to both sides

$$x^2 - 2 \times x \times \frac{7}{8} + \left(\frac{7}{8}\right)^2 = \frac{15}{8} + \left(\frac{7}{8}\right)^2$$

$$\Rightarrow \left(x - \frac{7}{8}\right)^2 = \frac{15}{8} + \frac{49}{64}$$

$$= \frac{120 + 49}{64} = \frac{169}{64} = \left(\pm\frac{13}{8}\right)^2$$

$$\therefore x - \frac{7}{8} = \pm\frac{13}{8}$$

$$\Rightarrow x = \frac{7}{8} \pm \frac{13}{8}$$

$$x = \frac{7}{8} + \frac{13}{8} = \frac{20}{8} = \frac{5}{2}$$

$$\text{or } x = \frac{7}{8} - \frac{13}{8} = \frac{-6}{8} = \frac{-3}{4}$$

Hence, $x = \frac{5}{2}$ or $\frac{-3}{4}$

Question 8.

Solution:

$7x^2 + 3x - 4 = 0$

Dividing each by 7,

$$x^2 + \frac{3}{7}x - \frac{4}{7} = 0$$

$$\Rightarrow (x)^2 + 2 \times x \times \frac{3}{14} = \frac{4}{7}$$

Adding, $\left(\frac{3}{14}\right)^2$ to both sides,

$$\Rightarrow (x)^2 + 2 \times x \times \frac{3}{14} + \left(\frac{3}{14}\right)^2 = \frac{4}{7} + \left(\frac{3}{14}\right)^2$$

$$\Rightarrow \left(x + \frac{3}{14}\right)^2 = \frac{4}{7} + \frac{9}{196}$$

$$= \frac{112 + 9}{196} = \frac{121}{196} = \left(\pm\frac{11}{14}\right)^2$$

$$x + \frac{3}{14} = \pm\frac{11}{14}$$

$$\therefore x + \frac{3}{14} = \pm\frac{11}{14}$$

$$\Rightarrow x = \frac{-3}{14} \pm \frac{11}{14}$$

$$x = \frac{-3}{14} + \frac{11}{14} = \frac{8}{14} = \frac{4}{7}$$

$$\text{or } x = \frac{-3}{14} - \frac{11}{14} = \frac{-14}{14} = -1$$

Hence, $x = \frac{4}{7}$ or -1

Question 9.

Solution:

$3x^2 - 2x - 1 = 0$

Dividing each term by 3

$x^2 - \frac{2}{3}x - \frac{1}{3} = 0$

$(x)^2 - 2 \times x \times \frac{1}{3} = \frac{1}{3}$

Adding each side $\left(\frac{1}{3}\right)^2$

$\Rightarrow (x)^2 - 2 \times x \times \frac{1}{3} + \left(\frac{1}{3}\right)^2 = \frac{1}{3} + \left(\frac{1}{3}\right)^2$

$\Rightarrow \left(x - \frac{1}{3}\right)^2 = \frac{1}{3} + \frac{1}{9} = \frac{4}{9} = \left(\pm\frac{2}{3}\right)^2$

$\therefore x - \frac{1}{3} = \pm\frac{2}{3} \Rightarrow x = \frac{1}{3} \pm \frac{2}{3}$

$x = \frac{1}{3} + \frac{2}{3} = \frac{3}{3} = 1$

or $\frac{1}{3} - \frac{2}{3} = \frac{-1}{3}$

Question 10.

Solution:

$5x^2 - 6x - 2 = 0$

Dividing each term by 5

$x^2 - \frac{6}{5}x - \frac{2}{5} = 0$

$(x)^2 - 2 \times x \times \frac{3}{5} = \frac{2}{5}$

Adding, $\left(\frac{3}{5}\right)^2$ to both sides

$\Rightarrow (x)^2 - 2 \times x \times \frac{3}{5} + \left(\frac{3}{5}\right)^2 = \frac{2}{5} + \left(\frac{3}{5}\right)^2$

$\left(x - \frac{3}{5}\right)^2 = \frac{2}{5} + \frac{9}{25}$

$= \frac{10+9}{25} = \frac{19}{25} = \left(\frac{\pm\sqrt{19}}{5}\right)^2$

$\therefore\ x - \frac{3}{5} = \pm\frac{\sqrt{19}}{5} \Rightarrow x = \frac{3}{5} \pm \frac{\sqrt{19}}{5}$

$x = \frac{3}{5} + \frac{\sqrt{19}}{5} = \frac{3+\sqrt{19}}{5}$

or $\frac{3}{5} - \frac{\sqrt{19}}{5} = \frac{3-\sqrt{19}}{5}$

Question 11.

Solution:

$$\frac{2}{x^2} - \frac{5}{x} + 2 = 0$$

$$\Rightarrow \frac{2 - 5x + 2x^2 = 0}{x^2}$$

$$\Rightarrow 2x^2 - 5x + 2 = 0$$

$$\Rightarrow x^2 - \frac{5}{2}x + 1 = 0 \quad \text{(Dividing by 2)}$$

$$\Rightarrow (x)^2 - 2 \times x \times \frac{5}{4} = -1$$

Adding $\left(\frac{5}{4}\right)^2$ to both sides,

$$\Rightarrow (x)^2 - 2 \times x \times \frac{5}{4} + \left(\frac{5}{4}\right)^2 = -1 + \left(\frac{5}{4}\right)^2$$

$$\Rightarrow \left(x - \frac{5}{4}\right)^2 = -1 + \frac{25}{16}$$

$$= \frac{-16 + 25}{16} = \frac{9}{16} = \left(\pm \frac{3}{4}\right)^2$$

$$\therefore x - \frac{5}{4} = \pm \frac{3}{4}$$

$$x = \frac{5}{4} \pm \frac{3}{4}$$

$$\therefore x = \frac{5}{4} + \frac{3}{4} = \frac{8}{4} = 2$$

$$\text{or } x = \frac{5}{4} - \frac{3}{4} = \frac{2}{4} = \frac{1}{2}$$

$$\therefore x = 2 \text{ or } \frac{1}{2}$$

Question 12.

Solution:

$$4x^2 + 4bx - (a^2 - b^2) = 0$$

$$\Rightarrow x^2 + bx - \frac{a^2 - b^2}{4} = 0 \qquad \text{(Dividing by 4)}$$

$$\Rightarrow (x)^2 + 2 \times x \times \frac{b}{2} = \frac{a^2 - b^2}{4}$$

Adding, $\left(\frac{b}{2}\right)^2$ to both sides

$$\Rightarrow (x)^2 + 2 \times x + \frac{b}{2} + \left(\frac{b}{2}\right)^2$$

$$= \frac{a^2 - b^2}{4} + \left(\frac{b}{2}\right)^2 = \frac{a^2 - b^2}{4} + \frac{b^2}{4}$$

$$\left(x + \frac{b}{2}\right)^2 = \frac{a^2 - b^2 + b^2}{4} = \frac{a^2}{4} = \left(\pm\frac{a}{2}\right)^2$$

$$\therefore\ x + \frac{b}{2} = \pm\frac{a}{2}$$

$$x = \frac{-b}{2} \pm \frac{a}{2}$$

$$\Rightarrow x = \frac{-b}{2} + \frac{a}{2} = \frac{a - b}{2}$$

$$\text{or } x = \frac{-b}{2} - \frac{a}{2} = \frac{-(a + b)}{2}$$

Hence, $x\ \frac{(a-b)}{2}$ or $\frac{-(a+b)}{2}$

Question 13.

Solution:

$$x^2 - (\sqrt{2} + 1)x + \sqrt{2} = 0$$

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

Adding, $\left(\frac{\sqrt{2}+1}{2}\right)^2$ to both sides

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

$$= -\sqrt{2} + \left(\frac{\sqrt{2}+1}{2}\right)^2$$

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

$$= \frac{-4\sqrt{2}+2+1+2\sqrt{2}}{4} = \frac{2+1-2\sqrt{2}}{4}$$

$$= \left(\pm\frac{\sqrt{2}-1}{2}\right)^2$$

$$\therefore x - \frac{\sqrt{2}+1}{2} = \pm\left(\frac{\sqrt{2}-1}{2}\right)$$

$$x = \frac{\sqrt{2}+1}{2} \pm \frac{\sqrt{2}-1}{2}$$

$$x = \frac{\sqrt{2}+1+\sqrt{2}-1}{2} = \frac{2\sqrt{2}}{2} = \sqrt{2}$$

$$\text{or } x = \frac{\sqrt{2}+1-\sqrt{2}+1}{2} = \frac{2}{2} = 1$$

$$\therefore x = 1 \text{ or } \sqrt{2}$$

Question 14.

Solution:

$\sqrt{2}x^2 - 3x - 2\sqrt{2} = 0$

Dividing each by $\sqrt{2}$,

$x^2 - \frac{3}{\sqrt{2}}x - 2 = 0$

$(x)^2 - 2 \times x \times \frac{3}{2\sqrt{2}} = 2$

Adding, $\left(\frac{3}{2\sqrt{2}}\right)^2$ to both sides,

$\Rightarrow (x)^2 - 2 \times x \times \frac{3}{2\sqrt{2}} + \left(\frac{3}{2\sqrt{2}}\right)^2$

$= 2 + \left(\frac{3}{2\sqrt{2}}\right)^2$

$\Rightarrow \left(x - \frac{3}{2\sqrt{2}}\right)^2 = 2 + \frac{9}{8} = \frac{25}{8} = \left(\pm\frac{5}{2\sqrt{2}}\right)^2$

$\therefore x - \frac{3}{2\sqrt{2}} = \left(\pm\frac{5}{2\sqrt{2}}\right)$

$x = \frac{3}{2\sqrt{2}} \pm \frac{5}{2\sqrt{2}}$

$x = \frac{3}{2\sqrt{2}} + \frac{5}{2\sqrt{2}} = \frac{8}{2\sqrt{2}} = \frac{4}{\sqrt{2}}$

$= \frac{4\sqrt{2}}{\sqrt{2} \times \sqrt{2}} = 2\sqrt{2}$

or $x = \frac{3}{2\sqrt{2}} - \frac{5}{2\sqrt{2}} = \frac{-2}{2\sqrt{2}} = \frac{-1}{\sqrt{2}} = \frac{\sqrt{2}}{4}$

$\therefore x = \frac{-1}{\sqrt{2}}$ or $2\sqrt{2}$

Question 15.

Solution:

$\sqrt{3}x^2 + 10x + 7\sqrt{3} = 0$

Dividing by $\sqrt{3}$,

$\Rightarrow x^2 + \frac{10}{\sqrt{3}}x + 7 = 0$

$\Rightarrow (x)^2 + 2 \times x \times \frac{5}{\sqrt{3}} = -7$

Adding, $\left(\frac{5}{\sqrt{3}}\right)^2$ to both sides

$\Rightarrow (x)^2 + 2 \times x \times \frac{5}{\sqrt{3}} + \left(\frac{5}{\sqrt{3}}\right)^2 = -7 + \left(\frac{5}{\sqrt{3}}\right)^2$

$\left(x + \frac{5}{\sqrt{3}}\right)^2 = -7 + \frac{25}{3}$

$= \frac{-21+25}{3} = \frac{4}{3} = \left(\pm\frac{2}{\sqrt{3}}\right)^2$

$\Rightarrow x + \frac{5}{\sqrt{3}} = \pm\frac{2}{\sqrt{3}}$

$\therefore x = \frac{-5}{\sqrt{3}} \pm \frac{2}{\sqrt{3}}$

$\therefore x = \frac{-5}{\sqrt{3}} + \frac{2}{\sqrt{3}} = \frac{-3}{\sqrt{3}} = -\sqrt{3}$

or $\frac{-5}{\sqrt{3}} - \frac{2}{\sqrt{3}} = \frac{-7}{\sqrt{3}}$

$\therefore x = -\sqrt{3}$ or $\frac{-7}{\sqrt{3}}$

Question 16.

Solution:

$2x^2 + x + 4 = 0$

Dividing by 2,

$x^2 + \frac{1}{2}x + 2 = 0$

$(x)^2 + 2 \times x \times \frac{1}{4} = -2$

Adding, $\left(\frac{1}{4}\right)^2$ to both sides

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

$\Rightarrow \left(x + \frac{1}{4}\right)^2 = -2 + \frac{1}{16} = \frac{-31}{16} = \left(\pm \frac{\sqrt{-31}}{4}\right)^2$

But $\sqrt{-31}$ is not a real number.

$\therefore$ The given equation has no real root.

Benefits of RS Aggarwal Solutions for Class 10 Maths Chapter 1 Exercise 1.5

- **Clear Understanding:** These solutions provide clear explanations and step-by-step methods for solving problems related to Euclid's Division Lemma, the Fundamental Theorem of Arithmetic, and finding HCF and LCM. This clarity helps students grasp concepts easily.
- **Improved Problem-Solving Skills:** By practicing these solutions, students can improve their ability to solve mathematical problems effectively and efficiently.
- **Confidence Building:** Understanding and applying these solutions can boost students' confidence in tackling math problems, as they gain proficiency in fundamental concepts.

- **Exam Preparation:** These solutions are aligned with the curriculum and help students prepare comprehensively for exams by covering essential topics in a structured manner.
- **Expert Guidance:** Prepared by subject experts, these solutions ensure accuracy and reliability, providing students with reliable methods and techniques for solving math problems.
- **Accessible Learning:** The solutions are presented in a way that is easy to understand, making learning more accessible and enjoyable for students.
- **Foundation for Future Topics:** Mastery of these fundamental concepts lays a strong foundation for understanding more advanced mathematical topics in higher classes.