

Simple Equation

Introduction

In this chapter, we shall study the meaning of equation and linear equation. In the end of the chapter, we shall study formulation and solution of equation for some real-life problems.

Statements involving the 'equals' symbol '=' is called a statement of equality or simply an equality.

Equation

A statement of equality which involves one or more literals (variables) is called an equation. Every equation has two sides, namely the left hand side (L.H.S.) and the right hand side (R.H.S.).

Linear Equation

An equation in which the highest power of the variables involved is 1, is called a linear equation.

Solving Linear Equation

In this section, we shall study three method of solving a linear equations:

1. **By trial and error method:** In this method we find the values of L.H.S. and R.H.S. of the given equation for different values of the variable. The value of the variable for which L.H.S. = R.H.S. is the root of the equation.

Example: Solve by the trial and error method : $x + 7 = 10$

Ans: L.H.S. = $x + 7$, R.H.S. = 10

x	L.H.S.	R.H.S.	Is L.H.S. = R.H.S.
1	$1 + 7 = 8$	10	No
2	$2 + 7 = 9$	10	No
3	$3 + 7 = 10$	10	Yes

Clearly, L.H.S. = R.H.S. for $n = 3$

Hence $x = 3$ is the solution of given equation.

2. **Systematic Method**

Rule 1: We can add the same number to both sides of the equation, i.e. of $x + 5 = 7$ then $x + 5 + 2 = 7 + 2$.

Rule 2: We can subtract the same number from the both sides of the equation i.e. if $x + 5 = 7$, then $x + 5 - 2 = 7 - 2$.

Rule 3: We can multiply both sides of the equation by the same non-zero number, i.e. if $\frac{x}{3} = 4$, then $\frac{x}{3} \times 6 = 4 \times 6$. Also, $\frac{x}{3} \times 3 = 4 \times 3$.

Rule 4: We can divide both sides of the equation by the same non-zero number, i.e., if $3x = 10$, then $\frac{3x}{3} = \frac{10}{3}$. Also, $\frac{3x}{5} = \frac{10}{5}$.

Transposition Method:

The transposition method involves the following steps:

Step 1: Obtain the linear equation.

Step 2: Identify the unknown quality.

Step 3: Simplify the L.H.S. and R.H.S. by removing grouping symbols.

Step 4: Transfer all terms containing the variable on the L.H.S. and constant terms on the R.H.S. of the equation. Note that the signs of the terms will change in carrying them from L.H.S. to R.H.S. and vice-versa.

Step 5: Simplify L.H.S. and R.H.S. in the simplest form so that each side contains just one term. Then solve it.

Solving Equations Which Have Linear Expressions on One Side and Numbers on the Other Side

Example 1: Find the solution of $2x - 3 = 7$

Solution: Step 1 Transpose 3 to RHS

$$2x = 7 + 3$$

$$\text{or } 2x = 10$$

Step 2 Next divide both sides by 2.

$$x = 5 \text{ (required solution)}$$

Example 2: Solve $2y + 9 = 4$

Solution: Transposing 9 to RHS

$$2y = 4 - 9$$

$$\text{or } 2y = -5$$

$$\text{Dividing both sides by 2, } y = \frac{-5}{2}$$

SOLVED PROBLEMS

Problem 1: What should be added to twice the rational number $\frac{-7}{3}$ to get $\frac{3}{7}$?

Solution: Twice the rational number $2 \times \left(\frac{-7}{3}\right) = \frac{-14}{3}$

Let the number to be added to twice the rational number $\frac{-7}{3}$ be x .

$$x + \left(\frac{-14}{3}\right) = \frac{3}{7}$$

$$\text{or } x - \frac{14}{3} = \frac{3}{7}$$

$$\begin{aligned} \text{or } x &= \frac{3}{7} + \frac{14}{3} \quad (\text{transposing } \frac{14}{3} \text{ to RHS}) \\ &= \frac{(3 \times 3) + (14 \times 7)}{21} = \frac{9 + 98}{21} = \frac{107}{21} \end{aligned}$$

Thus $\frac{107}{21}$ should be added to twice the rational number $\frac{-7}{3}$ to get $\frac{3}{7}$?

Problem 2: The perimeter of a rectangle is 13 cm and its width is $2\frac{3}{4}$ cm. Find its length.

Solution: Let the length of the rectangle be x cm.

The perimeter of the rectangle = $2 \times (\text{length} + \text{width})$

$$= 2 \times \left(x + 2\frac{3}{4}\right) = 2 \left(x + \frac{11}{4}\right)$$

$$2 \left(x + \frac{11}{4}\right) = 13 \quad (\text{given perimeter} = 13 \text{ cm})$$

$$\text{or } x + \frac{11}{4} = \frac{13}{2} \quad (\text{dividing both sides by 2})$$

$$\text{or } x = \frac{13}{2} - \frac{11}{4} = \frac{26}{4} - \frac{11}{4} = \frac{15}{4} = 3\frac{3}{4}$$

The length of the rectangle is $3\frac{3}{4}$ cm

Problem 3: The sum of three consecutive multiples of 11 is 363. Find these multiples.

Solution: Let the three consecutive multiples of 11 be x , $x + 11$ and $x + 22$.

$$x + (x + 11) + (x + 22) = 363 \quad [\text{given}]$$

$$\text{or } x + x + 11 + x + 22 = 363$$

$$\text{or } 3x + 33 = 363$$

$$\text{or } 3x = 363 - 33 \quad (\text{by transposing 33 to RHS})$$

$$\text{or } 3x = 330$$

$$\text{or } x = 330/3 = 110$$

Hence, the three consecutive multiples are 110, 121, 132.

Problem 4: The present age of Sahil's mother is three times the present age of Sahil. After 5 years sum of their ages will be 66 years. Find their present ages.

Solution: Let Sahil's present age be x years. His mother's present age is $3x$ years.
After 5 years, Sahil's age will be $x + 5$ years and his mother's age will be $3x + 5$ years.
It is given that this sum is 66 years.
Therefore, $(x + 5) + (3x + 5) = 66$
 $4x + 10 = 66$ (after opening the brackets)
 $4x = 66 - 10$ (by transposing 10 to RHS)
 $4x = 56$
 $x = 56/4 = 14$
Thus, Sahil's present age is 14 years and his mother's age is 42 years.

Problem 5: Solve $\frac{6x+1}{3} + 1 = \frac{x-3}{6}$

Solution: Multiplying both sides of the equation by 6,

$$\frac{6(6x+1)}{3} + 6 \times 1 = \frac{6(x-3)}{6} \quad \text{Since LCM (3,1,6) = 6]}$$

$$\text{or } 2(6x+1) + 6 = x-3$$

$$\text{or } 12x + 2 + 6 = x-3 \quad (\text{opening the brackets})$$

$$\text{or } 12x + 8 = x-3$$

$$\text{or } 12x - x + 8 = -3$$

$$\text{or } 11x + 8 = -3$$

$$\text{or } 11x = -3 - 8$$

$$\text{or } 11x = -11$$

$$\text{or } x = -1 \quad (\text{Required answer})$$

Problem 6: Solve $5x - 2(2x - 7) = 2(3x - 1) + \frac{7}{2}$

Solution: Let us open the brackets,
LHS = $5x - 4x + 14 = x + 14$
RHS = $6x - 2 + \frac{7}{2} = 6x - \frac{4}{2} + \frac{7}{2} = 6x + \frac{3}{2}$
The equation is $x + 14 = 6x + \frac{3}{2}$
or $14 = 6x - x + \frac{3}{2}$ or $14 = 5x + \frac{3}{2}$
or $14 - \frac{3}{2} = 5x$ or $\frac{28-3}{2} = 5x$
or $\frac{25}{2} = 5x$
or $x = \frac{25}{2} \times \frac{1}{5} = \frac{5 \times 5}{2 \times 5} = \frac{5}{2}$
Therefore, required solution is $x = \frac{5}{2}$

Example 7: Solve $\frac{x+1}{2x+3} = \frac{3}{8}$

Solution: Cross multiplying both sides
 $8(x+1) = 3(2x+3)$
 or $8x + 8 = 6x + 9$ (open brackets)
 or $8x = 6x + 9 - 8$ or $8x = 6x + 1$
 or $8x - 6x = 1$
 or $2x = 1$ or $x = \frac{1}{2}$
 The solution is $x = \frac{1}{2}$

Example 8: Present ages of Anu and Raj are in the ratio 4:5. Eight years from now the ratio of their ages will be 5:6. Find their present ages.

Solution: Let the present ages of Anu and Raj be $4x$ years and $5x$ years respectively.
 After eight years, Anu's age = $(4x + 8)$ years.
 After eight years, Raj's age = $(5x + 8)$ years.

Therefore, the ratio of their ages after eight years = $\frac{4x+8}{5x+8}$

This is given to be 5 : 6

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

Cross-multiplication gives $6(4x + 8) = 5(5x + 8)$

or $24x + 48 = 25x + 40$

or $24x + 48 - 40 = 25x$

or $24x + 8 = 25x$

or $8 = 25x - 24x$

or $8 = x$

Therefore, Anu's present age = $4x = 4 \times 8 = 32$ years

Raj's present age = $5x = 5 \times 8 = 40$ year

Problem 9: Deveshi has a total of Rs 590 as currency notes in the denominations of Rs 50, Rs 20 and Rs 10. The ratio of the number of Rs 50 notes and Rs 20 notes is 3:5. If she has a total of 25 notes, how many notes of each denomination she has?

Solution: Let the number of Rs 50 notes and Rs 20 notes be $3x$ and $5x$, respectively.
 But she has 25 notes in total.

Therefore, the number of Rs 10 notes = $25 - (3x + 5x) = 25 - 8x$

The amount she has

from Rs 50 notes : $3x \times 50 = \text{Rs } 150x$

from Rs 20 notes : $5x \times 20 = \text{Rs } 100x$

from Rs 10 notes : $(25 - 8x) \times 10 = \text{Rs } (250 - 80x)$

Hence the total money she has = $150x + 100x + (250 - 80x) = \text{Rs } (170x + 250)$

But she has Rs 590. Therefore, $170x + 250 = 590$

or $170x = 590 - 250 = 340$

or $x = 340/170 = 2$

The number of Rs 50 notes she has = $3x = 3 \times 2 = 6$

The number of Rs 20 notes she has = $5x = 5 \times 2 = 10$

The number of Rs 10 notes she has = $25 - 8x = 25 - (8 \times 2) = 25 - 16 = 9$

Problem 10: Bansi has 3 times as many two-rupee coins as he has five-rupee coins. If he has in all a sum of Rs 77, how many coins of each denomination does he have?

Solution: Let the number of five-rupee coins that Bansi has be x . Then the number of two-rupee coins he has is 3 times x or $3x$.

The amount Bansi has:

i) from 5 rupee coins, Rs $5 \times x = \text{Rs } 5x$

ii) from 2 rupee coins, Rs $2 \times 3x = \text{Rs } 6x$

Hence the total money he has = Rs $11x$

But this is given to be Rs 77; therefore,

$$11x = 77$$

$$x = 77/11 = 7$$

Thus, number of five-rupee coins = $x = 7$

and number of two-rupee coins = $3x = 21$

THINGS TO REMEMBER

1. A statement of equality involving one or more variables (literals) is called an equation.
2. An equation involving only one literal number (variable) with the highest power one is called a linear equation in one variable.
3. While solving an equation we can:
 - i) add the same number to both sides of the equation.
 - ii) subtract the same number from both sides of the equation.
 - iii) multiply both sides of the equation by the same non-zero number.
 - iv) divide both sides of the equation by the same non-zero number.
4. In an equation, we can drop a term from one side and put it on the other side with the opposite sign. This process is known as transposition.

TIPS

1. A statement of equality containing one or more unknowns (variables) is called an algebraic equation.
E.g., $6x + 4 = 16$, $3x + 2y = 6$, $4x^2 + 8x + 5 = 17$, etc.
2. A number which satisfies an equation or the value of the unknown is called the solution or root of the equation.
3. An equation remains unchanged if:
 - (a) same number is added to both the sides.
 - (b) same number is subtracted from both the sides.
 - (c) both sides are multiplied by the same number.
 - (d) both sides are divided by the same number.
4. All equations consists of a **left side**, an equal sign ('=') and a **right side**. Thus, in the equation $x + 4 = 10$, the **left side** is $(x + 4)$ and the **right side** is 10.

PART – I: MISCELLANEOUS DOMAIN

1. Solve the following linear equations:

$$(i) \frac{x}{2} - \frac{1}{5} = \frac{x}{5} + \frac{1}{4}$$

$$(ii) \frac{n}{2} - \frac{3n}{4} + \frac{5n}{6} = 21$$

$$(iii) x + 7 - \frac{8x}{3} = \frac{17}{6} - \frac{5x}{2}$$

$$(iv) \frac{x-5}{3} = \frac{x-3}{5}$$

$$(v) \frac{3t-2}{4} - \frac{2t-3}{3} = \frac{2}{3} - t$$

$$(vi) m - \frac{m-1}{2} = 1 - \frac{m-2}{3}$$

2. Simplify and solve the following linear equations:

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

$$(ii) 15(y-4) - 2(y-9) + 5(y+6) = 0$$

$$(iii) 3(5z-1) - 2(9z-11) = 4(8z-13) - 17$$

$$(iv) 0.25(4f-3) = 0.05(10f-9)$$

3. Solve the following equations:

$$(i) \frac{8x-3}{3x} = 2$$

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

$$(iii) \frac{z}{z+15} = \frac{4}{9}$$

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

4. 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.

5. 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.

6. Solve: $\frac{3}{5}(4x-9) - \frac{5}{4}(3x-8) = 5 - \frac{7}{10}(2x-1)$.

7. A number consists of two digits such that the digits in the ten's place is less by 2 than the digit in the unit's place. Three times the number added to $\frac{6}{7}$ times the number obtained by reversing the digits equals 108. What is the sum of the digits in the number.

8. The sides of a triangle are in the ratio $\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$. If the perimeter of the triangle is 52 cm, then what is the length of the smallest side?

9. The present ages of three persons are in the ratio 4 : 7 : 9. Eight years ago, the sum of their ages was 56. Find their present ages (in years).

10. 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?

11. The sum of three numbers is 264. If the first number be twice the second and third number be one-third of the first, then find the second number?
12. Solve: $(x+6)(x-6)-(x-5)^2=40-17(x-2)$
13. A person travelled $\frac{5}{8}$ th of the distance by trains, $\frac{1}{4}$ th bus and the remaining 15 km by boat. What was the total distance travelled by him?
14. The total value of a collection of coins of denominations `1.00, 50 paise, 25 paise, 10 paise and 5 paise is `380. If the number of coins of each denomination is the same, then what is the number of one-rupee coins?
15. The numerator and denominator of a fraction are in the ratio 2 : 3. If 6 is subtracted from the numerator, the result is a fraction that has a value $\frac{2}{3}$ of the original fraction. What is the numerator of the original fraction?
16. A labourer was engaged for 20 days on the condition that he will receive `60 for each day he works and he will be fined `5 for each day he is absent. If he received `745 in all, then what is the number of days he was absent?
17. The difference between two numbers is 156. If one-third of the smaller number is greater than one-seventh of the larger number by 4, then what are the two numbers?
18. 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?
19. In a two digit number, the digit at the unit's place is four times the digit in the ten's place and the sum of the digits is equal to 10. What is the number?
20. One third of a pole is painted yellow, one-fifth is painted white and the remaining 7 metres is painted black. Find the length of the pole.
21. If the sum of one-half and one-fifth of a number exceeds one-third of that number by $7\frac{1}{3}$. Find the number.
22. $\frac{1}{2}$ is subtracted from a number and the difference is multiplied by 4. If 25 is added to the product and the sum is divided by 3, the result is equal to 10. Find the number.
23. The denominator of a fraction is 1 more than is number. If 1 is deduced from both the number and the denominator, the fraction becomes equivalent to 0.5. Find the fraction.
24. The value of m that satisfies the equation $\frac{7}{4m-2} = \frac{5}{3m-4}$.
25. If $(x-2)(x+3) = x^2 - 4$, Find x ?

26. A is 2 years older than B who is twice as old as C. If the total of the ages of A, B and C be 27 years, then how old is B?
27. The sum of two numbers is 18 and the difference of their squares is 108. Find the difference between the numbers.
28. The sum of the ages of 5 children born at intervals of 3 years each is 50 years. What is the age of the youngest child?
29. Shuba got three fourth of what. Alka had./Alka gave half of what remained with her to Mohini. If Mohini got `625.
30. X is 36 years old and Y is 16 years old. In how many years will X be twice as old as Y?

HIGHER ORDER THINKING SKILLS (HOTS)

1. In an examination, a student attempted 15 questions correctly and secured 40 marks. If there were two types of questions (2 marks and 4 marks questions), How many questions of 2 marks did he attempt correctly?
(a) 5 (b) 10 (c) 20 (d) 40
2. The sum of the digits of a three digit number is 16. If the ten's digit of the number is 3 times the unit's digit and the unit's digit is one-fourth of the hundredth digit, then what is the number?
(a) 446 (b) 561 (c) 682 (d) 862
3. The ratio between the present ages of M and N is 5 : 3 respectively. The ratio between M's age 4 years ago and N's age after 4 years is 1 : 1./What is the ratio between M's age after 4 years and N's age 4 years ago?
(a) 2 : 1 (b) 1 : 3 (c) 4 : 1 (d) 3 : 1
4. Ashok gave 40 per cent of the amount he had to Jayant. Jayant in turn gave one-fourth of what he received from Ashok to Prakash. After paying `200 to the taxi driver out of the amount he got from Jayant. Prakash how has `600 left with him. How much amount did Ashok have?
(a) `1,200 (b) `4,000 (c) `8,000 (d) `6,000
5. A man engaged a servant on the condition that he would pay him `90 and a turban after a service of one year. He served only for nine months and received the turban and `65/ The price of the turban is
(a) `25 (b) `18.75 (c) `10 (d) `2.50

PART – II: MULTIPLE CHOICE QUESTIONS

1. Solve: $\frac{n+3}{\frac{1}{3}} - \frac{n+2}{\frac{1}{2}} = \frac{n-4}{\frac{1}{10}}$. The value of n is obtained as:
(a) 5 (b) 1 (c) -3 (d) -1
2. Solve: $(t-4)(5+4) = 54 + (t-5)(t-10)$. The value of t is:
(a) 4 (b) 8 (c) 8 (d) 2
3. Solve: $\frac{2}{3}(n+6) - \frac{1}{5}(n-4) = \frac{3}{7}(n+12)$
(a) -9 (b) 8 (c) $3\frac{1}{9}$ (d) 9
4. Mr. Joshi has 430 cabbage – plants which he wants to plant out, some 25 to a row, the rest 20 to a row. If there are to be 18 rows in all, how many rows of 25 will there be?
(a) 10 (b) 14 (c) 8 (d) 12
5. Solve: $\frac{x+5}{4} - \frac{3x-1}{8} + \frac{4-x}{6} = 2\frac{1}{24}$. The value of x is:
(a) 1 (b) -1 (c) 0 (d) 2
6. A rectangle is 8 cm long and 5 cm wide. Its perimeter is doubled when each of its sides is increased by x cm.
(a) 26, 52, 104 (b) 24, 48, 96 (c) 18, 36, 72 (d) 32, 64, 128
7. Divide 224 into three parts so that the second will be twice the first and third will be twice the second.
(a) 26, 52, 104 (b) 24, 48, 96 (c) 18, 36, 72 (d) 32, 64, 128
8. ₹770 have to be divided among A, B and C such that A receives $\frac{2}{9}$ of what B and C together receive. Then A's share is:
(a) ₹140 (b) ₹154 (c) ₹165 (d) ₹170
9. Find a number such that of 6.12 and 20 are added to it, the product of the first and third sums may be equal to the square of second?
(a) 10 (b) 8 (c) 12 (d) 9
10. A person was asked to state his age in years. His reply was, “take my age three years hence, multiply it by 3 and then subtract three times my age three years ago and you will know how old I am. “What was the age of the person?
(a) 24 years (b) 20 years (c) 32 years (d) 18 years

11. If $\frac{b}{a} = 0.25$, then $\frac{2a-b}{2a+b} + \frac{2}{9} = ?$
 (a) $\frac{4}{9}$ (b) $\frac{5}{9}$ (c) 1 (d) 2
12. The factors of $a^4 - 4a^2$ are:
 (a) $a^2(a-2)(a+2)$ (b) $a(a-2)(a+2)$ (c) $a(a+2)(a+2)$ (d) $a^2(a-2)^2$
13. Solve: $(x-4)^2 - (x+4)^2 = 48$. The value of x is:
 (a) 3 (b) -3 (c) 4 (d) 2
14. The value of $\frac{(1.5)^3 + (4.7)^3 + (3.8)^3 - 3 \times 1.5 \times 4.7 \times 3.8}{(1.5)^2 + (4.7)^2 + (3.8)^2 - 1.5 \times 4.7 - 4.7 \times 3.8 - 1.5 \times 3.8}$
 (a) 0 (b) 1 (c) 10 (d) 30
15. $\frac{a^2 - b^2 - 2bc - c^2}{a^2 + b^2 + 2ab - c^2}$ is equivalent to:
 (a) $\frac{a+b+c}{a-b+c}$ (b) $\frac{a-b-c}{a+b-c}$ (c) $\frac{a-b-c}{a-b+c}$ (d) $\frac{a-b+c}{a+b+c}$
16. $\frac{(2.3)^3 - 0.027}{(2.3)^2 + 0.69 + 0.09} = ?$
 (a) 2.6 (b) 2 (c) 2.33 (d) 2.8
17. $\frac{(0.35)^2 - (0.03)^2}{0.19} =$
 (a) 2.6 (b) 2 (c) 2.33 (d) 2.8
18. One of the factors of $a^2 - b^2 - a^2b + ab^2 + a^2 - b^2$ is:
 (a) $a+b$ (b) $b-a$ (c) $b-a$ (d) $a^2 + b^2$
19. In a lottery, a total of 200 prizes are to be given. A prize is either `500 or `100. If the total prize money is `50,000, then the number of `500 and `100 prizes are:
 (a) 70, 130 (b) 75, 125 (c) 60, 140 (d) 80, 120
20. If $x + y = a$ and $xy = b$, then the value of $\frac{1}{x^3} + \frac{1}{y^3}$ is:
 (a) $a^3 - 3ab$ (b) $\frac{a^3 + 3ab}{b^3}$ (c) $\frac{a^3 - 3ab}{b^3}$ (d) $a^3 + 3ab$
21. If $2x + ky + z$ is a factor of $9y^2 - z^2 - 2xz + 6xy$, then the value of k is equal to:
 (a) -3 (b) -1 (c) 1 (d) 3
22. If $x + y - 1 = 0$ then $x^3 + y^3 - 1$ is equal to:
 (a) $x^2 + y^2 - 1$ (b) $x^2 - xy + y^2$ (c) $x^2 + xy + y^2$ (d) $-3xy$

23. The ratio of three numbers is 3 : 4 : 5 and the sum of their squares is 1250. The sum of the three numbers is
(a) 60 (b) 90 (c) 30 (d) 50
24. A train starts with full number of passengers. At the first station, the train drops one-third of the passengers and takes in 96 more. At the next station, one half of the passengers on board get down while 12 new passengers get on board. If the passengers on board now are 240, the number of passengers in the beginning was
(a) 540 (b) 600 (c) 444 (d) 430
25. A sum of ₹36.90 is made up of 180 coins which are either 10 paise coins or 25 paise coins. Determine the number of each type of coins.
(a) 126 of 10 p coins and 54 of 25 p coins (b) 54 of 10 p coins and 126 of 25 p coins
(c) 90 of 10 p coins and 90 of 25 p coins (d) 54 of 10 p coins and 90 of 25 p coins
26. Present ages of Amit and his father are in the ratio 2 : 5 respectively. Four years hence the ratio of their ages becomes 5 : 11 respectively. What was the father's age five years ago?
(a) 40 years (b) 45 years (c) 30 years (d) 35 years
27. The sum of three consecutive multiples of 3 is 72. What is the largest number?
(a) 21 (b) 24 (c) 27 (d) 36
28. A number is doubled and 9 is added. If the result is tripled it becomes 75. What is that number?
(a) 3.5 (b) 6 (c) 8 (d) 7
29. The solution of $0.2(2x - 1) - 0.5(3x - 1) = 0.4$ is
(a) $\frac{1}{11}$ (b) $\frac{2}{11}$ (c) $\frac{3}{11}$ (d) $\frac{4}{11}$
30. In an isosceles triangle, each of the two equal sides is 3 cm more than twice the base. If the perimeter of the triangle is 31 cm, find the sides of the triangle.
(a) 7 cm, 12 cm, 12 cm (b) 5 cm, 13 cm, 13 cm
(c) 10 cm, 10.5 cm, 0.5 cm (d) 9 cm, 11 cm, 11 cm