


Qn. 12

(Question Pool - 2017)

$2x + 1, 4x - 1, 5x + 1, \dots$ are in an arithmetic sequence.

- a) Find x ?
- b) Write the algebraic expression of the sequence.
- c) Find the position of 195 in this sequence

 a) $2x + 1, 4x - 1, 5x + 1, \dots$ are in arithmetic sequence.

$$2(4x - 1) = 2x + 1 + 5x + 1$$

$$8x - 2 = 7x + 2$$

$$x = 4$$

b) Sequence = $9, 15, 21, \dots$

$$\text{Algebraic expression } x_n = 9 + (n - 1) 6$$

$$= 6n + 9 - 6 = 6n + 3$$

c) $6n + 3 = 195$

$$6n = 192$$

$$n = \frac{192}{6} = 32$$

32^{nd} term of the sequence is 195

Qn. 13

(Question Pool - 2017)

- a) Find the sum of first 25 counting numbers
- b) Find the sum of first 25 even numbers
- c) Find the sum of first 25 odd numbers

$$\begin{aligned} \text{a) } 1 + 2 + 3 + \dots + 25 &= \frac{25 \times 26}{2} \\ &= 25 \times 13 \\ &= 325 \end{aligned}$$

$$\begin{aligned} \text{b) } 2 + 4 + 6 + \dots + 50 &= 2(1 + 2 + 3 + \dots + 25) \\ &= 2 \times 325 \\ &= 650 \end{aligned}$$


$$\begin{aligned} \text{c) } 1 + 3 + 5 + \dots + 49 &= (2 - 1) + (4 - 1) + (6 - 1) + \\ &\quad (50 - 1) \\ &\quad 2 + 4 + 6 + \dots + 50 - \\ &\quad (1 + 1 + 1 + \dots + 1) \\ &= 2(1 + 2 + 3 + \dots + 25) - (1 \times 25) \\ &= 650 - 25 \\ &= 625 \end{aligned}$$

Qn. 14

(Question Pool - 2017)

Let the algebraic expression of an arithmetic sequence be $6n + 3$.

- a) Find the sum of first 20 terms of the sequence.
- b) Write the algebraic expression of the sum.

 a) $x_n = 6n + 3$

$$x_1 = 9$$

$$x_{20} = 6 \times 20 + 3 = 123$$

$$\text{Sum of first 20 terms} = \frac{20}{2} [9 + 123]$$

$$= 10 \times 132$$

$$= 1320$$

b) Sum of n terms $= \frac{6n(n+1)}{2} + 3n$

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


$$= 3n^2 + 6n$$

Qn. 15

(Question Pool - 2017)

Consider an arithmetic sequence whose sum of first 9 terms is 261 and sum of next 6 terms is 444.

- Find the first term and common difference
- Write the algebraic expression of the sequence
- Write the algebraic expression of the sum of the sequence

 a) Sum of first 9 terms = 216

$$\text{Middle term} = 5^{\text{th}} \text{ term} = x_5 = \frac{261}{9} = 29$$

$$\text{Sum of first 15 terms} = 261 + 444 = 705$$

$$\text{Middle term} = 8^{\text{th}} \text{ term} = x_8 = \frac{705}{15} = 47$$

$$x_5 + 3d = x_8$$

$$3d = x_8 - x_5$$

$$= 47 - 29 = 18$$

$$d = 6$$

$$x_1 = x_5 - 4d$$


$$= 29 - 24 = 5$$

b) Algebraic expression $x_n = 5 + (n-1)6$
 $= 6n - 1$

c) Algebraic expression
of the sum $= 3n^2 + 2n$

Qn. 16 (Orukkam - 2017)

Write the sequence of numbers which leaves the remainder 3 on dividing by 5 and 10.

 Sequence = 3, 13, 23, 33,


Qn. 17 (Orukkam - 2017)

Look at the sequence

$$1 + (1 + 5), 2 + (2 + 5), 3 + (3 + 5), \dots$$

a) Write next two terms.


b) Write its algebra.

 a) $1 + (1 + 5), 2 + (2 + 5), 3 + (3 + 5), 4 + (4 + 5),$
 $5 + (5 + 5)$

b) $x_n = 2n + 5$

Qn. 18 (Orukkam - 2017)

The difference between 12th term and 8th term of an arithmetic sequence is 20. Find the common difference.

 $x_{12} - x_8 = 20$

$$4d = 20$$

$$d = 5, \text{ Common difference} = 5$$