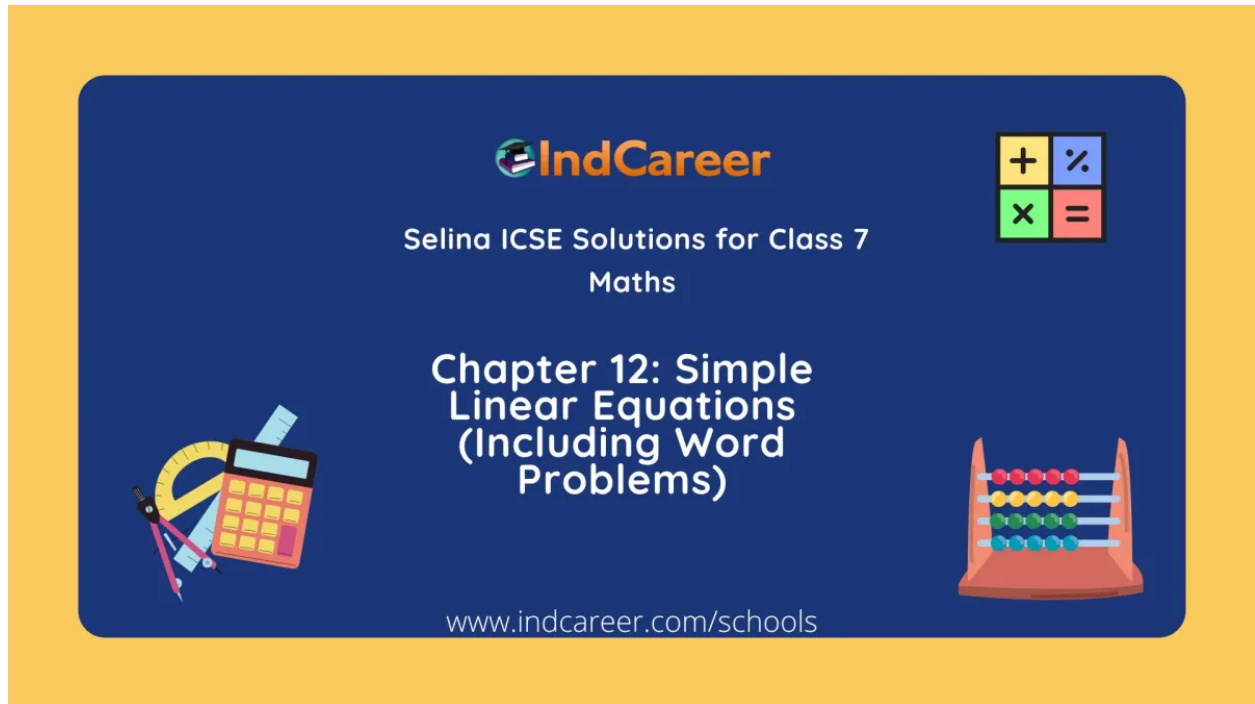


# Selina Class 7 ICSE Solutions Mathematics : Chapter 12- Simple Linear Equations (Including Word Problems)



For any clarifications or questions you can write to [info@indcareer.com](mailto:info@indcareer.com)

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# Selina Class 7 ICSE Solutions Mathematics :

## Chapter 12- Simple Linear Equations

### (Including Word Problems)

Class 7: Maths Chapter 12 solutions. Complete Class 7 Maths Chapter 12 Notes.

## Selina Class 7 ICSE Solutions Mathematics : Chapter 12- Simple Linear Equations (Including Word Problems)

Selina 7th Maths Chapter 12, Class 7 Maths Chapter 12 solutions

**Exercise 12A page: 139**

**Solve the following questions:**

**1.  $x + 5 = 10$**

**Solution:**

$$x + 5 = 10$$

So we get

$$x = 10 - 5 = 5$$

**2.  $2 + y = 7$**

**Solution:**

$$2 + y = 7$$

So we get

$$y = 7 - 2 = 5$$

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**3.  $a - 2 = 6$**

**Solution:**

$$a - 2 = 6$$

So we get

$$a = 6 + 2 = 8$$

**4.  $x - 5 = 8$**

**Solution:**

$$x - 5 = 8$$

So we get

$$x = 8 + 5 = 13$$

**5.  $5 - d = 12$**

**Solution:**

$$5 - d = 12$$

So we get

$$-d = 12 - 5 = 7$$

$$d = -7$$

**6.  $3p = 12$**

**Solution:**

$$3p = 12$$

So we get

$$p = 12/3 = 4$$

**7.  $14 = 7m$**

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**Solution:**

$$14 = 7m$$

So we get

$$m = 14/7 = 2$$

**8.  $2x = 0$**

**Solution:**

$$2x = 0$$

So we get

$$x = 0/2 = 0$$

**9.  $x/9 = 2$**

**Solution:**

$$x/9 = 2$$

So we get

$$x = 2 \times 9 = 18$$

**10.  $y/-12 = -4$**

**Solution:**

$$y/-12 = -4$$

So we get

$$y = -4 \times -12 = 48$$

**11.  $8x - 2 = 38$**

**Solution:**

$$8x - 2 = 38$$

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So we get

$$8x = 38 + 2$$

$$8x = 40$$

$$x = 40/8 = 5$$

**12.  $2x + 5 = 5$**

**Solution:**

$$2x + 5 = 5$$

So we get

$$2x = 5 - 5$$

$$2x = 0$$

$$x = 0/2 = 0$$

**13.  $5x - 1 = 74$**

**Solution:**

$$5x - 1 = 74$$

So we get

$$5x = 74 + 1$$

$$5x = 75$$

$$x = 75/5 = 15$$

**14.  $14 = 27 - x$**

**Solution:**

$$14 = 27 - x$$

So we get

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$$x = 27 - 14 = 13$$

**15.  $10 + 6a = 40$**

**Solution:**

$$10 + 6a = 40$$

So we get

$$6a = 40 - 10$$

$$6a = 30$$

$$a = 30/6 = 5$$

**Exercise 12B page: 140**

**Solve:**

**1.  $8y - 4y = 20$**

**Solution:**

$$8y - 4y = 20$$

By further calculation

$$4y = 20$$

So we get

$$y = 20/4 = 5$$

**2.  $9b - 4b + 3b = 16$**

**Solution:**

$$9b - 4b + 3b = 16$$

By further calculation

$$8b = 16$$

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So we get

$$b = 16/8 = 2$$

**3.  $5y + 8 = 8y - 18$**

**Solution:**

$$5y + 8 = 8y - 18$$

By further calculation

$$8y - 5y = 8 + 18$$

So we get

$$3y = 26$$

$$y = 26/3 = 8 \frac{2}{3}$$

**4.  $6 = 7 + 2p - 5$**

**Solution:**

$$6 = 7 + 2p - 5$$

By further calculation

$$2p = 6 - 7 + 5$$

So we get

$$2p = 4$$

$$p = 4/2 = 2$$

**5.  $8 - 7x = 13x + 8$**

**Solution:**

$$8 - 7x = 13x + 8$$

By further calculation

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$$13x + 7x = 8 - 8$$

$$20x = 0$$

$$x = 0/20 = 0$$

**6.  $4x - 5x + 2x = 28 + 3x$**

**Solution:**

$$4x - 5x + 2x = 28 + 3x$$

By further calculation

$$4x - 5x + 2x - 3x = 28$$

So we get

$$-2x = 28$$

$$x = 28/-2 = -14$$

**7.  $9 + m = 6m + 8 - m$**

**Solution:**

$$9 + m = 6m + 8 - m$$

By further calculation

$$6m - m - m = 9 - 8$$

$$4m = 1$$

So we get

$$m = 1/4$$

**8.  $24 = y + 2y + 3 + 4y$**

**Solution:**

$$24 = y + 2y + 3 + 4y$$

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By further calculation

$$24 - 3 = 7y$$

$$21 = 7y$$

So we get

$$y = 21/7 = 3$$

$$\mathbf{9. \ 19x + 13 - 12x + 3 = 23}$$

**Solution:**

$$19x + 13 - 12x + 3 = 23$$

By further calculation

$$7x = 23 - 16$$

So we get

$$7x = 7$$

$$x = 7/7 = 1$$

$$\mathbf{10. \ 6b + 40 = -100 - b}$$

**Solution:**

$$6b + 40 = -100 - b$$

By further calculation

$$7b = -100 - 40$$

$$7b = -140$$

So we get

$$b = -140/7 = -20$$

$$\mathbf{11. \ 6 - 5m - 1 + 3m = 0}$$

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**Solution:**

$$6 - 5m - 1 + 3m = 0$$

By further calculation

$$5 - 2m = 0$$

So we get

$$2m = 5$$

$$m = 5/2 = 2 \frac{1}{2}$$

**12.  $0.4x - 1.2 = 0.3x + 0.6$**

**Solution:**

$$0.4x - 1.2 = 0.3x + 0.6$$

By further calculation

$$0.1x = 1.8$$

Multiply and divide both numerator and denominator by 10

$$1/10x = 18/10$$

By cross multiplication

$$x = 18/10 \times 10/1 = 18$$

**13.  $6(x + 4) = 36$**

**Solution:**

$$6(x + 4) = 36$$

By further calculation

$$6x + 24 = 36$$

So we get

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$$6x = 36 - 24$$

$$6x = 12$$

$$x = 12/6 = 2$$

**14.  $9(a + 5) + 2 = 11$**

**Solution:**

$$9(a + 5) + 2 = 11$$

By further calculation

$$9a + 45 + 2 = 11$$

So we get

$$9a = 11 - 47$$

$$9a = -36$$

$$a = -36/9 = -4$$

**15.  $4(x - 2) = 12$**

**Solution:**

$$4(x - 2) = 12$$

By further calculation

$$4x - 8 = 12$$

So we get

$$4x = 20$$

$$x = 20/4 = 5$$

**Exercise 12C page: 141**

**Solve:**

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**1.  $x/2 + x = 9$**

**Solution:**

It is given that

$$x/2 + x/1 = 9$$

Taking LCM

$$(x + 2x)/2 = 9$$

By cross multiplication

$$x + 2x = 9 \times 2$$

$$3x = 18$$

So we get

$$x = 18/3 = 6$$

**2.  $x/5 + 2x = 33$**

**Solution:**

It is given that

$$x/5 + 2x/1 = 33$$

Taking LCM

$$(x + 10x)/5 = 33$$

$$11x/5 = 33$$

By cross multiplication

$$11x = 5 \times 33 = 165$$

So we get

$$x = 165/11 = 15$$

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**3.  $\frac{3x}{4} + 4x = 38$**

**Solution:**

It is given that

$$\frac{3x}{4} + 4x/1 = 38$$

Taking LCM

$$(3x + 16x)/4 = 38$$

$$19x/4 = 38$$

By cross multiplication

$$19x = 38 \times 4 = 152$$

So we get

$$x = 152/19 = 8$$

**4.  $\frac{x}{2} + \frac{x}{5} = 14$**

**Solution:**

It is given that

$$\frac{x}{2} + \frac{x}{5} = 14$$

Taking LCM

$$(5x + 2x)/10 = 14$$

$$7x/10 = 14$$

By cross multiplication

$$7x = 14 \times 10 = 140$$

So we get

$$x = 140/7 = 20$$

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**5.  $x/3 - x/4 = 2$**

**Solution:**

It is given that

$$x/3 - x/4 = 2$$

Taking LCM

$$(4x - 3x)/12 = 2$$

$$x/12 = 2$$

By cross multiplication

$$x = 12 \times 2 = 24$$

**6.  $y + y/2 = 7/4 - y/4$**

**Solution:**

It is given that

$$y/1 + y/2 = 7/4 - y/4$$

$$y/1 + y/2 + y/4 = 7/4$$

Taking LCM

$$(4y + 2y + y)/4 = 7/4$$

$$7y/4 = 7/4$$

$$7y = 7$$

So we get

$$y = 7/7 = 1$$

**7.  $4x/3 - 7x/3 = 1$**

**Solution:**

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It is given that

$$4x/3 - 7x/3 = 1$$

By further calculation

$$-3x/3 = 1$$

So we get

$$-x = 1$$

$$x = -1$$

$$8. (1/2)m + (3/4)m - m = 2.5$$

**Solution:**

It is given that

$$(1/2)m + (3/4)m - m/1 = 2.5$$

Taking LCM

$$(2m + 3m - 4m)/4 = 2.5$$

$$m/4 = 2.5$$

By cross multiplication

$$m = 2.5 \times 4 = 10$$

$$9. 2x/3 + x/2 - 3x/4 = 1$$

**Solution:**

It is given that

$$2x/3 + x/2 - 3x/4 = 1$$

Taking LCM

$$(8x + 6x - 9x)/12 = 1$$

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$$5x/12 = 1$$

By cross multiplication

$$5x = 1 \times 12 = 12$$

So we get

$$x = 12/5 = 2 \frac{2}{5}$$

$$\mathbf{10. \frac{3a}{4} + \frac{a}{6} = 66}$$

Solution:

It is given that

$$\frac{3a}{4} + \frac{a}{6} = 66$$

Taking LCM

$$(9a + 2a)/12 = 66$$

$$11a/12 = 66$$

By cross multiplication

$$11a = 66 \times 12 = 792$$

So we get

$$a = 792/11 = 72$$

$$\mathbf{11. \frac{2p}{3} - \frac{p}{5} = 35}$$

Solution:

It is given that

$$\frac{2p}{3} - \frac{p}{5} = 35$$

Taking LCM

$$(10p - 3p)/15 = 35$$

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$$7p/15 = 35$$

By cross multiplication

$$7p = 35 \times 15 = 525$$

So we get

$$p = 525/7 = 75$$

$$\mathbf{12. \ 0.6a + 0.2a = 0.4a + 8}$$

**Solution:**

It is given that

$$0.6a + 0.2a = 0.4a + 8$$

Multiplying and dividing both numerator and denominator by 10

$$6/10a + 2/10a = 4a/10 + 80/10$$

Taking LCM

$$(6a + 2a)/10 = (4a + 80)/10$$

$$6a + 2a = 4a + 80$$

So we get

$$4a = 80$$

$$a = 80/4 = 20$$

$$\mathbf{13. \ p + 1.4p = 48}$$

**Solution:**

It is given that

$$p + 1.4p = 48$$

Multiplying and dividing both numerator and denominator by 10

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$$p + 14/10p = 48$$

Taking LCM

$$(10p + 14p)/10 = 48$$

$$24p/10 = 48$$

By cross multiplication

$$24p = 48 \times 10 = 480$$

So we get

$$p = 480/24 = 20$$

**14. 10% of  $x = 20$**

**Solution:**

It is given that

$$10\% \text{ of } x = 20$$

We can write it as

$$10/100 \times x = 20$$

$$x/10 = 20$$

By cross multiplication

$$x = 20 \times 10 = 200$$

**15.  $y + 20\% \text{ of } y = 18$**

**Solution:**

It is given that

$$y + 20\% \text{ of } y = 18$$

We can write it as

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$$y + 20/100 \times y = 18$$

Taking LCM

$$(100y + 20y)/100 = 18$$

By cross multiplication

$$120y = 18 \times 100 = 1800$$

So we get

$$y = 1800/120 = 15$$

### **Exercise 12D page: 145**

**1. One-fifth of a number is 5, find the number.**

**Solution:**

Consider the number =  $x$

Based on the condition

$$(1/5)x = 5$$

By cross multiplication

$$x = 5 \times 5 = 25$$

Hence, the number is 25.

**2. Six times a number is 72, find the number.**

**Solution:**

Consider the number =  $x$

Based on the condition

$$6x = 72$$

So we get

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$$x = 72/6 = 12$$

Hence, the number is 12.

**3. If 15 is added to a number, the result is 69, find the number.**

**Solution:**

Consider the number =  $x$

Based on the condition

$$x + 15 = 69$$

So we get

$$x = 69 - 15 = 54$$

Hence, the number is 54.

**4. The sum of twice a number and 4 is 80, find the number.**

**Solution:**

Consider the number =  $x$

Based on the condition

$$2x + 4 = 80$$

So we get

$$2x = 80 - 4 = 76$$

$$x = 76/2 = 38$$

Hence, the number is 38.

**5. The difference between a number and one-fourth of itself is 24, find the number.**

**Solution:**

Consider the number =  $x$

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Based on the condition

$$x - (1/4)x = 24$$

Taking LCM

$$(4x - x)/4 = 24$$

$$3x/4 = 24$$

By cross multiplication

$$x = 24 \times 4/3$$

So we get

$$x = 8 \times 4 = 32$$

Hence, the number is 32.

**6. Find a number whose one-third part exceeds its one-fifth part by 20.**

**Solution:**

Consider the number = x

Based on the condition

$$(1/3)x - (1/5)x = 20$$

Here the LCM of 3 and 5 is 15

$$(5x - 3x)/15 = 20$$

$$2x/15 = 20$$

So we get

$$x = 20 \times 15/2 = 150$$

Hence, the number is 150.

**7. A number is as much greater than 35 as is less than 53. Find the number.**

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**Solution:**

Consider the number =  $x$

Based on the condition

$$x - 35 = 53 - x$$

By further calculation

$$2x = 88$$

So we get

$$x = 88/2 = 44$$

Hence, the number is 44.

**8. The sum of two numbers is 18. If one is twice the other, find the numbers.**

**Solution:**

Consider the first number =  $x$

Second number =  $y$

Based on the condition

$$x + y = 18 \dots\dots (1)$$

$$x = 2y \dots\dots (2)$$

Now substituting the equation (2) in (1)

$$2y + y = 18$$

$$3y = 18$$

So we get

$$y = 18/3 = 6$$

Substituting the value of  $y$  in equation (2)

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$$x = 2 \times 6 = 12$$

Hence, the two numbers are 12 and 6.

**9. A number is 15 more than the other. The sum of the two numbers is 195. Find the numbers.**

**Solution:**

Consider the first number =  $x$

Second number =  $y$

Based on the condition

$$x = y + 15 \dots (1)$$

$$x + y = 195 \dots (2)$$

Now substituting equation (1) in (2) we get

$$y + 15 + y = 195$$

$$2y = 195 - 15 = 180$$

So we get

$$y = 180/2 = 90$$

Substituting the value of  $y$  in equation (1)

$$x = 90 + 15 = 105$$

Hence, the two numbers are 105 and 90.

**10. The sum of three consecutive even numbers is 54. Find the numbers.**

**Solution:**

Consider the first even number =  $x$

Second even number =  $x + 2$

Third even number =  $x + 4$

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Based on the condition

$$x + x + 2 + x + 4 = 54$$

By further calculation

$$3x + 6 = 54$$

$$3x = 54 - 6 = 48$$

So we get

$$x = 48/3 = 16$$

First even number = 16

Second even number =  $16 + 2 = 18$

Third even number =  $16 + 4 = 20$

**11. The sum of three consecutive odd numbers is 63. Find the numbers.**

**Solution:**

Consider the first odd number =  $x$

Second odd number =  $x + 2$

Third odd number =  $x + 4$

Based on the condition

$$x + x + 2 + x + 4 = 63$$

By further calculation

$$3x + 6 = 63$$

$$3x = 63 - 6 = 57$$

So we get

$$x = 57/3 = 19$$

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First odd number = 19

Second odd number =  $19 + 2 = 21$

Third odd number =  $19 + 4 = 23$

**12. A man has ₹ x from which he spends ₹ 6. If twice of the money left with him is ₹ 86, find x.**

**Solution:**

Consider ₹ x as the total amount

Based on the condition

$$2x = 86$$

By further calculation

$$x = 86/2 = 43$$

Amount spent by him = ₹ 6

So the total money he have =  $43 + 6 = ₹ 49$

**13. A man is four times as old as his son. After 20 years, he will be twice as old as his son at that time. Find their present ages.**

**Solution:**

Consider the present age of son = x years

So the present age of father = 4x years

After 20 years

Age of son = (x + 20) years

Age of father = (4x + 20) years

Based on the condition

$$4x + 20 = 2(x + 20)$$

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By further calculation

$$4x + 20 = 2x + 40$$

$$2x = 20$$

So we get

$$x = 10$$

So the present age of son = 10 years

Present age of father =  $4 \times 10 = 40$  years

**14. If 5 is subtracted from three times a number, the result is 16. Find the number.**

**Solution:**

Consider  $x$  as the number

Based on the condition

$$3x - 5 = 16$$

By further calculation

$$3x = 16 + 5 = 21$$

So we get

$$x = 21/3 = 7$$

Hence, the number is 7.

**15. Find three consecutive natural numbers such that the sum of the first and the second is 15 more than the third.**

**Solution:**

Consider the first consecutive number =  $x$

Second consecutive number =  $x + 1$

Third consecutive number =  $x + 2$

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Based on the condition

$$x + x + 1 = 15 + x + 2$$

By further calculation

$$2x + 1 = 17 + x$$

$$2x - x = 17 - 1$$

So we get

$$x = 16$$

First consecutive number = 16

Second consecutive number =  $16 + 1 = 17$

Third consecutive number =  $16 + 2 = 18$

### **Exercise 12B page: 140**

**Solve:**

**1.  $8y - 4y = 20$**

**Solution:**

$$8y - 4y = 20$$

By further calculation

$$4y = 20$$

So we get

$$y = 20/4 = 5$$

**2.  $9b - 4b + 3b = 16$**

**Solution:**

$$9b - 4b + 3b = 16$$

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By further calculation

$$8b = 16$$

So we get

$$b = 16/8 = 2$$

**3.  $5y + 8 = 8y - 18$**

**Solution:**

$$5y + 8 = 8y - 18$$

By further calculation

$$8y - 5y = 8 + 18$$

So we get

$$3y = 26$$

$$y = 26/3 = 8 \frac{2}{3}$$

**4.  $6 = 7 + 2p - 5$**

**Solution:**

$$6 = 7 + 2p - 5$$

By further calculation

$$2p = 6 - 7 + 5$$

So we get

$$2p = 4$$

$$p = 4/2 = 2$$

**5.  $8 - 7x = 13x + 8$**

**Solution:**

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$$8 - 7x = 13x + 8$$

By further calculation

$$13x + 7x = 8 - 8$$

$$20x = 0$$

$$x = 0/20 = 0$$

$$\mathbf{6. \ 4x - 5x + 2x = 28 + 3x}$$

**Solution:**

$$4x - 5x + 2x = 28 + 3x$$

By further calculation

$$4x - 5x + 2x - 3x = 28$$

So we get

$$- 2x = 28$$

$$x = 28/-2 = - 14$$

$$\mathbf{7. \ 9 + m = 6m + 8 - m}$$

**Solution:**

$$9 + m = 6m + 8 - m$$

By further calculation

$$6m - m - m = 9 - 8$$

$$4m = 1$$

So we get

$$m = 1/4$$

$$\mathbf{8. \ 24 = y + 2y + 3 + 4y}$$

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**Solution:**

$$24 = y + 2y + 3 + 4y$$

By further calculation

$$24 - 3 = 7y$$

$$21 = 7y$$

So we get

$$y = 21/7 = 3$$

$$\mathbf{9. \ 19x + 13 - 12x + 3 = 23}$$

**Solution:**

$$19x + 13 - 12x + 3 = 23$$

By further calculation

$$7x = 23 - 16$$

So we get

$$7x = 7$$

$$x = 7/7 = 1$$

$$\mathbf{10. \ 6b + 40 = -100 - b}$$

**Solution:**

$$6b + 40 = -100 - b$$

By further calculation

$$7b = -100 - 40$$

$$7b = -140$$

So we get

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$$b = -140/7 = -20$$

**11.  $6 - 5m - 1 + 3m = 0$**

**Solution:**

$$6 - 5m - 1 + 3m = 0$$

By further calculation

$$5 - 2m = 0$$

So we get

$$2m = 5$$

$$m = 5/2 = 2 \frac{1}{2}$$

**12.  $0.4x - 1.2 = 0.3x + 0.6$**

**Solution:**

$$0.4x - 1.2 = 0.3x + 0.6$$

By further calculation

$$0.1x = 1.8$$

Multiply and divide both numerator and denominator by 10

$$1/10x = 18/10$$

By cross multiplication

$$x = 18/10 \times 10/1 = 18$$

**13.  $6(x + 4) = 36$**

**Solution:**

$$6(x + 4) = 36$$

By further calculation

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$$6x + 24 = 36$$

So we get

$$6x = 36 - 24$$

$$6x = 12$$

$$x = 12/6 = 2$$

**14.  $9(a + 5) + 2 = 11$**

**Solution:**

$$9(a + 5) + 2 = 11$$

By further calculation

$$9a + 45 + 2 = 11$$

So we get

$$9a = 11 - 47$$

$$9a = -36$$

$$a = -36/9 = -4$$

**15.  $4(x - 2) = 12$**

**Solution:**

$$4(x - 2) = 12$$

By further calculation

$$4x - 8 = 12$$

So we get

$$4x = 20$$

$$x = 20/4 = 5$$

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**Exercise 12C page: 141****Solve:**

**1.  $\frac{x}{2} + x = 9$**

**Solution:**

It is given that

$$\frac{x}{2} + \frac{x}{1} = 9$$

Taking LCM

$$(\frac{x}{2} + \frac{2x}{2}) = 9$$

By cross multiplication

$$x + 2x = 9 \times 2$$

$$3x = 18$$

So we get

$$x = \frac{18}{3} = 6$$

**2.  $\frac{x}{5} + 2x = 33$**

**Solution:**

It is given that

$$\frac{x}{5} + \frac{2x}{1} = 33$$

Taking LCM

$$(\frac{x}{5} + \frac{10x}{5}) = 33$$

$$\frac{11x}{5} = 33$$

By cross multiplication

$$11x = 5 \times 33 = 165$$

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So we get

$$x = 165/11 = 15$$

**3.  $3x/4 + 4x = 38$**

**Solution:**

It is given that

$$3x/4 + 4x/1 = 38$$

Taking LCM

$$(3x + 16x)/4 = 38$$

$$19x/4 = 38$$

By cross multiplication

$$19x = 38 \times 4 = 152$$

So we get

$$x = 152/19 = 8$$

**4.  $x/2 + x/5 = 14$**

**Solution:**

It is given that

$$x/2 + x/5 = 14$$

Taking LCM

$$(5x + 2x)/10 = 14$$

$$7x/10 = 14$$

By cross multiplication

$$7x = 14 \times 10 = 140$$

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So we get

$$x = 140/7 = 20$$

**5.  $x/3 - x/4 = 2$**

**Solution:**

It is given that

$$x/3 - x/4 = 2$$

Taking LCM

$$(4x - 3x)/12 = 2$$

$$x/12 = 2$$

By cross multiplication

$$x = 12 \times 2 = 24$$

**6.  $y + y/2 = 7/4 - y/4$**

**Solution:**

It is given that

$$y/1 + y/2 = 7/4 - y/4$$

$$y/1 + y/2 + y/4 = 7/4$$

Taking LCM

$$(4y + 2y + y)/4 = 7/4$$

$$7y/4 = 7/4$$

$$7y = 7$$

So we get

$$y = 7/7 = 1$$

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**7.  $\frac{4x}{3} - \frac{7x}{3} = 1$**

**Solution:**

It is given that

$$\frac{4x}{3} - \frac{7x}{3} = 1$$

By further calculation

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

So we get

$$-x = 1$$

$$x = -1$$

**8.  $\frac{m}{2} + \frac{3m}{4} - m = 2.5$**

**Solution:**

It is given that

$$\frac{m}{2} + \frac{3m}{4} - \frac{m}{1} = 2.5$$

Taking LCM

$$\frac{(2m + 3m - 4m)}{4} = 2.5$$

$$\frac{m}{4} = 2.5$$

By cross multiplication

$$m = 2.5 \times 4 = 10$$

**9.  $\frac{2x}{3} + \frac{x}{2} - \frac{3x}{4} = 1$**

**Solution:**

It is given that

$$\frac{2x}{3} + \frac{x}{2} - \frac{3x}{4} = 1$$

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Taking LCM

$$(8x + 6x - 9x)/12 = 1$$

$$5x/12 = 1$$

By cross multiplication

$$5x = 1 \times 12 = 12$$

So we get

$$x = 12/5 = 2 \frac{2}{5}$$

$$\mathbf{10. \frac{3a}{4} + \frac{a}{6} = 66}$$

Solution:

It is given that

$$\frac{3a}{4} + \frac{a}{6} = 66$$

Taking LCM

$$(9a + 2a)/12 = 66$$

$$11a/12 = 66$$

By cross multiplication

$$11a = 66 \times 12 = 792$$

So we get

$$a = 792/11 = 72$$

$$\mathbf{11. \frac{2p}{3} - \frac{p}{5} = 35}$$

Solution:

It is given that

$$\frac{2p}{3} - \frac{p}{5} = 35$$

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Taking LCM

$$(10p - 3p) / 15 = 35$$

$$7p / 15 = 35$$

By cross multiplication

$$7p = 35 \times 15 = 525$$

So we get

$$p = 525 / 7 = 75$$

$$\mathbf{12. \ 0.6a + 0.2a = 0.4a + 8}$$

**Solution:**

It is given that

$$0.6a + 0.2a = 0.4a + 8$$

Multiplying and dividing both numerator and denominator by 10

$$6/10a + 2/10a = 4a/10 + 80/10$$

Taking LCM

$$(6a + 2a) / 10 = (4a + 80) / 10$$

$$6a + 2a = 4a + 80$$

So we get

$$4a = 80$$

$$a = 80 / 4 = 20$$

$$\mathbf{13. \ p + 1.4p = 48}$$

**Solution:**

It is given that

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$$p + 1.4p = 48$$

Multiplying and dividing both numerator and denominator by 10

$$p + 14/10p = 48$$

Taking LCM

$$(10p + 14p)/10 = 48$$

$$24p/10 = 48$$

By cross multiplication

$$24p = 48 \times 10 = 480$$

So we get

$$p = 480/24 = 20$$

**14. 10% of x = 20**

**Solution:**

It is given that

$$10\% \text{ of } x = 20$$

We can write it as

$$10/100 \times x = 20$$

$$x/10 = 20$$

By cross multiplication

$$x = 20 \times 10 = 200$$

**15. y + 20% of y = 18**

**Solution:**

It is given that

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$$y + 20\% \text{ of } y = 18$$

We can write it as

$$y + 20/100 \times y = 18$$

Taking LCM

$$(100y + 20y)/100 = 18$$

By cross multiplication

$$120y = 18 \times 100 = 1800$$

So we get

$$y = 1800/120 = 15$$

### **Exercise 12D page: 145**

**1. One-fifth of a number is 5, find the number.**

**Solution:**

Consider the number =  $x$

Based on the condition

$$(1/5)x = 5$$

By cross multiplication

$$x = 5 \times 5 = 25$$

Hence, the number is 25.

**2. Six times a number is 72, find the number.**

**Solution:**

Consider the number =  $x$

Based on the condition

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$$6x = 72$$

So we get

$$x = 72/6 = 12$$

Hence, the number is 12.

**3. If 15 is added to a number, the result is 69, find the number.**

**Solution:**

Consider the number =  $x$

Based on the condition

$$x + 15 = 69$$

So we get

$$x = 69 - 15 = 54$$

Hence, the number is 54.

**4. The sum of twice a number and 4 is 80, find the number.**

**Solution:**

Consider the number =  $x$

Based on the condition

$$2x + 4 = 80$$

So we get

$$2x = 80 - 4 = 76$$

$$x = 76/2 = 38$$

Hence, the number is 38.

**5. The difference between a number and one-fourth of itself is 24, find the number.**

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**Solution:**

Consider the number =  $x$

Based on the condition

$$x - (1/4)x = 24$$

Taking LCM

$$(4x - x)/4 = 24$$

$$3x/4 = 24$$

By cross multiplication

$$x = 24 \times 4/3$$

So we get

$$x = 8 \times 4 = 32$$

Hence, the number is 32.

**6. Find a number whose one-third part exceeds its one-fifth part by 20.****Solution:**

Consider the number =  $x$

Based on the condition

$$(1/3)x - (1/5)x = 20$$

Here the LCM of 3 and 5 is 15

$$(5x - 3x)/15 = 20$$

$$2x/15 = 20$$

So we get

$$x = 20 \times 15/2 = 150$$

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Hence, the number is 150.

**7. A number is as much greater than 35 as is less than 53. Find the number.**

**Solution:**

Consider the number =  $x$

Based on the condition

$$x - 35 = 53 - x$$

By further calculation

$$2x = 88$$

So we get

$$x = 88/2 = 44$$

Hence, the number is 44.

**8. The sum of two numbers is 18. If one is twice the other, find the numbers.**

**Solution:**

Consider the first number =  $x$

Second number =  $y$

Based on the condition

$$x + y = 18 \dots\dots (1)$$

$$x = 2y \dots\dots (2)$$

Now substituting the equation (2) in (1)

$$2y + y = 18$$

$$3y = 18$$

So we get

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$$y = 18/3 = 6$$

Substituting the value of  $y$  in equation (2)

$$x = 2 \times 6 = 12$$

Hence, the two numbers are 12 and 6.

**9. A number is 15 more than the other. The sum of the two numbers is 195. Find the numbers.**

**Solution:**

Consider the first number =  $x$

Second number =  $y$

Based on the condition

$$x = y + 15 \dots\dots (1)$$

$$x + y = 195 \dots\dots (2)$$

Now substituting equation (1) in (2) we get

$$y + 15 + y = 195$$

$$2y = 195 - 15 = 180$$

So we get

$$y = 180/2 = 90$$

Substituting the value of  $y$  in equation (1)

$$x = 90 + 15 = 105$$

Hence, the two numbers are 105 and 90.

**10. The sum of three consecutive even numbers is 54. Find the numbers.**

**Solution:**

Consider the first even number =  $x$

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Second even number =  $x + 2$

Third even number =  $x + 4$

Based on the condition

$$x + x + 2 + x + 4 = 54$$

By further calculation

$$3x + 6 = 54$$

$$3x = 54 - 6 = 48$$

So we get

$$x = 48/3 = 16$$

First even number = 16

Second even number =  $16 + 2 = 18$

Third even number =  $16 + 4 = 20$

**11. The sum of three consecutive odd numbers is 63. Find the numbers.**

**Solution:**

Consider the first odd number =  $x$

Second odd number =  $x + 2$

Third odd number =  $x + 4$

Based on the condition

$$x + x + 2 + x + 4 = 63$$

By further calculation

$$3x + 6 = 63$$

$$3x = 63 - 6 = 57$$

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So we get

$$x = 57/3 = 19$$

First odd number = 19

Second odd number =  $19 + 2 = 21$

Third odd number =  $19 + 4 = 23$

**12. A man has ₹ x from which he spends ₹ 6. If twice of the money left with him is ₹ 86, find x.**

**Solution:**

Consider ₹ x as the total amount

Based on the condition

$$2x = 86$$

By further calculation

$$x = 86/2 = 43$$

Amount spent by him = ₹ 6

So the total money he have =  $43 + 6 = ₹ 49$

**13. A man is four times as old as his son. After 20 years, he will be twice as old as his son at that time. Find their present ages.**

**Solution:**

Consider the present age of son = x years

So the present age of father = 4x years

After 20 years

Age of son = (x + 20) years

Age of father = (4x + 20) years

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Based on the condition

$$4x + 20 = 2(x + 20)$$

By further calculation

$$4x + 20 = 2x + 40$$

$$2x = 20$$

So we get

$$x = 10$$

So the present age of son = 10 years

Present age of father =  $4 \times 10 = 40$  years

**14. If 5 is subtracted from three times a number, the result is 16. Find the number.**

**Solution:**

Consider x as the number

Based on the condition

$$3x - 5 = 16$$

By further calculation

$$3x = 16 + 5 = 21$$

So we get

$$x = 21/3 = 7$$

Hence, the number is 7.

**15. Find three consecutive natural numbers such that the sum of the first and the second is 15 more than the third.**

**Solution:**

Consider the first consecutive number = x

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Second consecutive number =  $x + 1$

Third consecutive number =  $x + 2$

Based on the condition

$$x + x + 1 = 15 + x + 2$$

By further calculation

$$2x + 1 = 17 + x$$

$$2x - x = 17 - 1$$

So we get

$$x = 16$$

First consecutive number = 16

Second consecutive number =  $16 + 1 = 17$

Third consecutive number =  $16 + 2 = 18$



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