

Maharashtra Board Solutions Class 8-Maths (Practice Set 12.1): Chapter 12- Equations in One Variable



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Maharashtra Board Solutions Class 8-Maths (Practice Set 12.1): Chapter 12- Equations in One Variable

Class 8: Maths Chapter 12 solutions. Complete Class 8 Maths Chapter 12 Notes.

Maharashtra Board Solutions Class 8-Maths (Practice Set 12.1): Chapter 12- Equations in One Variable

Maharashtra Board 8th Maths Chapter 12, Class 8 Maths Chapter 12 solutions

Question 1. Each equation is followed by the values of the variable. Decide whether these values are the solutions of that equation.

i. $x - 4 = 3$, $x = -1, 7, -7$

ii. $9m = 81$, $m = 3, 9, -3$

iii. $2a + 4 = 0$, $a = 2, -2, 1$

iv. $3 - y = 4$, $y = -1, 1, 2$

Solution:

i. $x - 4 = 3$ (i)

Substituting $x = -1$ in L.H.S. of equation (i),

$$\text{L.H.S.} = (-1) - 4$$

$$= -5$$

$$\text{R.H.S.} = 3$$

$$\therefore \text{L.H.S.} \neq \text{R.H.S.}$$

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$\therefore x = -1$ is not the solution of the given equation.

Substituting $x = 7$ in L.H.S. of equation (i),

$$\text{L.H.S.} = (7) - 4$$

$$= 3$$

$$\text{R.H.S.} = 3$$

$$\therefore \text{L.H.S.} = \text{R.H.S.}$$

$\therefore x = 7$ is the solution of the given equation.

Substituting $x = -7$ in L.H.S. of equation (i),

$$\text{L.H.S.} = (-7) - 4$$

$$= -11$$

$$\text{R.H.S.} = 3$$

$$\therefore \text{L.H.S.} \neq \text{R.H.S.}$$

$\therefore x = -7$ is not the solution of the given equation.

$$\text{ii. } 9m = 81 \dots (i)$$

Substituting $m = 3$ in L.H.S. of equation (i),

$$\text{L.H.S.} = 9 \times (3)$$

$$= 27$$

$$\text{R.H.S.} = 81$$

$$\therefore \text{L.H.S.} \neq \text{R.H.S.}$$

$\therefore m = 3$ is not the solution of the given equation.

Substituting $m = 9$ in L.H.S. of equation (i),

$$\text{L.H.S.} = 9 \times (9)$$

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$$= 81$$

$$\text{R.H.S.} = 81$$

$$\therefore \text{L.H.S.} = \text{R.H.S.}$$

$\therefore m = 9$ is the solution of the given equation.

Substituting $m = -3$ in L.H.S. of equation (i),

$$\text{L.H.S.} = 9 \times (-3)$$

$$= -27$$

$$\text{R.H.S.} = 81$$

$$\therefore \text{L.H.S.} \neq \text{R.H.S.}$$

$\therefore m = -3$ is not the solution of the given equation.

iii. $2a + 4 = 0 \dots\dots(i)$

Substituting $a = 2$ in L.H.S. of equation (i),

$$\text{L.H.S.} = 2(2) + 4$$

$$= 4 + 4$$

$$= 8$$

$$\text{R.H.S.} = 0$$

$$\therefore \text{L.H.S.} \neq \text{R.H.S.}$$

$\therefore a = 2$ is not the solution of the given equation.

Substituting $a = -2$ in L.H.S. of equation (i),

$$\text{L.H.S.} = 2(-2) + 4$$

$$= -4 + 4$$

$$= 0$$

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$$\text{R.H.S.} = 0$$

$$\therefore \text{L.H.S.} = \text{R.H.S.}$$

$\therefore a = -2$ is the solution of the given equation.

Substituting $a = 1$ in L.H.S. of equation (i),

$$\text{L.H.S.} = 2(1) + 4$$

$$= 2 + 4$$

$$= 6$$

$$\text{R.H.S.} = 0$$

$$\therefore \text{L.H.S.} \neq \text{R.H.S.}$$

$\therefore a = 1$ is not the solution of the given equation.

iv. $3 - y = 4 \dots(i)$

Substituting $y = -1$ in L.H.S. of equation (i),

$$\text{L.H.S.} = 3 - (-1)$$

$$= 3 + 1$$

$$= 4$$

$$\text{R.H.S.} = 4$$

$$\therefore \text{L.H.S.} = \text{R.H.S.}$$

$\therefore y = -1$ is the solution of the given equation.

Substituting $y = 1$ in L.H.S. of equation (i),

$$\text{L.H.S.} = 3 - (1)$$

$$= 2$$

$$\text{R.H.S.} = 4$$

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$\therefore \text{L.H.S.} \neq \text{R.H.S.}$

$\therefore y = 1$ is not the solution of the given equation.

Substituting $y = 2$ in L.H.S. of equation (i),

$$\text{L.H.S.} = 3 - (2)$$

$$= 1$$

$$\text{R.H.S.} = 4$$

$\therefore \text{L.H.S.} \neq \text{R.H.S.}$

$\therefore y = 2$ is not the solution of the given equation.

Question 2.

Solve the following equations:

i. $17p - 2 = 49$

ii. $2m + 7 = 9$

iii. $3x + 12 = 2x - 4$

iv. $5(x - 3) = 3(x + 2)$

v. $\frac{9x}{8} + 1 = 10$

vi. $\frac{y}{7} + \frac{y-4}{3} = 2$

vii. $13x - 5 = \frac{3}{2}$

viii. $3(y + 8) = 10(y - 4) + 8$

ix. $\frac{x-9}{x-5} = \frac{5}{7}$

x. $\frac{y-4}{3} + 3y = 4$

xi. $\frac{b+(b+1)+(b+2)}{4} = 21$

Solution:

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i. $17p - 2 = 49$

$$\therefore 17p - 2 + 2 = 49 + 2$$

...[Adding 2 on both the sides]

$$\therefore 17p = 51$$

$$\therefore \frac{17p}{17} = \frac{51}{17} \quad 17p \div 17 = 51 \div 17 \quad \dots [\text{Dividing both the sides by 17}]$$

$$p = 3$$

ii. $2m + 7 = 9$

$$\therefore 2m + 7 - 7 = 9 - 7$$

...[Subtracting 7 from both the sides]

$$\therefore 2m = 2$$

$$\therefore \frac{2m}{2} = \frac{2}{2} \quad 2m \div 2 = 2 \div 2 \quad [\text{Dividing both the sides by 2}]$$

$$\therefore m = 1$$

iii. $3x + 12 = 2x - 4$

$$\therefore 3x + 12 - 12 = 2x - 4 - 12$$

...[Subtracting 12 from both the sides]

$$\therefore 3x = 2x - 16$$

$$\therefore 3x - 2x = 2x - 16 - 2x$$

...[Subtracting 2x from both the sides]

$$\therefore x = -16$$

iv. $5(x - 3) = 3(x + 2)$

$$\therefore 5x - 15 = 3x + 6$$

$$\therefore 5x - 15 + 15 = 3x + 6 + 15$$

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...[Adding 15 on both the sides]

$$\therefore 5x = 3x + 21$$

$$\therefore 5x - 3x = 3x + 21 - 3x$$

...[Subtracting 3x from both the sides]

$$\therefore 2x = 21$$

$$\therefore \frac{2x}{2} = \frac{21}{2} \quad 2x \div 2 = 21 \div 2 \quad \dots [\text{Dividing both the sides by 2}]$$

$$\therefore x = \frac{21}{2}$$

$$\text{v. } \frac{9x}{8} + 1 = 10 \quad 9x \div 8 + 1 = 10$$

$$\therefore \frac{9x}{8} + 1 - 1 = 10 - 1$$

...[Subtracting 1 from both the sides]

$$\therefore \frac{9x}{8} = 9$$

$$\therefore \frac{9x}{8} \times 8 = 9 \times 8$$

...[Multiplying both the sides by 8]

$$\therefore 9x = 72$$

$$\therefore \frac{9x}{9} = \frac{72}{9} \quad \dots [\text{Dividing both the sides by 9}]$$

$$\therefore x = 8$$

$$\text{vi. } \frac{y}{7} + \frac{y-4}{3} = 2 \quad y \div 7 + (y-4) \div 3 = 2$$

$$\therefore \frac{y \times 3}{7 \times 3} + \frac{(y-4) \times 7}{3 \times 7} = 2$$

$$\therefore \frac{3y}{21} + \frac{7y-28}{21} = 2$$

$$\therefore \frac{3y+7y-28}{21} = 2$$

$$\therefore \frac{10y-28}{21} = 2$$

$$\therefore \frac{10y-28}{21} \times 21 = 2 \times 21$$

...[Multiplying both the sides by 21]

$$\therefore 10y - 28 = 42$$

$$\therefore 10y - 28 + 28 = 42 + 28$$

...[Adding 28 on both the sides]

$$\therefore 10y = 70$$

$$\therefore \frac{10y}{10} = \frac{70}{10} \quad \text{...[Dividing both the sides by 10]}$$

$$\therefore y = 7$$

vii. $13x - 5 = \frac{3}{2} \times 32$

$$\therefore (13x - 5) \times 2 = \frac{3}{2} \times 2$$

...[Multiplying both the sides by 2]

$$\therefore 26x - 10 = 3$$

$$\therefore 26x - 10 + 10 = 3 + 10$$

...[Adding 10 on both the sides]

$$\therefore 26x = 13$$

$$\therefore \frac{26x}{26} = \frac{13}{26} \quad \dots[\text{Dividing both the sides by 26}]$$

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

viii. $3(y + 8) = 10(y - 4) + 8$

$$\therefore 3y + 24 = 10y - 40 + 8$$

$$\therefore 3y + 24 = 10y - 32$$

$$\therefore 3y + 24 - 24 = 10y - 32 - 24$$

...[Subtracting 24 from both the sides]

$$\therefore 3y = 10y - 56$$

$$\therefore 3y - 10y = 10y - 56$$

...[Subtracting 10y from both the sides]

$$\therefore -7y = -56$$

$$\therefore \frac{-7y}{-7} = \frac{-56}{-7} \dots[\text{Dividing both the sides by } -7]$$

$$\therefore y = 8$$

ix. $\frac{x-9}{x-5} = \frac{5}{7}$

$$\therefore \frac{x-9}{x-5} \times 7(x-5) = \frac{5}{7} \times 7(x-5)$$

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...[Multiplying both the sides by 7 (x – 5)]

$$\therefore 7(x - 9) = 5(x - 5)$$

$$\therefore 7x - 63 = 5x - 25$$

$$\therefore 7x - 63 + 63 = 5x - 25 + 63$$

...[Adding 63 on both the sides]

$$\therefore 7x = 5x + 38$$

$$\therefore 7x - 5x = 5x + 38 - 5x$$

...[Subtracting 5x from both the sides]

$$\therefore 2x = 38$$

$$\therefore \frac{2x}{2} = \frac{38}{2} \text{ ...[Dividing both the sides by 2]}$$

$$\therefore x = 19$$

$$x. \frac{y-4}{3} + 3y = 4$$

$$\therefore \frac{y-4}{3} \times 3 + 3y \times 3 = 4 \times 3$$

...[Multiplying both the sides by 3]

$$\therefore y - 4 + 9y = 12$$

$$\therefore 10y - 4 = 12$$

$$\therefore 10y - 4 + 4 = 12 + 4$$

...[Adding 4 on both the sides]

$$\therefore 10y = 16$$

$$\therefore \frac{10y}{10} = \frac{16}{10} \text{ ...[Dividing both the sides by 10]}$$

$$\therefore y = \frac{8}{5}$$

$$xi. \frac{b+(b+1)+(b+2)}{4} = 21$$

$$\therefore \frac{b+(b+1)+(b+2)}{4} \times 4 = 21 \times 4$$

...[Multiplying both the sides by 4]

$$\therefore b + b + 1 + b + 2 = 84$$

$$\therefore 3b + 3 = 84$$

$$\therefore 3b + 3 - 3 = 84 - 3$$

...[Subtracting 3 from both the sides]

$$\therefore 3b = 81$$

$$\therefore \frac{3b}{3} = \frac{81}{3}$$
 ...[Dividing both the sides by 3]

$$\therefore b = 27$$

Intext Questions and Activities

Question 1.

Fill in the boxes to solve the following equations. (Textbook pg. no. 75)

i. $x + 4 = 9$

$$\therefore x + 4 - \underline{\quad} = 9 - \underline{\quad}$$

... [Subtracting 4 from both the sides]

$$\therefore x = \underline{\quad}$$

ii. $x - 2 = 7$

$$\therefore x - 2 + \underline{\quad} = 7 + \underline{\quad}$$

... [Adding 2 on both the sides]

$$\therefore x = \underline{\quad}$$

iii. $\frac{x}{3} = 4$

$$\therefore \frac{x}{3} \times \underline{\quad} = 4 \times \underline{\quad}$$

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$$\therefore x = \underline{\hspace{1cm}}$$

iv. $4x = 24$

$$\therefore \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\therefore x = \underline{\hspace{1cm}}$$

Solution:

i. $x + 4 = 9$

$$\therefore x + 4 - 4 = 9 - 4$$

... [Subtracting 4 from both the sides]

$$\therefore x = 5$$

ii. $x - 2 = 7$

$$\therefore x - 2 + 2 = 7 + 2$$

... [Adding 2 on both the sides]

$$\therefore x = 9$$

iii. $\frac{x}{3} = 4$

$$\therefore \frac{x}{3} \times 3 = 4 \times 3$$

... [Multiplying both the sides by 3]

$$\therefore x = 12$$

iv. $4x = 24$

$$\therefore \frac{4x}{4} = \frac{24}{4}$$

... [Dividing both the sides by 4]

$$\therefore x = 6$$



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- Chapter 16- Surface Area and Volume (Practice Set 16.2)
- Chapter 16- Surface Area and Volume (Practice Set 16.3)
- Chapter 17- Factorisation of Algebraic Expressions (Practice Set 17.1)
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The Maharashtra State Board of Secondary and Higher Secondary Education or MSBSHSE (Marathi: महाराष्ट्र राज्य माध्यमिक आणि उच्च माध्यमिक शिक्षण मंडळ), is an **autonomous and statutory body established in 1965**. The board was amended in the year 1977 under the provisions of the Maharashtra Act No. 41 of 1965.

The Maharashtra State Board of Secondary & Higher Secondary Education (MSBSHSE), Pune is an independent body of the Maharashtra Government. There are more than 1.4 million students that appear in the examination every year. The Maha State Board conducts the board examination twice a year. This board conducts the examination for SSC and HSC.

The Maharashtra government established the Maharashtra State Bureau of Textbook Production and Curriculum Research, also commonly referred to as Ebalbharati, in 1967 to take up the responsibility of providing quality textbooks to students from all classes studying under the Maharashtra State Board. MSBHSE prepares and updates the curriculum to provide holistic development for students. It is designed to tackle the difficulty in understanding the concepts with simple language with simple illustrations. Every year around 10 lakh students are enrolled in schools that are affiliated with the Maharashtra State Board.

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As of now, the MSCERT and Balbharti are responsible for the syllabus and textbooks of Classes 1 to 8, while Classes 9 and 10 are under the Maharashtra State Board of Secondary and Higher Secondary Education (MSBSHSE).

How many state boards are there in Maharashtra?

The Maharashtra State Board of Secondary & Higher Secondary Education, conducts the HSC and SSC Examinations in the state of Maharashtra through its nine Divisional Boards located at Pune, Mumbai, Aurangabad, Nasik, Kolhapur, Amravati, Latur, Nagpur and Ratnagiri.

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