

Mathematics

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(Chapter - 2) (Linear Equations in One Variable)

(Class - VIII)

Exercise 2.6

Question 1:

Solve the following equation: $\frac{8x-3}{3x} = 2$

Answer 1:

$$\frac{8x-3}{3x} = 2$$

$$\Rightarrow 8x-3 = 2 \times 3x \quad \Rightarrow 8x-3 = 6x \quad \Rightarrow 8x-6x = 3 \quad \Rightarrow 2x = 3 \quad \Rightarrow x = \frac{3}{2}$$

Question 2:

Solve the following equation: $\frac{9x}{7-6x} = 15$

Answer 2:

$$\frac{9x}{7-6x} = 15$$

$$\Rightarrow 9x = 15(7-6x) \quad \Rightarrow 9x = 105 - 90x \quad \Rightarrow 9x + 90x = 105$$

$$\Rightarrow 99x = 105 \quad \Rightarrow x = \frac{105}{99} \quad \Rightarrow x = \frac{35}{33}$$

Question 3:

Solve the following equation: $\frac{z}{z+15} = \frac{4}{9}$

Answer 3:

$$\frac{z}{z+15} = \frac{4}{9}$$

$$\Rightarrow z \times 9 = 4(z+15) \quad \Rightarrow 9z = 4z + 60 \quad \Rightarrow 9z - 4z = 60$$

$$\Rightarrow 5z = 60 \quad \Rightarrow z = \frac{60}{5} \quad \Rightarrow z = 12$$

Question 4:

Solve the following equation: $\frac{3y+4}{2-6y} = \frac{-2}{5}$

Answer 4:

$$\frac{3y+4}{2-6y} = \frac{-2}{5}$$

$$\Rightarrow 5(3y+4) = -2(2-6y)$$

$$\Rightarrow 15y + 20 = -4 + 12y$$

$$\Rightarrow 15y - 12y = -4 - 20$$

$$\Rightarrow 3y = -24$$

$$\Rightarrow y = \frac{-24}{3}$$

$$\Rightarrow y = -8$$

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Question 5:

Solve the following equation: $\frac{7y+4}{y+2} = \frac{-4}{3}$

Answer 5:

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

$$\Rightarrow 3(7y+4) = -4(y+2) \quad \Rightarrow 21y+12 = -4y-8$$

$$\Rightarrow 21y+4y = -8-12 \quad \Rightarrow 25y = -20$$

$$\Rightarrow y = \frac{-20}{25} \quad \Rightarrow y = \frac{-4}{5}$$

Question 6:

The ages of Hari and Harry are in the ratio 5:7. Four years from now the ratio of their ages will be 3:4. Find their present ages.

Answer 6:

Let the Ages of Hari and Harry be $5x$ years and $7x$ years.

According to question, $\frac{5x+4}{7x+4} = \frac{3}{4}$

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

$$\Rightarrow 20x+16 = 21x+12$$

$$\Rightarrow 20x-21x = 12-16$$

$$\Rightarrow -x = -4$$

$$\Rightarrow x = 4$$

Hence, the age of Hari = $5x = 5 \times 4 = 20$ years and the age of Harry = $7x = 7 \times 4 = 28$ years.

Question 7:

The denominator of a rational number is greater than its numerator by 8. If the numerator is increased by 17 and the denominator is decreased by 1, the number obtained is $\frac{3}{2}$. Find the rational number.

Answer 7:

Let the numerator of a rational number be x , then the denominator is $x+8$.

Therefore, Rational number = $\frac{x}{x+8}$

According to the question, $\frac{x+17}{x+8-1} = \frac{3}{2}$

$$\Rightarrow \frac{x+17}{x+7} = \frac{3}{2}$$

$$\Rightarrow 2(x+17) = 3(x+7)$$

$$\Rightarrow 2x+34 = 3x+21$$

$$\Rightarrow 2x-3x = 21-34$$

$$\Rightarrow -x = -13 \quad \Rightarrow x = 13$$

Hence, the required rational number = $\frac{x}{x+8} = \frac{13}{13+8} = \frac{13}{21}$.