

## Important Questions Class 8 Maths Chapter 2 – Linear Equations in One Variable

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**Question 1:** The perimeter of a rectangular swimming pool is 154m. Its length is 2m, more than twice its breadth. What is the length and the breadth of the pool?

**Answer 1:** Let the breadth of the swimming pool be  $x$  m.

The length of the swimming pool will be =  $(2x + 2)$  m.

Perimeter of swimming pool:-  $2(l + b) = 154$

$$2(2x + 2 + x) = 154$$

$$2(3x + 2) = 154$$

∴ Dividing both sides by 2, we obtain

$$(3x + 2) = 77$$

On transporting two on the R.H.S., we get

$$3x = 77 - 2$$

$$3x = 75$$

$$x = 75/3$$

$$x = 25 \text{ m}$$

Hence, the breadth of the swimming pool is  $x = 25$  m

The length of the swimming pool will be =  $(2x + 2)$  m.

$$= (2 \times 25 + 2) \text{ m}$$

$$= (50 + 2) \text{ m}$$

$$= 52 \text{ m}$$

Thus, the length of the swimming pool is 52m, and the breadth of the swimming pool is 25m.

**Question 2: What is the share of A when Rs 25 are divided between A and B so that A gets Rs 8 more than B is 16.5?**

**Answer 2:** Let the share of B be x.

Let the share of A be (x + 8).

From this, we get,

$$x + x + 8 = 25$$

$$2x = 25 - 8$$

$$2x = 17$$

$$x = 17/2$$

$$x = 8.5$$

Therefore, A's share will be 8.5.

**Question 3: Find three consecutive odd numbers whose sum is 147.**

**Answer 3:** Let the first, second, and third consecutive odd numbers be (2x + 1), (2x + 3) and (2x + 5), respectively.

Hence the sum of the consecutive odd numbers is

$$(2x + 1) + (2x + 3) + (2x + 5) = 147.$$

On further simplifying, we get

$$2x + 2x + 2x + 1 + 3 + 5 = 147$$

$$6x + 9 = 147.$$

On rearranging, we obtain

$$6x = 147 - 9$$

$$6x = 138$$

$$x = 138/6 = 23,$$

So the three consecutive odd numbers are  $(2x + 1) = 47$

$$(2x + 3) = 49$$

$$(2x + 5) = 51.$$

**Question 4: Ram's father is 26 years younger than Ram's grandfather and 29 years older than Ram. The sum of the ages of all three is 135 years. What is the age of each one of them?**

**Answer 4:** Let Ram's present age be  $x$  years

Ram's father's present age is  $= (x + 29)$  years

Ram's grandfather's present age  $= (x + 29 + 26)$  years

The sum of all three ages adds up to 135 years

Hence,

$$x + (x + 29) + (x + 29 + 26) = 135$$

$$x + x + x + 29 + 29 + 26 = 135$$

$$3x + 84 = 135$$

$$3x = 135 - 84$$

$$3x = 51$$

$$x = 51/3$$

$$x = 17$$

Hence, Ram's present age is  $x = 17$  years

Ram's father's present age  $= (x + 29)$

$$= (17 + 29)$$

$$= 46 \text{ years}$$

Ram's grandfather's age  $= (x + 29 + 26)$

$$= (17 + 29 + 26) = 72 \text{ years}$$

**Question 5:** If  $8x - 3 = 25 + 17x$ , then  $x$  \_\_\_\_\_.

is a fraction

is an integer

- is a rational number
- cannot be solved

**Answer 5:** (C) A rational number

Given:-  $8x - 3 = 25 + 17x$

Moving -3 to R.H.S. and becomes 3 and 17x to L.H.S.

We obtain,

$$8x - 17x = 25 + 3$$

$$-9x = 28$$

$$x = -28/9$$

Thus,  $x$  is a rational number.

**Question 6:**  $3x + \frac{2}{3} = 2x + 1$

**Answer 6:**  $3x + \frac{2}{3} = 2x + 1$

By transposing the above equation, we get

$$3x + 2 = 3(2x + 1)$$

$$3x + 2 = 6x + 3$$

By moving all the variables on the L.H.S., we get,

$$3x - 6x = 3 - 2$$

$$-3x = 1$$

$$x = -1/3$$

**Question 7:** The angles of a triangle are in the ratio 2 : 3 : 4. Find the angles of the triangle.

**Answer 7:** Let the angles of the triangle be  $2x^\circ$ ,  $3x^\circ$  and  $4x^\circ$ .

From the given question, we get,

$$2x + 3x + 4x = 180$$

∴ The sum of all the angles of a triangle is  $180^\circ$ )

$$\Rightarrow 9x = 180$$

$$\Rightarrow x = 20 \dots\dots\dots \text{(Transposing 9 to R.H.S.)}$$

Hence, The angles of the given triangle are

$$2 \times 20 = 40^\circ,$$

$$3 \times 20 = 60^\circ,$$

$$4 \times 20 = 80^\circ.$$

**Question 8: The sum of the two numbers is 95. If one exceeds the other by 15, find the numbers.**

**Answer 8:** Let the smaller number be  $x$ .

Then, the larger number =  $x + 15$ .

According to the question,

the sum of the two numbers is 95

$$x + (x + 15) = 95$$

$$2x + 15 = 95 \dots\dots\dots \text{(transposing 15 to the R.H.S.)}$$

$$2x = 80$$

$$x = 80/2$$

$$x = 40$$

Hence, the smaller number is 40

The larger number is  $(x + 15) = 40 + 15 = 55$

Hence, the required numbers are 40 and 55

**Question 9: If  $(5x/3) - 4 = (2x/5)$ , then the numerical value of  $2x - 7$  is**

(A) 19/13

(B) -13/19

(C) 0

(D) 13/19

**Answer 9:** (B) -13/19

Given :-  $(5x/3) - 4 = (2x/5)$

$$(5x/3) - (2x/5) = 4$$

L.C.M. of 3 and 5 is 15

$$(25x - 6x)/15 = 4$$

$$19x = 4 \times 15$$

$$19x = 60$$

$$x = 60/19$$

Substituting  $x=60/19$  in the given equation,

$$= (2 \times (60/19)) - 7$$

$$= (120/19) - 7$$

$$= (120 - 133)/19$$

$$= - 13/19$$

**Question 10:**  $9x + 5 = 4(x - 2) + 8$

**Answer 10:**  $9x + 5 = 4(x - 2) + 8$ ,

By transposing the above equation, we get,

$$9x + 5 = 4x - 8 + 8$$

$$9x - 4x = 5$$

Again by transposing

$$5x = 5$$

$$X=5/5$$

$$X=1$$

**Question 11: The sum of three consecutive multiples of 8 is 888. Find the multiple.**

**Answer 11:** Let the three consecutive multiples be  $x$ ,  $x + 8$ ,  $x + 16$

According to the given question,

The sum of three consecutive multiples of 8 is 888

$$x + x + 8 + x + 16 = 888$$

$$3x + 24 = 888$$

$$3x = 888 - 24$$

$$3x = 864$$

$$x = 864/3$$

$$x = 288$$

Therefore the three consecutive multiples are:

$$x = 288$$

$$x + 8 = 296$$

$$x + 16 = 304, \text{ respectively.}$$

**Question 12: A rational number is such that when you multiply it by  $5/2$  and add  $2/3$  to get  $-7/12$ . What is the number?**

**Answer 12:** Let the rational number be  $x$

According to the question,

$$X \times (5/2) + 2/3 = -7/12$$

$$5x/2 + 2/3 = -7/12$$

$$5x/2 = -7/12 - 2/3$$

Taking L.C.M. on the R.H.S.

$$5x/2 = (-7-8)/12$$

$$5x/2 = -15/12$$

$$5x/2 = -5/4$$

$$x = (-5/4) \times (2/5)$$

$$x = -10/20$$

$$x = -1/2$$

Therefore, the rational number is  $-1/2$

**Question 13:** Find the number whose fifth part increased by 5 is equal to its fourth part diminished by 5.

**Answer 13:** Let the number be  $x$ .

According to the question, we get

$$(1/5)x + 5 = (1/4)x - 5$$

On rearranging the given equation,

$$(1/5)x - (1/4)x = -5-5$$

$$(1/5)x - (1/4)x = -10$$

By taking L.C.M., we will get,

$$(4x-5x)/20 = -10$$

Again by transposing

$$-x = -200$$

$$x = 200$$

**Question 14:** The sum of two numbers is 11, and their difference is 5. Find the numbers.

**Answer 14:** Let one of the numbers from the two numbers be  $x$ .

Let the other number =  $11 - x$ .

As per the given conditions, we have



$$x - (11 - x) = 5$$

$$\Rightarrow x - 11 + x = 5$$

$$\Rightarrow 2x - 11 = 5$$

$$\Rightarrow 2x = 5 + 11 \dots\dots\dots \text{(Transposing 11 to R.H.S.)}$$

$$\Rightarrow 2x = 16$$

$$\Rightarrow x = 8$$

Hence, the required numbers for the given question are 8 and  $11 - 8 = 3$ , respectively.

**Question 15: The number of boys and girls in a class is in the ratio of 7:5. The number of boys is 8 more than the number of girls. What is the total class strength?**

**Answer 15:** Let the number of boys in a class be  $7x$

Let the number of girls in a class be  $5x$

According to the question,

$$7x = 5x + 8$$

$$7x - 5x = 8$$

$$2x = 8$$

$$x = 8/2$$

$$x = 4$$

Therefore, Number of boys =  $7 \times 4 = 28$

Number of girls =  $5 \times 4 = 20$

Total number of students =  $20 + 28 = 48$

**Question 16:- Linear equation in one variable has \_\_\_\_\_.**

**only one variable with any power**

**only one term with a variable**

- **only one variable with power 1**
- **only constant term**

**Answer 16:-** (C) Only one variable with power 1

**Question 17:-** Arpita's present age is thrice of Shilpa. If Shilpa's age three years ago was  $x$ . Then Arpita's present age is

$$3(x - 3)$$

$$3x + 3$$

- $3x - 9$
- $3(x + 3)$

**Answer 17:-** (D)  $3(x + 3)$

Given:- Shilpa's age three years ago was  $x$

Then, Shilpa's present age is  $= x + 3$

Arpita's present age is thrice of Shilpa's age  $= 3(x + 3)$

**Question 18: Verify that  $x = 2$  is the solution of the equation  $4.4x - 3.8 = 5$ .**

**Answer 18:**  $4.4x - 3.8 = 5$

Putting  $x = 2$ , we have

$$4.4 \times 2 - 3.8 = 5$$

$$\Rightarrow 8.8 - 3.8 = 5$$

$$\Rightarrow 5 = 5$$

L.H.S. = R.H.S.

Hence, it is verified.