ICSE Class 8 Maths Selina Solutions Chapter 6: In ICSE Class 8 Maths, Chapter 6, the topic of "Sets" is covered. While solving trigonometric issues, German mathematician Georg Cantor came upon sets for the first time. He then went on to create the theory of sets. This chapter will teach students how to define disjoint sets, calculate the complement of a set, and discover the union and intersection of sets.

To better grasp the uses of sets, students must answer all of the exercise's questions. Additionally, it will instill confidence in the pupils to tackle any kind of set-related challenge during the annual examinations. Using the link below, students can obtain the ICSE Class 8 Maths Selina Solutions Chapter 6 Sets. Students can use the answer PDF if they run into trouble solving the practice issues. Experts in the field have created the Selina Solutions, which are broken down into manageable steps to help students grasp the idea.

ICSE Class 8 Maths Selina Solutions Chapter 6 Overview

Selina Solutions for ICSE Class 8 Maths Chapter 6 on sets provide clear and comprehensive explanations for all topics covered in the syllabus. They include step-by-step solutions to exercises, ensuring students understand the concepts of set theory thoroughly.

These solutions are accurate and aligned with the ICSE marking scheme, making them ideal for exam preparation. By using these solutions, students can improve their problem-solving skills, self-assess their understanding, and effectively prepare for exams, making learning about sets accessible and effective.

ICSE Class 8 Maths Selina Solutions Chapter 6

Here we have provided ICSE Class 8 Maths Selina Solutions Chapter 6 for the ease of students so that they can prepare better for their upcoming exams -

Question 1.

Write the following sets in roster (Tabular) form:

(i)

$A_1 = \{x : 2x + 3 = 11\}$

Solution:

$\therefore$ 2x+3=11

Shifting the terms 2x=11-3 (Subtracting)

2x=8

$x = \frac{8}{2} \rightarrow x = 4$

$\therefore$ Given set in roster (Tabular) Form is

$A_1 = \{4\}$

(ii)

$$A_2 = \{x : x^2 - 4x - 5 = 0\}$$

Solution:

Given

$$x^2 - 4x - 5 = 0$$
$$\rightarrow x^2 - 5x + x - 5 = 0$$
$$\rightarrow x(x - 5) + 1(x - 5) = 0$$

∴ Either x-5=0 or x+1=0

$$\rightarrow \quad x = 5 \rightarrow x = -1$$

∴ Given set in roster (Tabular) Form is

$$A_2 = \{5, -1\}$$

(iii)

$$A_3 = \{x : x \in Z, -3 \le x < 4\}$$

Solution:

Given -3≤x < 4

∴ x=-3, -2, -1, 0, 1, 2, 3

∴ Given set in roster (Tabular) form is

$$A_3 = \{-3, -2, -1, 0, 1, 2, 3\}$$

(iv)

$$A_4 = x : is\,a\,two\,digit\,number\,and\,sum\,of\,digits\,of\,x\,is\,7$$

Solution:

∵ x is a two digit number and sum of digits of x is 7

∴ x=16, 25, 34, 43, 52, 61, 70

∴ Given set in roster (Tabular) form is

$$A_4 = \{16, 25, 34, 43, 52, 61, 70\}$$

Question 3.

(i) Is {1, 2, 4, 16, 64} = {x : x is a factor of 32} ? Give reason.

Solution:

No, {1, 2, 4, 16, 64}≠{x : x is a factor of 32}.

Because 64 is not a factor of 32.

(ii) Is {x : x is a factor of 27}≠{3,9,27,54}? Give reason.

Solution:

Yes, {x:x is a factor of 27}≠{3, 9, 27, 54}

Because 54 is not a factor of 27

(iii) Write the set of even factors of 124.

Solution:

Factors of 124=1, 2, 4, 31, 62, 124

Set of even factors of 124={2, 4, 62, 124}

(iv) Write the set of odd factors of 72.

Factors of 72=1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72

Set of odd factors of 72 = {1, 3, 9}

(v) Write the set of prime factors of 3234.

Solution:

2	3234
3	1617
7	539
7	77
	11

∴ Set of prime factors of 3234={2, 3, 7, 11}

(vi)

$$ls \left\{ x : x^2 - 7x + 12 = 0 \right\} = \{3, 4\}$$
?

Solution:

$$x^2 - 7x + 12 = 0$$
$$\rightarrow x^2 - 4x - 3x + 12 = 0$$
$$\rightarrow x(x - 4) - 3(x - 4) = 0$$
$$\rightarrow (x - 4)(x - 3) = 0$$
$\therefore$ Either x-4=0   or x-3=0

x-4=0 $\Rightarrow$ x=4

x-3=0 $\Rightarrow$ x=3

$$\therefore \left\{ x : x^2 - 7x + 12 = 0 \right\} = \{3, 4\}$$
, is true.

(vii)

Is $\{x : x^2 - 5x - 6 = 0\} = \{2, 3\}$?

Solution:

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

$\rightarrow x^2 - 6x + x - 6 = 0$

$\Rightarrow x(x - 6) + 1(x - 6) = 0$

$\Rightarrow (x - 6)(x + 1) = 0$

$\therefore$ Either $x - 6 = 0$ Or $x + 1 = 0$

$x - 6 = 0 \rightarrow x = 6$

$x + 1 = 0 \rightarrow x = -1$

$\therefore \{x : x^2 - 5x - 6 = 0\} \neq \{2, 3\}$

i.e.

$\{x : x^2 - 5x - 6 = 0\} = \{2, 3\}$

is not true.

Question 4.

Write the following sets in Roster form:

(i) The set of letters in the word 'MEERUT'

(ii) The set of letters in the word 'UNIVERSAL'

Solution:

(i) Roster form of the set of letters in the word "MEERUT"= {m, e, r, u, t}

(ii) Roster form of the set of letters in the word "UNIVERSAL"= {u, n, i, v, e, r, s, a, l}

(iii)

$A=\{x:x=y+3, y \in N$ and $y>3\}$

x=y+3

y=4, 5, 6, 7, 8, 9, … [∵ y > 3]

When y=4, x=4+3=7

When y=5, x=5+3=8

When y=6, x=6+3=9

when y=7, x=7+3=10

when y=8, x=8+3=11

∴ Roster form of the given set A= {7, 8, 9, 10, 11……….}

(iv)

$$B = \{P : P \in W \text{ and } P^2 < 20\}$$
$$P^2 = 0, 1, 4, 9, 16 \quad [\because P^2 < 20]$$
When

$$P^2 = 0 \to P = \sqrt{0} = 0$$
When

$$P^2 = 1 \to P = \sqrt{1} = 1$$
When

$$P^2 = 4 \to P = \sqrt{4} = 2$$
When

$$P^2 = 9 \to P = \sqrt{9} = 3$$
When

$$P^2 = 16 \to P = \sqrt{16} = 4$$
$\therefore$ Roster form of the given set B = $\{0, 1, 2, 3, 4\}$

(v)

$C = \{x : x \text{ is composite number and } 5 \le x \le 21)$
$5 \le x \le 21$ means $x = 5, 6, 7, 8, 9, 10, \ldots \ldots, 21$

But we are given that x is a composite number, so we need to ignore prime numbers in between 5 and 21.

∴x=6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21

∴ Roster form of the given set C = {6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21}

Question 5.

List the elements of the following sets:

(i)

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

Solution:

Given

$x^2 - 2x - 3 = 0$
$\rightarrow x^2 - 3x + x - 3 = 0$
$\rightarrow x(x - 3) + 1(x - 3) = 0$
$\Rightarrow (x+1)(x-3)=0$

∴ Either x-3=0 or x+1=0

x-3=0 ⇒ x=3

x+1=0 ⇒ x=-1

∴ Elements of the set

$\{x : x^2 - 2x - 3 = 0\}$
are 3 and -1

(ii)

$\{x : x = 2y + 5; y \in N \text{ and } 2 \leq y < 6\}$

Solution:

$\{x : x = 2y + 5; y \in N \text{ and } 2 \leq y < 6\}$

x=2y+5

y=2, 3, 4, 5 [∵2≤y < 6]

When

$y = 2, x = 2 \times 2 + 5 = 4 + 5 = 9$
When

$y = 3, x = 2 \times 3 + 5 = 6 + 5 = 11$
When

$y = 4x = 2 \times 4 + 5 = 8 + 5 = 13$
When

$y = 5, x = 2 \times 5 + 5 = 10 + 5 = 15$
∴ Elements of the given set

$\{x : x = 2y + 5y \in N \text{ and } 2 \leq y < 6\}$
are 9, 11, 13, 15.

(iii)

$\{x : x \text{ is a factor of } 24\}$

Solution:

Given

$\{x : x \text{ is a factor of } 24\}$

$24 = 1 \times 24$

$24 = 2 \times 12$

$24 = 3 \times 8$

$24 = 4 \times 6$

$\therefore$ Elements of the given set

$\{x : x \text{ is a factor of } 24\}$

are 1, 2, 3, 4, 6, 8, 12, 24.

(iv)

$\{x : x \in Z \text{ and } x^2 \leq 4\}$

Solution:

Given

$\{x : x \in Z \text{ and } x^2 \leq 4\}$
$x = 4, 1, 0 \quad [\because x^2 \leq 4]$
When

$x^2 = 4 \rightarrow x = \pm\sqrt{4} = \pm 2$
When

$x^2 = 1 \rightarrow x = \pm\sqrt{1} = \pm 1$
When

$x^2 = 0 \rightarrow x = \sqrt{0} = 0$
$\therefore$ Elements of the given set

$\{x : x \in Z \text{ and } x^2 \leq 4\}$ are $-2, -1, 0, 1, 2$

(v)

$\{x : 3x - 2 \leq 10, x \in N\}$

Solution:

Given

$3x - 2 \leq 10$
$\rightarrow \quad 3x \leq 10 + 2$
$\rightarrow \quad 3x \leq 12$
$\rightarrow \quad x \leq \frac{12}{3}$
$\rightarrow \quad x \leq 4$
$\therefore x = 1, 2, 3, 4$
$\therefore$ Elements of the given set

$\{x : 3x - 2 \leq 10, x \in N\}$ are $1, 2, 3$ and 4

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Benefits of ICSE Class 8 Maths Selina Solutions Chapter 6

The Selina Solutions for ICSE Class 8 Maths Chapter 6 on sets offer several benefits for students:

Clear Explanation: The solutions provide step-by-step explanations for each problem, making complex concepts easier to understand.

Comprehensive Coverage: They cover all topics and exercises from the ICSE Class 8 Maths syllabus related to sets, ensuring thorough preparation.

Accuracy: Solutions are accurate and follow the ICSE marking scheme, helping students understand how to approach different types of questions.

Practice: They offer ample practice exercises with solutions, allowing students to reinforce their understanding and improve problem-solving skills.

Exam Preparation: By using these solutions, students can familiarize themselves with the pattern of questions asked in exams, enhancing their exam readiness.

Self-Assessment: Students can use the solutions to self-assess their understanding and identify areas where they need further practice or clarification.

Time Efficiency: The solutions save time for students and teachers alike by providing ready-made answers that are easy to follow and understand.