

NCERT SOLUTION FOR CLASS 7 MATHEMATICS | SIMPLE EQUATIONS | EXERCISE 4.4

1. Set up equations and solve them to find the unknown numbers in the following cases:

a) Add 4 to eight times a number you get 60.

b) One-fifth of a number minus 4 gives 3.

c) If I take three-fourths of a number and add 3 to it, I get 21.

d) When I subtracted 11 from twice a number, the result was 15.

e) Munna subtracts thrice the number of notebooks he has from 50, he finds the result to be 8.

f) Ibenhal thinks of a number. If she adds 19 to it and divides the sum by 5, she will get 8.

g) Anwar thinks of a number. If he takes away 7 from $\frac{5}{2}$ of the number, the result is 23.

Answer:

a) Let the number be x .

Eight times the number $x = 8x$

Add 4 to eight times a number $x = 8x + 4$

So the equation is $8x + 4 = 60$

To find the solution of the equation, Subtract 4 from both sides.

$$8x + 4 - 4 = 60 - 4$$

$$8x = 56$$

Divide both sides by 8

$$\frac{8x}{8} = \frac{56}{8}$$

$x = 7$, which is the solution of the equation.

b) Let the number be x .

One-fifth of a number $x = \frac{1}{5}x$

One-fifth of a number minus 4 $= \frac{1}{5}x - 4$

So the equation is $\frac{x}{5} - 4 = 3$.

To find the solution of the equation, add 4 to both sides.

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

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

Multiply both sides by 5

$$\frac{x}{5} \times 5 = 7 \times 5$$

$x = 35$, which is the solution of the equation.

c) Let the number be y .

Three-fourth of a number $y = \frac{3}{4}y$

Three-fourth of a number and add 3 to it $= \frac{3}{4}y + 3$

So the required equation is $\frac{3}{4}y + 3 = 21$

To find the solution of the equation, subtract 3 from both sides.

$$\frac{3}{4}y + 3 - 3 = 21 - 3$$

$$\frac{3}{4}y = 18$$

Multiply both sides by 4.

$$\frac{3}{4}y \times 4 = 18 \times 4$$

$$3y = 72$$

Divide both sides by 3.

$$\frac{3y}{3} = \frac{72}{3}$$

$y = 24$, which is the solution of the equation.

d) Let the number be m .

Twice a number $m = 2m$

Subtracted 11 from twice a number $m = 2m - 11$

So the required equation is $2m - 11 = 15$

To find the solution of the equation, add 11 to both sides.

$$2m - 11 + 11 = 15 + 11$$

$$2m = 26$$

Divide both sides by 2.

$$\frac{2m}{2} = \frac{26}{2}$$

$$m = 13$$

e) Let the number of notebooks be x .

Subtracts thrice the number of notebooks from 50 $= 50 - 3x$

So the required equation is $50 - 3x = 8$

To find the solution of the equation, subtract 50 from both sides.

$$50 - 3x - 50 = 8 - 50$$

$$-3x = -42$$

$$\text{i.e. } 3x = 42$$

Divide both sides by 3.

$$\frac{3x}{3} = \frac{42}{3}$$

$x = 14$, which is the solution of the equation.

f) Let the number be x .

Adds 19 to it and divides the sum by 5 = $\frac{x+19}{5}$

So the required equation is $\frac{x+19}{5} = 8$

To find the solution of the equation, multiply both sides by 5.

$$\frac{x+19}{5} \times 5 = 8 \times 5$$

$$x + 19 = 40$$

Subtract 19 from both sides.

$$x + 19 - 19 = 40 - 19$$

$x = 21$, which is the solution of the equation.

g) Let the number be n .

Takes away 7 from $\frac{5}{2}$ of a number $n = \frac{5}{2}n - 7$

So the required equation is $\frac{5n}{2} - 7 = 23$

To find the solution of the equation, add 7 to both sides.

$$\frac{5n}{2} - 7 + 7 = 23 + 7$$

$$\frac{5n}{2} = 30$$

Multiply both sides by 2.

$$\frac{5n}{2} \times 2 = 30 \times 2$$

$$5n = 60$$

Divide both sides by 5.

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

$n = 12$, which is the solution of the equation.

2. Solve the following:

a) The teacher tells the class that the highest marks obtained by a student in her class is twice the lowest marks plus 7. The highest score is 87. What is the lowest score?

b) In an isosceles triangle, the base angles are equal. The vertex angle is 40° . What are the base angles of the triangle? (Remember, the sum of three angles of a triangle is 180°).

c) Sachin scored twice as many runs as Rahul. Together, their runs fell two short of a double century. How many runs did each one score?

Answer:

a) Let the lowest score be l .

$$\text{Twice the lowest marks plus 7} = 2l + 7$$

$$\text{So the highest marks obtained by a student in her class} = 2l + 7$$

$$\text{So the required equation is } 2l + 7 = 87$$

To find the solution of the equation, subtract 7 from both sides.

$$2l + 7 - 7 = 87 - 7$$

$$2l = 80$$

Divide both sides by 2.

$$\frac{2l}{2} = \frac{80}{2}$$

$$l = 40$$

So the lowest score is 40.

b) Let the base angles be b .

Sum of three angles of a triangle = 180° .

Given vertex angle = 40° .

Therefore, $b + b + 40^\circ = 180^\circ$.

$$2b + 40^\circ = 180^\circ$$

To find the solution of the equation, subtract 40 from both sides.

$$2b + 40 - 40 = 180 - 40$$

$$2b = 140$$

Divide both sides by 2.

$$\frac{2b}{2} = \frac{140}{2}$$

$$b = 70^\circ$$

So the base angles are 70° each.

c) Let Rahul's score be x .

Therefore, Sachin's score = $2x$

Rahul's score + Sachin's score = $200 - 2$

$$x + 2x = 198$$

$$3x = 198$$

To find the solution of the equation, divide both sides by 3.

$$\frac{3x}{3} = \frac{198}{3}$$

$$x = 66$$

So Rahul's score = 66 runs

Sachin's score = $2x = 2 \times 66 = 132$ runs

3. Solve the following:

i) Irfan says that he has 7 marbles more than five times the marbles Parmit has.

Irfan has 37 marbles. How many marbles does Parmit have?

ii) Laxmi's father is 49 years old. He is 4 years older than three times Laxmi's age. What is Laxmi's age?

iii) People of Sundargram planted trees in the village garden. Some of the trees were fruit trees. The number of non-fruit trees were two more than three times the number of fruit trees. What was the number of fruit trees planted if the number of non-fruit trees planted was 77?

Answer:

i) Let the number of Parmit's marbles be x .

7 marbles more than five times the marbles Parmit has = $5x + 7$

So the given equation is $5x + 7 = 37$

To find the solution of the given equation, subtract 7 from both sides.

$$5x + 7 - 7 = 37 - 7$$

$$5x = 30$$

Divide both sides by 5.

$$\frac{5x}{5} = \frac{30}{5}$$

$$x = 6$$

Therefore, Parmit has 6 marbles.

ii) Let Laxmi's age be x years.

4 years older than three times Laxmi's age = $3x + 4$

Laxmi's father's age = 49 years old.

So the given equation is $3x + 4 = 49$

To find the solution of the given equation, subtract 4 from both sides.

$$3x + 4 - 4 = 49 - 4$$

$$3x = 45$$

Divide both sides by 3.

$$\frac{3x}{3} = \frac{45}{3}$$

$$x = 15$$

Therefore, Laxmi's age = 15 years.

iii) Let the number of fruit trees be x .

Two more than three times the number of fruit trees = $3x + 2$

Given the number of non-fruit trees = 77

So the required equation is $3x + 2 = 77$

To find the solution of the equation, subtract 2 from both sides.

$$3x + 2 - 2 = 77 - 2$$

$$3x = 75$$

Divide both sides by 3

$$\frac{3x}{3} = \frac{75}{3}$$

$$x = 25$$

Therefore, the number of fruit trees = 25

4. Solve the following riddle:

I am a number,

Tell my identity!

Take me seven times over

And add a fifty!

To reach a triple century

You still need forty!

Answer:

Let the number be x.

The required equation is $(7x + 50) + 40 = 300$

$$\text{i.e. } 7x + 90 = 300$$

To find the number, subtract 90 from both sides.

$$7x + 90 - 90 = 300 - 90$$

$$7x = 210$$

Divide both sides by 7.

$$\frac{7x}{7} = \frac{210}{7}$$

$$x = 30$$

Therefore, the number is 30.