Step-VI Solve the equation obtained in step V by dividing both sides by the coefficient of the variable on L.H.S.

Substituting $x = \dfrac{27}{10}$ in the given equation, we get

L.H.S. $= \dfrac{x}{2} - \dfrac{1}{5} = \dfrac{27}{10} \times \dfrac{1}{2} - \dfrac{1}{5} = \dfrac{27}{10} - \dfrac{1}{5}$

$= \dfrac{27 - 1 \times 4}{20} = \dfrac{27 - 4}{20} = \dfrac{23}{20}$ and,

R.H.S. $= \dfrac{x}{3} + \dfrac{1}{4} = \dfrac{27}{10} \times \dfrac{1}{3} + \dfrac{1}{4}$

$= \dfrac{9}{10} + \dfrac{1}{4} = \dfrac{9 \times 2 + 1 \times 5}{20} = \dfrac{18 + 5}{20} = \dfrac{23}{20}$

Thus, for $x = \dfrac{27}{10}$, we have L.H.S. = R.H.S.

Substituting $x = 4$ in the given equation, we get

L.H.S. $= x + 7 - \dfrac{8x}{3} = 4 + 7 - \dfrac{8 \times 4}{3}$

$= 11 - \dfrac{32}{3} = \dfrac{33 - 32}{3} = \dfrac{1}{3}$

and, R.H.S. $= \dfrac{17}{6} - \dfrac{5x}{8} = \dfrac{17}{6} - \dfrac{5 \times 4}{8} = \dfrac{17}{6} - \dfrac{5}{2}$

$= \dfrac{17 - 15}{6} = \dfrac{2}{6} = \dfrac{1}{3}$

Thus, for $x = 4$, we have L.H.S. = R.H.S.

Substituting $t = 2$ on both sides of the given equation, we get

L.H.S. $= \dfrac{3t - 2}{4} - \dfrac{2t + 3}{3}$

$= \dfrac{3 \times 2 - 2}{4} - \dfrac{2 \times 2 + 3}{3} = \dfrac{6 - 2}{4} - \dfrac{4 + 3}{3}$

$\dfrac{4}{4} - \dfrac{7}{3} = 1 - \dfrac{7}{3} = \dfrac{3 - 7}{3} = \dfrac{-4}{3}$

and,

R.H.S. $= \dfrac{2}{3} - t = \dfrac{2}{3} - 2 = \dfrac{2 - 6}{4} = \dfrac{-4}{3}$

Thus, for $t = 2$, we have L.H.S. = R.H.S.

Substituting $x = 11$ on both sides of the given equation, we get

L.H.S. $= \dfrac{x + 2}{6} - \left(\dfrac{11 - x}{3} - \dfrac{1}{4}\right)$

$= \dfrac{11 + 2}{6} - \left(\dfrac{11 - 11}{3} - \dfrac{1}{4}\right) = \dfrac{13}{6} - \left(0 - \dfrac{1}{4}\right)$

$= \dfrac{13}{6} + \dfrac{1}{4} = \dfrac{26 + 3}{12} = \dfrac{29}{12}$

and, R.H.S. $= \dfrac{3x - 4}{12} = \dfrac{3 \times 11 - 4}{12} = \dfrac{33 - 4}{12} = \dfrac{29}{12}$

Thus, for $x = 11$, we have L.H.S. = R.H.S.

Putting $x = -\dfrac{2x + 8}{3} = -10 - \dfrac{2 \times -10 + 8}{3}$

$= -10 - \dfrac{-20 + 8}{3} = -10 - \left(\dfrac{-12}{3}\right)$

$= -10 + 4 = -6$ and,

R.H.S. $= \dfrac{1}{4}\left(x - \dfrac{2 - x}{6}\right) - 3 = \dfrac{1}{4}\left(-10 - \dfrac{2 + 10}{6}\right) - 3$

$= \dfrac{1}{4}(-10 - 2) - 3 = -3 - 3 = -6$

Thus, L.H.S. = R.H.S. for $x = -10$.

Cross-Multiplication Method for Solving Equations of the form :

$$\dfrac{ax + b}{cx + d} = \dfrac{m}{n}$$

$\Rightarrow n(ax + b) = m(cx + d)$

Applications of Linear Equations to Practical Problems

The following steps should be followed to solve a word problem:

Step-I Read the problem carefully and note what is given and what is required.

Step-II Denote the unknown quantity by some letters, say x, y, z, etc.

Step-III Translate the statements of the problem into mathematical statements.

Step-IV Using the condition(s) given in the problem, form the equation.

Step-V Solve the equation for the unknown.

Step-VI Check whether the solution satisfies the equation.

Area of the given rectangle $= (x^2 + 4x)\text{cm}^2$
$= (10^2 + 4 \times 10)\text{cm}^2 = 140\ \text{cm}^2$

Area of the new rectangle
$= (x^2 + 10x + 21)\text{cm}^2$
$= (10^2 + 10 \times 10 + 21)\text{cm}^2 = 221\ \text{cm}^2$

Clearly, area of the new rectangle is 81 cm^2 more than that of the given rectangle, which is the same as given in the problem. Hence, our answer is correct.

We have,

Area of the given triangle $= \left(\dfrac{5}{6} \times 12^2\right)\text{cm}$

$= 120\text{cm}^2$

Area of the given triangle

$= \left(\dfrac{5}{6} \times 12^2 - \dfrac{15}{3} \times 12 + 2 \times 12 - 4\right)\text{cm} = 120\text{cm}^2$

Therefore, area of the given triangle is the same as that of the new triangle, which is the same as given in the problem. Thus, our answer is correct.

$\Rightarrow \quad \dfrac{x}{5} = \dfrac{1}{15} - 11$

$\Rightarrow \quad \dfrac{x}{5} = \dfrac{1-165}{15}$

$\Rightarrow \quad \dfrac{x}{5} = -\dfrac{164}{15}$

$\Rightarrow \quad 5 \times \dfrac{x}{5} = 5 \times -\dfrac{164}{15}$

$\Rightarrow \quad x = -\dfrac{164}{3}$

Thus, $x = -\dfrac{164}{3}$ is the solution of the given equation.

Ex.7 Solve : $\dfrac{1}{3}x - \dfrac{5}{2} = 6$

Sol. We have,

$\dfrac{1}{3}x - \dfrac{5}{2} = 6$

$\Rightarrow \quad \dfrac{1}{3}x - \dfrac{5}{2} + \dfrac{5}{2} = 6 + \dfrac{5}{2}$

[Adding $\dfrac{5}{2}$ on

both sides]

$\Rightarrow \quad \dfrac{1}{3}x = 6 + \dfrac{5}{2}$

$\Rightarrow \quad \dfrac{1}{3}x = \dfrac{12+5}{2}$

$\Rightarrow \quad \dfrac{1}{3}x = \dfrac{17}{2}$

$\Rightarrow \quad 3 \times \dfrac{1}{3}x = 3 \times \dfrac{17}{2}$

[Multiplying both

sides by 3]

$\Rightarrow \quad x = \dfrac{51}{2}$

Thus, $x = \dfrac{51}{2}$ is the solution of the given equation.

Ex.8 Solve : $\dfrac{x}{2} - \dfrac{x}{3} = 8$

Sol. We have, $\dfrac{x}{2} - \dfrac{x}{3} = 8$

LCM of denominators 2 and 3 on L.H.S. is 6.
Multiplying both sides by 6, we get
$\Rightarrow \quad 3x - 2x = 6 \times 8$
$\Rightarrow \quad x = 48$

Ex.9 Solve : $\dfrac{x}{2} + \dfrac{x}{3} - \dfrac{x}{4} = 7$

Sol. We have, $\dfrac{x}{2} + \dfrac{x}{3} - \dfrac{x}{4} = 7$

LCM of denominators 2, 3, 4 on L.H.S. is 12. Multiplying both sides by 12, we get
$\quad 6x + 4x - 3x = 7 \times 12$
$\Rightarrow \quad 7x = 7 \times 12$
$\Rightarrow \quad 7x = 84$

$\Rightarrow \quad \dfrac{7x}{7} = \dfrac{84}{7}$ [Dividing both sides by 7]

$\Rightarrow \quad x = 12$

Ex.10 Solve : $x - \dfrac{2x+8}{3} = \dfrac{1}{4}\left(x - \dfrac{2-x}{6}\right) - 3$

Sol. We have,

$x - \dfrac{2x+8}{3} = \dfrac{1}{4}\left(x - \dfrac{2-x}{6}\right) - 3$

$\Rightarrow \quad x - \dfrac{2x+8}{3} = \dfrac{x}{4} - \dfrac{2-x}{24} - 3$

The denominators on the two sides of this equation are 3, 4 and 24. Their LCM is 24.
Multiplying both sides of this equation by 24, we get

$24x - 24\left(\dfrac{2x+8}{3}\right) = 24 \times \dfrac{x}{4} - 24\left(\dfrac{2-x}{24}\right) - 3 \times 24$

$\Rightarrow \quad 24x - 8(2x + 8) = 6x - (2 - x) - 72$
$\Rightarrow \quad 24x - 16x - 64 = 6x - 2 + x - 72$
$\Rightarrow \quad 8x - 64 = 7x - 74$
$\Rightarrow \quad 8x - 7x = 64 - 74$
    [Transposing 7x to LHS
              and − 64 to RHS]
$\Rightarrow \quad x = -10$
Thus, $x = -10$ is the solution of the given equation.

Ex.11 A number is such that it is as much greater than 84 as it is less than 108. Find it.

Sol. Let the number be x. Then, the number is greater than 84 by x − 84 and it is les than 108 by 108 − x.
[Given]
$\therefore \quad x - 84 = 108 - x$
$\Rightarrow \quad x + x = 108 + 84$
$\Rightarrow \quad 2x = 192$

$\Rightarrow \quad \dfrac{2x}{2} = \dfrac{192}{2}$

$\Rightarrow \quad x = 92$
Hence, the number is 96.

Putting x = 7 in (i), we get

Fraction $= \dfrac{7-4}{7} = \dfrac{3}{7}$.

Hence, the given fraction is $\dfrac{3}{7}$.

Ex.16 Saurabh has Rs 34 paise and twenty-five paise coins. If the number of 25-paise coins be twice the number of 50-paise coins, how mahy coins of each kind does he have ?

Sol. Let the number of 50-paise coins be x. Then,

Number of 25-paise coins = 2x

∴ Value of x fifty-paise coins = 50 × x paise

$= \text{Rs} \dfrac{50 \times x}{100} = \text{Rs} \dfrac{x}{2}$

Value of 2x twenty-five paise coins = 25 × 2x paise

$= \text{Rs} \dfrac{50x}{100} = \text{Rs} \dfrac{x}{2}$

∴ Total value of all coins

$= \text{Rs} \left(\dfrac{x}{2} + \dfrac{x}{2} \right) = \text{Rs } x$

But, the total value of the money is Rs 34

∴ x = 34

Thus, number of 50-paise coins = 34

Number of twenty-five paise coins

= 2x = 2 × 34 = 68

Ex.17 Arvind has Piggy bank. It is full of one-rupee and fifty-paise coins. It contains 3 times as many fifty paise coins as one rupee coins. The total amount of the money in the bank is Rs 35. How many coins of each kind are there in the bank ?

Sol. Let there be x one rupee coins in the bank. Then,

Number of 50-paise coins = 3x

∴ Value of x one rupee coins = Rs x

Value of 3x fifty-paise coins = 50 × 3x paise

$= 150 \, x = \text{paise} = \text{Rs} \dfrac{150}{100} x = \text{Rs} \dfrac{3x}{2}$

∴ Total value of all the coins =

$\text{Rs} \left(x + \dfrac{3x}{2} \right)$

But, the total amount of the money in the ban is given as Rs 35.

∴ $x + \dfrac{3x}{2} = 35$

⇒ 2x + 3x = 70

[Multiplying both sides by 2]

⇒ 5x = 70 ⇒ $\dfrac{5x}{5} = \dfrac{70}{5}$ ⇒ x = 14

∴ Number of one rupee coins = 14,

Number of 50 paise coins = 3x = 3 × 14 = 42.

Ex.18 Kanwar is three years older than Anima. Six years ago, Kanwar's age was four times Anima's age. Find the ages of Knawar and Anima.

Sol. Let Anima's age be x years. Then, Kanwar's age is (x + 3) years.

Six years ago, Anima's age was (x − 6) years

It is given that six years ago Kanwar's age was four times Anima's age.

∴ x − 3 = 4(x − 6)

⇒ x − 3 = 4x − 24

⇒ x − 4x = − 24 + 3

⇒ − 3x = − 21

⇒ $\dfrac{-3x}{-3} = \dfrac{-21}{-3}$

⇒ x = 7

Hence, Anima's age = 7 years

Kanwar's age = (x + 3) yers

= (7 + 3) years = 10 years.

Ex.19 Solve : $\dfrac{y-1}{3} - \dfrac{y-2}{4} = 1$

Sol. We have, $\dfrac{y-1}{3} - \dfrac{y-2}{4} = 1$

LCM of denominators 3 and 4 on L.H.S. is 12.

Multiplying both sides by 12, we get

$12 \times \left(\dfrac{y-1}{3} \right) - 12 \times \left(\dfrac{y-2}{4} \right) = 12 \times 1$

⇒ 4(y − 1) − 3(y − 2) = 12

⇒ 4y − 4 − 3y + 6 = 12 ⇒ 4y − 3y − 4 + 6 =12

⇒ y + 2 = 12

⇒ y + 2 − 2 = 12 − 2

[Subtracting 2 from both sides]

⇒ y = 10

Thus, y = 10 is the solution of the given equation.

Ex.20 Solve : $\dfrac{x}{2} - \dfrac{1}{5} = \dfrac{x}{3} + \dfrac{1}{4}$

Sol. We have, $\dfrac{x}{2} - \dfrac{1}{5} = \dfrac{x}{3} + \dfrac{1}{4}$

The denominators on two sides are 2, 5, 3 and 4. Their LCM is 60. Multiplying both sides of the given equation by 60, we get

$$15x \times \frac{2}{5x} - 15x \times \frac{5}{3x} = 15x \times \frac{1}{15}$$

$\Rightarrow$　$6 - 25 = x$　$\Rightarrow -19 = x$

$\Rightarrow$　$x = -19$

Hence, $x = -19$ is the solution of the given equation.

Ex.26 Solve : $\dfrac{17-3x}{5} - \dfrac{4x+2}{3} = 5 - 6x + \dfrac{7x+14}{3}$

Sol. Multiplying both sides by 15 i.e. the LCM of 5 and 3, we get

$3(17 - 3x) - 5(4x + 2)$
　$= 15(5 - 6x) + 5(7x + 14)$

$\Rightarrow$　$51 - 9x - 20x - 10$
　$= 75 - 90x + 35x + 70$

$\Rightarrow$　$41 - 29x = 145 - 55x$

$\Rightarrow$　$-29x + 55x = 145 - 41$

$\Rightarrow$　$26\,x = 104$

$\Rightarrow$　$\dfrac{26x}{26} = \dfrac{104}{26}$

$\Rightarrow$　$x = 4$

Thus, $x = 4$ is the solution of the given equation.

Ex.27 Solve : $\dfrac{x+2}{3} - \dfrac{x+1}{5} = \dfrac{x-3}{4} - 1$

Sol. Multiplying both sides by 60 i.e. the LCM of 3, 5, and 4, we get

$20(x + 2) - 12(x + 1) = 15(x - 3) - 1 \times 60$

$\Rightarrow$　$20x + 40 - 12x + 12 = 15x - 45 - 60$

$\Rightarrow$　$8x + 28 = 15x - 105$

$\Rightarrow$　$8x - 15x = 105 - 28$

$\Rightarrow$　$-7x = -133$

$\Rightarrow$　$\dfrac{-7x}{-7} = \dfrac{-133}{-7}$

[Dividing both sides by -7]

$\Rightarrow$　$x = \dfrac{133}{7} = 19$

Thus, $x = 19$ is the solution of the given equation.

Ex.28 Solve : $(2x + 3)^2 + (2x - 3)^2$
　$= (8x + 6)(x - 1) + 22$

Sol. We have,

$(2x + 3)^2 + (2x - 3)^2$
　$= (8x + 6)(x - 1) + 22$

$\Rightarrow$　$2\{(2x)^2 + 3^2\}$
　$= x(8x + 6) - (8x + 6) + 22$

[Using: $(a+b)^2 + (a-b)^2 = 2(a^2 + b^2)$ on LHS]

$\Rightarrow$　$2(4x^2 + 9)$
　$= 8x^2 + 6x - 8x - 6 + 22$

$\Rightarrow$　$8x^2 + 18 = 8x^2 - 2x - + 16$

$\Rightarrow$　$8x^2 - 8 + 2x = 16 = -18$

$\Rightarrow$　$2x = -2$

$\Rightarrow$　$x = -1$

Hence, $x = -1$ is the solution of the given equation.

Ex.29 Solve : $\dfrac{1}{x+1} + \dfrac{1}{x+2} = \dfrac{2}{x+10}$

Sol. We have, $\dfrac{1}{x+1} + \dfrac{1}{x+2} = \dfrac{2}{x+10}$

Multiplying both sides by
$(x + 1)(x + 2)(x + 10)$
i.e., the LCM of $x + 1$, $x + 2$ and $x + 10$, we get

$$\frac{(x+1)(x+2)(x+10)}{x+1} + \frac{(x+1)(x+2)(x+10)}{x+2}$$
$$= \frac{2(x+1)(x+2)(x+10)}{x+10}$$

$\Rightarrow$　$(x + 2)(x + 10) = (x + 1)(x + 10)$
　$= 2(x + 1)(x + 2)$

$\Rightarrow$　$x^2 + 2x + 10x + 20 + x^2 + 10x + x + 10$
　$= 2(x^2 + x + 2x + 2)$

$\Rightarrow$　$2x^2 + 23x + 30 = 2(x^2 + 3x + 2)$

$\Rightarrow$　$2x^2 + 23x + 30 = 2x^2 + 6x + 4$

$\Rightarrow$　$2x^2 + 23x - 2x^2 + 6x = 4 - 30$

$\Rightarrow$　$17x = -26$

$\Rightarrow$　$x = -\dfrac{26}{17}$

Hence, $x = -\dfrac{26}{17}$ is the solution of the given equation.

Ex.30 Solve : $\dfrac{6x^2+13x-4}{2x+5} = \dfrac{12x^2+5x-2}{4x+3}$

Sol. We have,

$\dfrac{6x^2+13x-4}{2x+5} = \dfrac{12x^2+5x-2}{4x+3}$

$\Rightarrow$　$(6x^2 + 13x - 4)(4x + 3)$
　$= (12x^2 + 5x - 2)(2x + 5)$

[By cross-multiplication]

$\Rightarrow$　$(6x^2 + 13x - 4) \times 4x +$
　$(6x^2 + 13x - 4) \times 3$
　$= (12x^2 + 5x - 2) \times 2x +$
　$(12x^2 + 5x - 2) \times 5$

$\Rightarrow$　$24x^3 + 52x^2 - 16x + 18x^2 +$
　$39x^2 - 12$
　$= 24x^3 + 10x^2 - 4x + 60x^2 +$
　$25x - 10$

$\Rightarrow$　$24x^3 + 70x^2 + 23x - 12$
　$= 24x^3 + 70x^2 + 12x - 10$

$\Rightarrow$　$24x^3 + 70x^2 + 23x - 24x^3 - 70x^2 - 21x$
　$= -10 + 12$

$\Rightarrow$　$2x = 2$

$\Rightarrow$　$x = 1$

Ex.34 50 kg of an alloy of lead and tin contains 50% lead. How much lead must be melted into it to make an alloy containing 75% lead ?

Sol. Lean contents in 100 kg alloy = 60 kg

∴ Lead contents in 50 kg alloy

$$= \left(\frac{60}{100} \times 50 \right) kg = 30 \ kg$$

Let x kg of lead be melted into the alloy to make it an alloy containing 75% lead. Then,

Weight of the new alloy = (50 + x) kg

Weight of lead in the new alloy

= (30 + x) kg

Now,

Lead contents in (50 + x)kg alloy = (30 + x)kg

∴ Lead contents in one kg alloy

$$= \left(\frac{30 + x}{50 + x} \right) kg$$

Lead contents in 100 kg alloy

$$= \left(\frac{30 + x}{50 + x} \right) \times 100 \ kg$$

⇒ Percentage of lead in new alloy

$$= \left(\frac{30 + x}{50 + x} \times 100 \right)\%$$

But, the percentage of lead in the new alloy is given as 75%.

∴ $\frac{30 + x}{50 + x} \times 100 = 75$

⇒ (30 + x) × 100 = 75 × (50 + x)
                                [Using cross-multiplication]

⇒ 3000 + 100x = 3750 + 75x

⇒ 100 x − 75x = 3750 − 3000

⇒ 25x = 750

⇒ $\frac{25x}{25} = \frac{750}{25}$

⇒ x = 30

Hence, required lead to be added = 30 kg.

Ex.35 The sum of two numbers is 2490. If 6.5% of one number is equal to 8.5% of the other, find the numbers.

Sol. Let the first number be x. Then,

Second number = 2490 − x.

[∴ Sum of the numbers is given to be 2490]

Now,

6.5% of the first number

$$= \frac{6.5}{100} \times x = \frac{65x}{1000}$$

and,

8.5% of the second number

$$= \frac{8.5}{100} \times (2490 - x)$$

$$= \frac{85}{1000} (2490 - x)$$

It is given that 6.5% of the first number is equal to 8.5% of the other.

∴ $\frac{65x}{1000} = \frac{85}{1000} (2490 - x)$

⇒ 65x = 85 (2490 − x)

[Multiplying both sides by 1000]

⇒ 65x = 2490 × 85 − 85x

⇒ 65x + 85x = 2490 × 85

⇒ 150x = 2490 × 85

⇒ $x = \frac{2490 \times 85}{150}$

⇒ x = 1411

∴ First number = 1411,

Second number

= 2490 − 1411 = 1079

We have,

6.5% of first number

$$= \frac{6.5}{100} \times 1411 = \frac{91715}{1000}$$

8.5% of the second number

$$= \frac{8.5}{100} \times 1079 = \frac{91715}{1000}$$

Clearly, 6.5% of the first number is equal to 8.5% of the second number, which is the same as given in the problem.

| EXERCISE - II | OLYMPIAD PROBLEMS |

Q.1 The differene between a number and its three-fifth is 50. What is the number ?
(A) 75 (B) 100
(C) 125 (D) None of these

Q.2 If a number is decreased by 4 and divided by 6, the result is 8. What would be the result if 2 is subtracted from the number and then it is divided by 5?
(A) $9\frac{2}{3}$ (B) 10
(C) $11\frac{1}{5}$ (D) None of these

Q.3 If one-third of one-fourth of a number is 15, then three-tenth of that number is :
(A) 35 (B) 36
(C) 45 (D) 54

Q.4 A number is doubled and 9 is added. If the resultant is trebled, it becomes 75. What is that number ?
(A) 3.5 (B) 6
(C) 8 (D) None of these

Q.5 Three-fourth of a number is 60 more than its one-third. The number is :
(A) 84 (B) 108
(C) 144 (D) None of these

Q.6 When 24 is subtracted froma number, it reduces to its four-seventh. What is the sum of the digits of that number?
(A) 1 (B) 9
(C) 11 (D) None of these

Q.7 Find the number which when multiplied by 15 is increased by 196.
(A) 14 (B) 20
(C) 26 (D) 28

Q.8 If a number, when divided by 4, is reduced by 21, the number is :
(A) 18 (B) 20
(C) 28 (D) 38

Q.9 A number whose fifth part increased by 4 is equal to its fourth part diminished by 10, is
(A) 240 (B) 260
(C) 270 (D) 280

Q.10 The difference of two numbers is 20% of the larger number. If the smaller number is 12, the larger one is :
(A) 15 (B) 16
(C) 18 (D) 20

Q.11 If one-seventh of a number exceeds its eleventh pary by 100, then the number is :
(A) 770 (B) 1100
(C) 1825 (D) 1925

Q.12 If the sum of one-half and one-fifth of a number exceeds one-third of that number by $7\frac{1}{3}$, the number is
(A) 15 (B) 18
(C) 20 (D) 30

Q.13 If doubling a number and adding 20 to the result gives the same answer as multiplying the number by 8 and taking away 4 from the product, the number is:
(A) 2 (B) 3
(C) 4 (D) 6

Q.14 If 50 is subtracted from two-third of a number, the result is equal to sum of 40 and one-fourth of that number. What is the number ?
(A) 174 (B) 216
(C) 246 (D) 336

Q.15 If the sum of a number and its square is 182, what is the number ?
(A) 15 (B) 26
(C) 28 (D) None of these

Q.16 Twenty times a positive integer is less than its square by 96. What is the integer ?
(A) 20 (B) 24
(C) Cannot be determined
(D) None of these

Q.17 Thrice the square of a natural number decreased by 4 times the number is equal to 50 more than the number. The number is :
(A) 4 (B) 5
(C) 6 (D) 10

Q.18 The sum of a number and its reciprocal is one-eighth of 34. What is the product of the number and its square root ?
(A) 8 (B) 27
(C) 32 (D) None of these

Q.35   The product of two number is 192 and the sum of these two numbers is 28. What is the smaller of these two numbers ?
(A) 12   (B) 14
(C) 16   (D) 18

Q.36   Sachin is younger than Rahul by 4 years. If their ages are in the respective ratio of 7 : 9, how old is Sachin ?
(A) 16 years   (B) 18 years
(C) 28 years   (D) None of these

Q.37   The ratio between the present ages of P and Q is 6 : 7. If Q is 4 years old than P, what will be the ratio of the ages of P and Q after 4 years?
(A) 3 : 4   (B) 3 : 5
(C) 4 : 3   (D) None of these

Q.38   The ratio between the present ages of P and Q is 5 : 7 respectively. If the difference between Q's present age and P's age after 6 years is 2, what is the total of P's and Q's present ages ?
(A) 48 years   (B) 52 years
(C) 56 years   (D) None of these

Q.39   At present, the ratio between the ages of Arun and Deepak is 4 : 3. After 6 years, Arun's age will be 26 years. What is the age of Deepak at present?
(A) 12 years   (B) 15 years
(C) $19\frac{1}{2}$ years   (D) 21 years

Q.40   Present ages of X and Y are in the ratio 5 : 6 respectively. Seven years hence this ratio will be become 6 : 7 respectively. What is X's present age in years ?
(A) 35   (B) 42
(C) 49
(D) Cannot be determind

Q.41   Present ages of Sameer and Anand are in the ratio of 5 : 4 respectively. Three years hence, the ratio of their ages will become 11 : 9 resepectively. What is Anand's present age in years?
(A) 24   (B) 27
(C) 40
(D) Cannot be determind

Q.42   Six years ago, the ratio of the ages of Kunal and Sagar was 6 : 5. Four years hence, the ratio of their ages will be 11 : 10. What is Sagar's age at present ?
(A) 16 years   (B) 18 years
(C) 20 years
(D) Cannot be determind

Q.43   The total of the ages of Jayant, Prem and Saransh is 93 years. Ten years ago, the ratio of their ages was 2 : 3 : 4. What is the present age of Saransh?
(A) 24 years   (B) 32 years
(C) 34 years   (D) 38 years

Q.44   The ratio of the present ages of two brothers is 1 : 2 and 5 years back, the ratio was 1 : 3. What will be the ratio of their ages after 5 years ?
(A) 1 : 4   (B) 2 : 3
(C) 3 : 5   (D) 5 : 6

Q.45   Hitesh is 40 years old and Ronnie is 60 years old. How many years ago was the ratio of their ages 3 : 5 ?
(A) 5 years   (B) 10 years
(C) 20 years   (D) 37 years

Q.46   The ratio of the father's age to his son's age is 7 : 3. The product of their ages is 756. The ratio of their ages after 6 years will be :
(A) 5 : 2   (B) 2 : 1
(C) 11 : 7   (D) 13 : 9

Q.47   The present ages of three persons are in proportions 4 : 7 : 9. Eight years ago, the sum of their ages was 56. Find their present ages (in yeras).
(A) 8, 20, 28   (B) 16, 28, 36
(C) 20, 35, 45   (D) None of these

Q.48   The ratio of the ages of a man and his wife is   4 : 3. After 4 years, this ratio will be 9 : 7. If at the time of marriage, the ratio was 5 : 3, then how many years ago were they married ?
(A) 8 years   (B) 10 years
(C) 12 years   (D) 15 years

Q.49   The ratio between the school ages of Neelam and Shaan is 5 : 6 respectively. If the ratio between the one-third age of Neelam and half of Shaan's age is 5 : 9, then what is the school age of Shaan?
(A) 25 years
(B) 30 years
(C) 36 years
(D) Cannot be determined