


Qn. 19

(Orukkam - 2017)


What will be the remainder on dividing a term of the sequence $3n + 7$ by its common difference.

 Remainder = 7

Qn. 20

(Orukkam - 2017)

Write the algebra of 10, 18, 26, Calculate the sum of first 30 terms.

 $x_n = 10 + (n - 1) 8$
 $= 10 + 8n - 8$
 $= 8n + 2$

$$x_1 = 10$$


$$x_{30} = 8 \times 30 + 2 = 242$$

$$\begin{aligned} \text{Sum of first 30 terms} &= \frac{30}{2} [x_1 + x_{30}] \\ &= 15 \times 252 = 3780 \end{aligned}$$

Qn. 21

(Orukkam - 2017)

The eighth term of an arithmetic sequence is 40. Calculate the sum of 15 terms.

 $x_8 = 40$

$$x_1 + 7d = 40$$

$$\text{Sum of first 15 terms} = \frac{15}{2} [2a + 14d]$$

$$= \frac{15}{2} \times 2 (a + 7d)$$

$$= 15 \times 40$$

$$= 600$$

Qn. 22

(Orukkam - 2017)

The first term of an arithmetic sequence is 10. 20th term 60. Calculate sum of first 20 terms.

Ans: $x_1 = 10$

$$x_{20} = 60$$

$$S_{20} = \frac{20}{2} [x_1 + x_{20}]$$

$$= 10 \times 70$$

$$= 700$$

Qn. 23

(Orukkam - 2017)

Write the algebra of 17, 20, 23, 26, ... Is 400 a term of this sequence. Can the square of a term belongs to his sequence.

Ans: $x_1 = 17$

$$d = 20 - 17 = 3$$

$$x_n = 17 + (n - 1) 3$$

$$= 17 + 3n - 3$$

$$= 3n + 14$$

400 is not a term of this sequence. The square of a term not belongs to this sequence.

Qn. 24

(Orukkam - 2017)

Write algebra of the sum of the sequence $6n + 5$.

Can the sum 2000? Why.

$$x_n = 6n + 5,$$

$$x_1 = 11$$

$$S_n = \frac{n}{2} [x_1 + x_n]$$

$$= \frac{n}{2} [11 + 6n + 5]$$

$$= \frac{11n}{2} + \frac{6n^2}{2} + \frac{5n}{2}$$

$$= 3n^2 + 8n$$

$$3n^2 + 8n = 2000$$

$$3n^2 + 8n - 2000 = 0$$

$$n = \frac{-8 \pm \sqrt{8^2 - 4 \times 3 \times 2000}}{2 \times 3}$$

$$= \frac{-8 \pm \sqrt{64 + 24000}}{6}$$

$$= \frac{-8 \pm \sqrt{24064}}{2}$$

n is not a counting number. So 2000 is not a sum of this sequence.

Qn. 25

(Orukkam - 2017)

If ten times tenth term of an arithmetic sequence is equal to fifteen times fifteenth term, find 25th term.

$$10^{\text{th}} \text{ term} = x_{10}$$

$$15^{\text{th}} \text{ term} = x_{15}$$

$$x_{15} = x_{10} + 5d$$

$$10 \times x_{10} = 15(x_{10} + 5d)$$

$$10x_{10} = 15x_{10} + 75d$$

$$-5x_{10} = 75d$$

$$x_{10} = \frac{75d}{-5}$$

$$= -15d$$

$$25^{\text{th}} \text{ term } x_{25} = x_{10} + 15d$$

$$= -15d + 15d = 0$$