DAY _____ ASSIGNMENT (GEN. ABILITY). DATE 28-8-24

Q. The sum of three consecutive prime numbers is 287. Find the square of the middle term.

- DATA:

Sum of three consecutive prime numbers = 287

Three consecutive prime numbers = ?

Square of its middle term = ?

- SOLUTION:

Find Middle term (or no. close to it).

$= \frac{\text{Sum of numbers}}{\text{Quantity of numbers}} = \frac{287}{3}$

$= \boxed{95.6}$ This, however, is not a prime no. So,

Choose the nearest prime to '95'.

Prime ... Prime

89 90 91 92 93 94 [95] 96 97

Hence, nearest Prime is, $\boxed{97}$ (Middle prime no.)

- Justifying the result,

$89 + 97 + 101 = 287$

$287 = 287$ (LHS = RHS)

Now,

Square of Middle term,

$= (97)^2$

$= \boxed{9409}$ Ans

So,

Three consecutive num. are = 89, 97, 101.

Square of Middle term = 9409.

DAY _____ DATE _____

Q. The sum of two numbers is 18 and the product of these two numbers is 56. Find the numbers.

- DATA:

Two numbers when added = 18

Two numbers when multiplied = 56

These Numbers = ?

- SOLUTION:

- Let these numbers be = x, y.
- Equating them:

$$x \times y = 56 \rightarrow (1)$$

$$\text{So, } y = \frac{56}{x} \rightarrow (i)$$

$$x + y = 18 \rightarrow (2)$$

- Put (i) in (2)

$$x + y = 18$$

$$x + \frac{56}{x} = 18 \quad \text{(LCM)}$$

$$\frac{x^2 + 56}{x} = 18$$

$$x^2 + 56 = 18x$$

$$x^2 - 18x + 56 = 0 \text{ (Quadratic Eq.)}$$

- Factors Finding.

- Method: 1

2	56
2	28
2	14
2	7
	1

$2 \times 2 \times 2 \times 7$

4, 14

Because of -ve sign in middle : $-4, -14$

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- Method: 2 (Quadratic formula)

$$\frac{x^2}{a} - \frac{18x}{b} + \frac{56}{c} = 0$$

One method is enough

$$\therefore \frac{-b \pm \sqrt{b^2-4ac}}{2a}, \text{ Put values}$$

$$\frac{-18 \pm \sqrt{(18)^2 - 4(1)(56)}}{2(1)}$$

$$\frac{-18 \pm \sqrt{324 - 224}}{2} \Rightarrow \frac{-18 \pm \sqrt{100}}{2}$$

$$\frac{-18+10}{2}, \quad \frac{-18-10}{2}$$

$$\frac{-8}{2}, \quad \frac{-28}{2}$$

$$-4, \quad -14$$

Now,

$$x^2 - 4x - 14x + 56 = 0$$

$$x(x-4) - 14(x-4) = 0$$

$$(x-14)(x-4) = 0$$

So, $x = 4$ or 14

Putting value of 'x' in (i)

$$y = \frac{56}{x} \Rightarrow y = \frac{56}{4} \Rightarrow y = 14$$

or $x = 14$

$$y = \frac{56}{14} = y = 4$$

- Concluding,

$(x = 4, y = 14)$

OR

$(x = 14, y = 4)$ Ans.

- Justifying,

$x + y = 18 \Rightarrow 4 + 14 \Rightarrow 18$

$x \times y = 56 \Rightarrow 4 \times 14 \Rightarrow 56$ (LHS = RHS)

Ans

Good attempt!!!