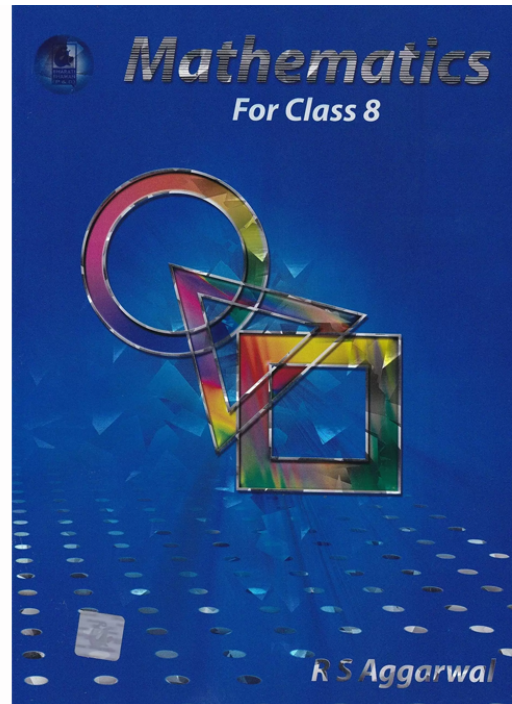


RS Aggarwal Solutions for Class 8 Maths Chapter 8–Linear Equations

Class 8 - Chapter 8 Linear Equations



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RS Aggarwal Solutions for Class 8 Maths Chapter 8–Linear Equations

RS Aggarwal 8th Maths Chapter 8, Class 8 Maths Chapter 8 solutions

Ex 8A

Q1

Answer :

$$\begin{aligned}8x + 3 &= 27 + 2x \\ \Rightarrow 8x - 2x &= 27 - 3 \\ \Rightarrow 6x &= 24 \\ \Rightarrow x &= \frac{24}{6} = 4 \\ \therefore x &= 4\end{aligned}$$

Q2

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-8-linear-equations/>

Answer :

$$\begin{aligned}5x + 7 &= 2x - 8 \\ \Rightarrow 5x - 2x &= -8 - 7 \\ \Rightarrow 3x &= -15 \\ \Rightarrow x &= \frac{-15}{3} = -5 \\ \therefore x &= -5\end{aligned}$$

<https://www.youtube.com/embed/PGcBZ8ziSAE?feature=oembed>

Q3.

Answer :

$$\begin{aligned}2z - 1 &= 14 - z \\ \Rightarrow 2z + z &= 14 + 1 \\ \Rightarrow 3z &= 15 \\ \Rightarrow z &= \frac{15}{3} = 5 \\ \therefore z &= 5\end{aligned}$$

Q4.

Answer :

$$\begin{aligned}9x + 5 &= 4(x - 2) + 8 \\ \Rightarrow 9x + 5 &= 4x - 8 + 8 \\ \Rightarrow 9x + 5 &= 4x \\ \Rightarrow 9x - 4x &= -5 \\ \Rightarrow 5x &= -5 \\ \Rightarrow x &= \frac{-5}{5} = -1 \\ \therefore x &= -1\end{aligned}$$

Q5.

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Answer :

$$\frac{7y}{5} = y - 4$$

By cross multiplication :

$$\Rightarrow 7y = 5(y - 4)$$

$$\Rightarrow 7y = 5y - 20$$

$$\Rightarrow 7y - 5y = -20$$

$$\Rightarrow 2y = -20$$

$$\Rightarrow y = \frac{-20}{2} = -10$$

$$\therefore y = -10$$

Q6.

Answer :

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

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

$$\Rightarrow x = \frac{1}{1} - \frac{2}{3} \quad \left(\text{L.C.M. of 1 and 3 is 3} \right) \quad \Rightarrow x =$$

$$\frac{3-2}{3}$$

$$\Rightarrow x = \frac{1}{3}$$

$$\Rightarrow x = \frac{1}{3}$$

$$\therefore x = \frac{1}{3}$$

Q7.

Answer :

$$\begin{aligned}15(y - 4) - 2(y - 9) + 5(y + 6) &= 0 \\ \Rightarrow 15y - 60 - 2y + 18 + 5y + 30 &= 0 \\ \Rightarrow 15y - 2y + 5y - 60 + 18 + 30 &= 0 \\ \Rightarrow 18y - 12 &= 0 \\ \Rightarrow 18y &= 12 \\ \Rightarrow y &= \frac{12}{18} = \frac{2}{3} \\ \therefore y &= \frac{2}{3}\end{aligned}$$

<https://www.youtube.com/embed/34aGgTFLVLc?feature=oembedQ8.Q9.Q10.Q11.Q12.Q13.Q14.Q15.Q16.Q17.Q18.Q19.Q20.Q21.Q22.Q23.Q24.Q25.Q26.Q27.Q28>.

Ex 8B

Q1

Answer :

Let the numbers be $8x$ and $3x$.

$$\begin{aligned}8x + 3x &= 143 \\ \Rightarrow 11x &= 143 \\ \Rightarrow x &= \frac{143}{11} \\ \Rightarrow x &= 13 \\ \therefore \text{One number} &= 8x = 8 \times 13 = 104 \\ \text{Other number} &= 3x = 3 \times 13 = 39\end{aligned}$$

Q2.

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-8-linear-equations/>

Answer :

Let the original number be x .

$\frac{2}{3}$ of the number is 20 less than the original number.

$$\therefore \frac{2}{3}x = x - 20$$

$$\Rightarrow \frac{2x}{3} = x - 20$$

$$\Rightarrow 2x = 3(x - 20) \quad (\text{by cross multiplication})$$

$$\Rightarrow 2x = 3x - 60$$

$$\Rightarrow 2x - 3x = -60$$

$$\Rightarrow -x = -60$$

$$\Rightarrow x = 60$$

Therefore, the original number is 60.

Q3.

Answer :

Let the number be x .

Four fifths of the number is 10 more than two thirds of the number.

$$\therefore \frac{4}{5}x = 10 + \frac{2}{3}x$$

$$\Rightarrow \frac{4x}{5} = 10 + \frac{2x}{3}$$

$$\Rightarrow \frac{4x}{5} = \frac{30 + 2x}{3} \quad (L.C.M. \text{ of } 1 \text{ and } 3 \text{ is } 3)$$

$$\Rightarrow 3(4x) = 5(30 + 2x) \quad (\text{by cross multiplication})$$

$$\Rightarrow 12x = 150 + 10x$$

$$\Rightarrow 12x - 10x = 150$$

$$\Rightarrow 2x = 150$$

$$\Rightarrow x = \frac{150}{2} = 75$$

Therefore, the number is 75.

Q4.

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Answer :

Let one part be x .

7 times the first part = $7x$

Let the other part be $(24 - x)$.

5 times the second part = $5(24 - x)$

$$\therefore 7x + 5(24 - x) = 146$$

$$\Rightarrow 7x + 120 - 5x = 146$$

$$\Rightarrow 7x - 5x = 146 - 120$$

$$\Rightarrow 2x = 26$$

$$\Rightarrow x = \frac{26}{2} = 13$$

Therefore, one part is 13.

$$\text{Other part} = (24 - x) = (24 - 13) = 11$$

Q5.

Answer :

Let the number be x .

Fifth part increased by 5 = $\frac{x}{5} + 5$

Fourt part diminished by 5 = $\frac{x}{4} - 5$

$$\therefore \frac{x}{5} + 5 = \frac{x}{4} - 5$$

$$\Rightarrow 5 + 5 = \frac{x}{4} - \frac{x}{5}$$

$$\Rightarrow 10 = \frac{5x - 4x}{20}$$

$$\Rightarrow 10 = \frac{x}{20}$$

$$\Rightarrow 200 = x$$

$$\Rightarrow x = 200$$

Therefore, the number is 200.

Q6.

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Answer :

Let the common multiple for the given three numbers be x .

Then, the three numbers would be $4x$, $5x$ and $6x$.

$$\therefore 4x + 6x = 5x + 55$$

$$\Rightarrow 10x = 5x + 55$$

$$\Rightarrow 10x - 5x = 55$$

$$\Rightarrow 5x = 55$$

$$\Rightarrow x = \frac{55}{5} = 11$$

$$\therefore \text{Smallest number} = 4x = 4(11) = 44$$

$$\text{Largest number is} = 6x = 6(11) = 66$$

$$\text{Third number} = 5x = 5(11) = 55$$

Therefore, *the* three numbers are 44, 55 and 66.

Q7.

Answer :

Let the number be x .

$$\therefore 10 + 4x = 5x - 5$$

$$\Rightarrow 10 + 5 = 5x - 4x$$

$$\Rightarrow 15 = x$$

$$\Rightarrow x = 15 \text{ (by transposition)}$$

Therefore, the number is 15.

Q8.

Answer :

Let us consider x as the common multiple of both the number.

Then, first number = $3x$

Second number = $5x$

$$\therefore \frac{3x + 10}{5x + 10} = \frac{5}{7}$$

$$\Rightarrow 7(3x + 10) = 5(5x + 10) \quad (\text{by cross multiplication})$$

$$\Rightarrow 21x + 70 = 25x + 50$$

$$\Rightarrow 21x - 25x = 50 - 70$$

$$\Rightarrow -4x = -20$$

$$\Rightarrow x = \frac{-20}{-4} = 5$$

Therefore, the common multiple of both the numbers is 5.

First number = $3x = 3 \times 5 = 15$

Second number = $5x = 5 \times 5 = 25$

Q9.

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Answer :

Let the first odd number be x .

Let the second odd number be $(x + 2)$.

Let the third odd number be $(x + 4)$.

$$\therefore x + (x + 2) + (x + 4) = 147$$

$$\Rightarrow x + x + 2 + x + 4 = 147$$

$$\Rightarrow 3x + 6 = 147$$

$$\Rightarrow 3x = 147 - 6$$

$$\Rightarrow 3x = 141$$

$$\Rightarrow x = \frac{141}{3} = 47$$

Therefore, the first odd number is 47.

$$\text{Second odd number} = (x + 2) = (47 + 2) = 49$$

$$\text{Third odd number} = (x + 4) = (47 + 4) = 51$$

Q10.

Answer :

Let the first even number be x .

Let the second even number be $x + 2$.

Let the third even number be $x + 4$.

$$\therefore x + x + 2 + x + 4 = 234$$

$$\Rightarrow x + x + 2 + x + 4 = 234$$

$$\Rightarrow 3x + 6 = 234$$

$$\Rightarrow 3x = 234 - 6$$

$$\Rightarrow 3x = 228$$

$$\Rightarrow x = \frac{228}{3} = 76$$

$$\therefore \text{First even number} = x = 76$$

$$\text{Second even number} = x + 2 = 76 + 2 = 78$$

$$\text{Third even number} = x + 4 = 80$$

Q11.

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Check :

The original number is 39.

$$\text{Sum of the digits in the original number} = (3 + 9) = 12$$

New number obtained on reversing the digits = 93

$$\text{New number} - \text{Original number} = (93 - 39) = 54$$

Thus, both the given conditions are satisfied by 39.

Hence, the original number is 39.

Ex 8C**Q1**

Answer :

(c) 5

$$2x - 3 = x + 2$$

$$\Rightarrow 2x - x = 3 + 2$$

$$\Rightarrow x = 5$$

Q2

Answer :

$$(b) -5$$

$$5x + \frac{7}{2} = \frac{3}{2}x - 14$$

$$\Rightarrow \frac{10x + 7}{2} = \frac{3x - 28}{2}$$

$$\Rightarrow 10x + 7 = 3x - 28$$

$$\Rightarrow 10x - 3x = -28 - 7$$

$$\Rightarrow 7x = -35$$

$$\Rightarrow x = \frac{-35}{7} = -5$$

Q3

<https://www.indcareer.com/schools/rs-aggarwal-solutions-for-class-8-maths-chapter-8-linear-equations/>

Answer :

(a) 40

$$z = \frac{4}{5} (z + 10)$$

$$\Rightarrow 5z = 4(z + 10)$$

$$\Rightarrow 5z = 4z + 40$$

$$\Rightarrow 5z - 4z = 40$$

$$\Rightarrow z = 40$$

Q4

Answer :

(c) $\frac{4}{5}$

$$3m = 5m - \frac{8}{5}$$

$$\Rightarrow 3m = \frac{25m - 8}{5}$$

$$\Rightarrow 15m = 25m - 8$$

$$\Rightarrow 15m - 25m = -8$$

$$\Rightarrow -10m = -8$$

$$\Rightarrow m = \frac{-8}{-10} = \frac{4}{5}$$

Q5

Answer :

(b) -1

$$5t - 3 = 3t - 5$$

$$\Rightarrow 5t - 3t = 3 - 5$$

$$\Rightarrow 2t = -2$$

$$\Rightarrow t = \frac{-2}{2} = -1$$

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Q6

Answer :

(b) -1

$$\begin{aligned}5t - 3 &= 3t - 5 \\ \Rightarrow 5t - 3t &= 3 - 5 \\ \Rightarrow 2t &= -2 \\ \Rightarrow t &= \frac{-2}{2} = -1\end{aligned}$$

Q7

Answer :

(b) -1

$$\begin{aligned}\frac{6x+1}{3} + 1 &= \frac{x-3}{6} \\ \Rightarrow \frac{6x+1+3}{3} &= \frac{x-3}{6} \\ \Rightarrow 6(6x+4) &= 3(x-3) \\ \Rightarrow 36x+24 &= 3x-9 \\ \Rightarrow 36x-3x &= -24-9 \\ \Rightarrow 33x &= -33 \\ \Rightarrow x &= \frac{-33}{33} = -1\end{aligned}$$

Q8

Answer :

(c) 36

$$\begin{aligned}\frac{n}{2} - \frac{3n}{4} + \frac{5n}{6} &= 21 \\ \Rightarrow \frac{6n-9n+10n}{12} &= 21 \\ \Rightarrow 7n &= 21 \times 12 \\ \Rightarrow 7n &= 252 \\ \Rightarrow n &= \frac{252}{7} = 36\end{aligned}$$

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Q9

Answer :

(d) $\frac{1}{2}$

$$\frac{x+1}{2x+3} = \frac{3}{8}$$

$$\Rightarrow 8(x+1) = 3(2x+3)$$

$$\Rightarrow 8x+8 = 6x+9$$

$$\Rightarrow 8x-6x = 9-8$$

$$\Rightarrow 2x = 1$$

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

Q10

Answer :

(c) 8

$$\frac{4x+8}{5x+8} = \frac{5}{6}$$

$$\Rightarrow 6(4x+8) = 5(5x+8)$$

$$\Rightarrow 24x+48 = 25x+40$$

$$\Rightarrow 24x-25x = -48+40$$

$$\Rightarrow -x = -8$$

$$\Rightarrow x = 8$$

Q11

Answer :

(d) 12

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

$$\Rightarrow 9n = 4(n + 15)$$

$$\Rightarrow 9n = 4n + 60$$

$$\Rightarrow 9n - 4n = 60$$

$$\Rightarrow 5n = 60$$

$$\Rightarrow n = \frac{60}{5} = 12$$

Q12

Answer :

(a) -2

$$3(t - 3) = 5(2t + 1)$$

$$\Rightarrow 3t - 9 = 10t + 5$$

$$\Rightarrow 3t - 10t = 9 + 5$$

$$\Rightarrow -7t = 14$$

$$\Rightarrow -t = \frac{14}{7} = 2$$

$$\Rightarrow t = -2$$

Q13

Answer :

(c) 80

Let the number be x .

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

$$\Rightarrow \frac{4x}{5} = \frac{3x + 16}{4}$$

$$\Rightarrow 16x = 15x + 80$$

$$\Rightarrow 16x - 15x = 80$$

$$\Rightarrow x = 80$$

Q14

Answer :

(b) 28 years

Let x be the common multiple of the ages of A and B.

Then, the ages of A and B would be $5x$ and $7x$, respectively.

$$\therefore \frac{5x + 4}{7x + 4} = \frac{3}{4}$$

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

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

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

$$\Rightarrow 4 = x$$

$$\Rightarrow x = 4$$

$$\begin{aligned}\therefore \text{Age of B} &= 7(x) = 7 \times 4 \\ &= 28 \text{ years}\end{aligned}$$

Q15

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Answer :

(b) 5 cm

Let the equal side of the isosceles triangle be x .

Then, the perimeter of the triangle would be $(x + x + 6)$.

$$\therefore 2x + 6 = 16$$

$$\Rightarrow 2x = 16 - 6$$

$$\Rightarrow 2x = 10$$

$$\Rightarrow x = \frac{10}{2} = 5$$

$\therefore$ Length of each equal side = 5 cm

Q16

Answer :

(d) 17

Let the three consecutive integers be x , $x + 1$ and $x + 2$.

$$\text{Equation} = x + x + 1 + x + 2 = 51$$

$$\Rightarrow 3x + 3 = 51$$

$$\Rightarrow 3x = 51 - 3$$

$$\Rightarrow 3x = 48$$

$$\Rightarrow x = \frac{48}{3} = 16$$

$$\text{Middle integer} = x + 1 = 16 + 1 = 17$$

Q17

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Answer :

(a) 40

Let the numbers be x and $x + 15$.

$$\therefore x + x + 15 = 95$$

$$\Rightarrow 2x + 15 = 95$$

$$\Rightarrow 2x = 95 - 15$$

$$\Rightarrow 2x = 80$$

$$\Rightarrow x = 40$$

The smaller number is 40.

Q18

Answer :

(c) 48

Let the number of boys in the class be x .

Then, the number of girls will be $(x - 8)$.

The equation becomes :

$$\frac{x}{x-8} = \frac{7}{5}$$

$$\Rightarrow 5x = 7x - 56$$

$$\Rightarrow 5x - 7x = -56$$

$$\Rightarrow -2x = -56$$

$$\Rightarrow x = \frac{-56}{-2} = 28$$

Therefore, the number of boys is 28.

$$\text{Number of girls} = (x - 8) = 28 - 8 = 20$$

$$\text{Total strength of the class} = 28 + 20 = 48$$



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He was born on January 2, 1946 in a village of Delhi. He graduated from Kirori Mal College, University of Delhi. After completing his M.Sc. in Mathematics in 1969, he joined N.A.S. College, Meerut, as a lecturer. In 1976, he was awarded a fellowship for 3 years and joined the University of Delhi for his Ph.D. Thereafter, he was promoted as a reader in N.A.S. College, Meerut. In 1999, he joined M.M.H. College, Ghaziabad, as a reader and took voluntary retirement in 2003. He has authored more than 75 titles ranging from Nursery to M. Sc. He has also written books for competitive examinations right from the clerical grade to the I.A.S. level.

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