



NCERT SOLUTIONS FOR CLASS 8 MATHS LINEAR
EQUATION IN ONE VARIABLE EX-2.2

Q1. If you subtract $\frac{1}{2}$ from a number and multiply the result by $\frac{1}{2}$, you get $\frac{1}{8}$. What is the number?

Ans: Let the number be x .

According to the question,

$$\frac{1}{2}\left(x - \frac{1}{2}\right) = \frac{1}{8}$$

$$\Rightarrow 2 \times \frac{1}{2}\left(x - \frac{1}{2}\right) = \frac{1}{8} \times 2$$

[Multiplying both sides by 2]

$$\Rightarrow x - \frac{1}{2} = \frac{1}{4}$$

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

[Adding both sides $\frac{1}{2}$]

$$\Rightarrow x = \frac{1+2}{4}$$

$$\Rightarrow x = \frac{3}{4}$$

Hence, the required number is $\frac{3}{4}$.

Q2. The perimeter of a rectangular swimming pool is 154 m. Its length is 2 m more than twice its breadth. What are the length and breadth?

Ans: Let the breadth of the pool be x m.

Then, the length of the pool = $(2x+2)$ m

$$\text{Perimeter} = 2(l + b)$$

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

$$\Rightarrow \frac{154}{2} = \frac{2(2x+2+x)}{2}$$

[Dividing both sides by 2]

$$\Rightarrow 77 = 3x+2$$

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

[Subtracting 2 from both sides]

$$\Rightarrow 75 = 3x$$

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

[Dividing both sides by 3]

$$\Rightarrow 25 = x$$

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

Hence, length of the pool = $2x + 2$

$$2 \times 25 + 2 = 50 + 2 = 52 \text{ m}$$

And, breadth of the pool = 25 m.

Q3. The base of an isosceles triangle is $\frac{4}{3}$ cm.

The perimeter of the triangle is $4\frac{2}{15}$ cm. What is the length of either of the remaining equal sides?

Ans: Let each of equal sides of an isosceles triangle be x cm.

Perimeter of a triangle = Sum of all three sides

$$\Rightarrow 4\frac{2}{15} = \frac{4}{3} + x + x$$

$$\Rightarrow \frac{62}{15} = \frac{4}{3} + 2x$$

$$\Rightarrow \frac{62}{15} - \frac{4}{3} = \frac{4}{3} - \frac{4}{3} + 2x$$

[Subtracting $\frac{4}{3}$ from both the sides]

$$\Rightarrow \frac{62-20}{15} = 2x$$

$$\Rightarrow \frac{42}{15} = 2x$$

$$\Rightarrow \frac{42}{15 \times 2} = \frac{2x}{2}$$

[Dividing both sides by 2]

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

$$\Rightarrow x = 1\frac{2}{5} \text{ cm}$$

Hence, each equal side of an isosceles triangle is $1\frac{2}{5}$ cm.

Q4. Sum of two numbers is 95. If one exceeds the other by 15, find the numbers.

Ans: Sum of two number = 95

Let the first number be x , then another number be $x+15$.

According to the question, $x + x + 15 = 95$

$$\Rightarrow 2x + 15 = 95$$

$$\Rightarrow 2x + 15 - 15 = 95 - 15$$

[Subtracting 15 from both sides]

$$\Rightarrow 2x = 80$$

$$\Rightarrow \frac{2x}{2} = \frac{80}{2}$$

[Dividing both sides by 2]

$$\Rightarrow x = 40$$

Hence, the first number = 40

And another number = $40 + 15 = 55$.

Q5. Two numbers are in the ratio 5 : 3. If they differ by 18, what are the numbers?

Ans: Let the two numbers be $5x$ and $3x$.

According to question, $5x - 3x = 18$

$$\Rightarrow 2x = 18$$

$$\Rightarrow \frac{2x}{2} = \frac{18}{2}$$

[Dividing both sides by 2]

$$\Rightarrow x = 9$$

Hence, first number = $5 \times 9 = 45$ and second number = $3 \times 9 = 27$.

Q6. Three consecutive integers add up to 51. What are these integers?

Ans: Let the three consecutive integers be $x, x+1$ and $x+2$.

According to the question, $x + x+1 + x+2 = 51$

$$\Rightarrow 3x + 3 = 51$$

$$\Rightarrow 3x + 3 - 3 = 51 - 3$$

[Subtracting 3 from both sides]

$$\Rightarrow 3x = 48$$

$$\Rightarrow \frac{3x}{3} = \frac{48}{3}$$

[Dividing both sides by 3]

$$\Rightarrow x = 16$$

Hence, first integer = 16,

second integer = $16 + 1 = 17$ and

third integer = $16 + 2 = 18$.

Q7. The sum of three consecutive multiples of 8 is 888. Find the multiples.

Ans: Let the three consecutive multiples of 8 be $x, x+8$ and $x+16$.

According to question, $x + x + 8 + x + 16 = 888$

$$\Rightarrow 3x + 24 = 888$$

$$\Rightarrow 3x + 24 - 24 = 888 - 24$$

[Subtracting 24 from both sides]

$$\Rightarrow 3x = 864$$

$$\Rightarrow \frac{3x}{3} = \frac{864}{3}$$

[Dividing both sides by 3]

$$\Rightarrow x = 288$$

Hence, first multiple of 8 = 288,

second multiple of 8 = $288 + 8 = 296$ and third

multiple of 8 = $288 + 16 = 304$.

Q8. Three consecutive integers are such that when they are taken in increasing order and multiplied by 2, 3 and 4 respectively, they add up to 74. Find these numbers.

Ans: Let the three consecutive integers be $x, x+1$ and $x+2$.

According to the question,

$$2x + 3(x+1) + 4(x+2) = 74$$

$$\Rightarrow 2x + 3x + 3 + 4x + 8 = 74$$

$$\Rightarrow 9x + 11 = 74$$

$$\Rightarrow 9x + 11 - 11 = 74 - 11$$

[Subtracting 11 from both sides]

$$\Rightarrow 9x = 63$$

$$\Rightarrow \frac{9x}{9} = \frac{63}{9}$$

[Dividing both sides by 9]

$$\Rightarrow x = 7$$

Hence first integer = 7, second integer
= $7 + 1 = 8$ and third integer = $7 + 2 = 9$.

Q9. The ages of Rahul and Haroon are in the ratio 5 : 7. Four years later the sum of their ages will be 56 years. What are their present ages?

Ans: Let the present ages of Rahul and Haroon be $5x$ years and $7x$ years respectively.

According to condition, $(5x + 4) + (7x + 4) = 56$

$$\Rightarrow 12x + 8 = 56$$

$$\Rightarrow 12x + 8 - 8 = 56 - 8$$

[Subtracting 8 from both sides]

$$\Rightarrow 12x = 48$$

$$\Rightarrow \frac{12x}{12} = \frac{48}{12}$$

[Dividing both sides by 12]

$$\Rightarrow x = 4$$

Hence, present age of Rahul = $5 \times 4 = 20$ years
and present age of Haroon
= $7 \times 4 = 28$ years.

Q10. The number of boys and girls in a class are in the ratio 7 : 5. The number of boys is 8 more than the number of girls. What is the total class strength?

Ans: Let the number of girls be x .

Then, the number of boys = $x + 8$.

According to the question, $\frac{x+8}{x} = \frac{7}{5}$

$$\Rightarrow 5(x+8) = 7x$$

$$\Rightarrow 5x + 40 = 7x$$

$$\Rightarrow 5x - 7x = -40$$

[Transposing $7x$ to L.H.S. and 40 to R.H.S.]

$$\Rightarrow -2x = -40 \Rightarrow \frac{-2x}{-2} = \frac{-40}{-2}$$

[Dividing both sides by -2]

$$\Rightarrow x = 20$$

Hence the number of girls = 20 and number of boys = $20 + 8 = 28$.

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