

**THIRUVANANTHAPURAM EDUCATIONAL DISTRICT**  
**MATHEMATICS – UNIT 1**  
**Standard X**

AK2MT  
101 E



**Answers**

1. (a)  $5^2 - 1 = 24$

(b)  $10^2 - 1 = 99$

(c) 99

2. (a)  $d = 77 - 70 = 7$

(b)  $20^{\text{th}} \text{ term} - 10^{\text{th}} \text{ term} = X_{20} - X_{10} = (20 - 10) \times d$   
 $= 10d = 10 \times 7 = 70$

(c) 70,140 or

77,154 or

84,168 etc

3.  $X_8 = 36, X_{10} = 28$

(a)  $d = \frac{X_{10} - X_8}{10-8} = \frac{28 - 36}{2} = \frac{-8}{2} = -4$

(b)  $X_8 = X_1 + 7d = 36$

$x_1 + 7(-4) = 36$

$x_1 - 28 = 36$

$x_1 = 36 + 28 = 64$

(c)  $X_n = dn + (f - d)$

$= -4n + (64 - (-4))$

$= -4n + (64 + 4)$

$= -4n + 68$

(d)  $X_{11} = X_{10} + d$

$= 28 + (-4)$

$= 28 - 4 = 24$

4. 4,9,14,19,.....

(a)  $d = 9 - 4 = 5$

(b) 24,29

(c)  $X_n = dn + (f - d)$

$= 5n + (4 - 5)$

$= 5n - 1$

5.  $X_n = 8n+3$

- (a)  $d = 8$
- (b)  $11, 19, 27\dots$
- (c) 3
- (d)  $n = \frac{X_n - X_1}{d} + 1$

$$\begin{aligned}&= \frac{395 - 203}{8} + 1 \\&= \frac{192}{8} + 1 \\&= 24 + 1 = 25\end{aligned}$$

6. (a)  $3 \times \text{middle term} = 36$

$$\text{middle term} = \frac{36}{3} = 12$$

(b)  $X_2 = 12$

$$d = 2$$

$$X_1 = 12 - 2 = 10$$

sequence is 10, 12, 14.....

7. (a)  $X_5 = \frac{45}{9} = 5$

(b) Sum of 10<sup>th</sup> to 18<sup>th</sup> terms =  $171 - 45 = 126$

(c)  $X_{14} = \frac{126}{9} = 14$

8. (a)  $f = 6$

$$d = 12 - 6 = 6$$

$$20^{\text{th}} \text{ term} = f + 19d$$

$$= 6 + 19 \times 6$$

$$= 6 + 114 = 120$$

(b) Sum =  $\frac{n}{2} \times (X_1 + X_2)$

$$= \frac{20}{2} \times (6 + 120)$$

$$= 10 \times 126 = 1260$$

(c) Sum =  $1260 + 20 = 1280$

9. (a)  $f = 3 \times 1^2 + 1 = 3 + 1 = 4$

$$\text{Sum of first 2 terms} = 3 \times 2^2 + 2 = 12 + 2 = 14$$

$$X_2 = 14 - 4 = 10$$

(b)  $d = 10 - 4 = 6$

(c) sequence is 4, 10, 16....



$$\begin{aligned}
 (d) X_n &= dn + (f-d) \\
 &= 6n + (4-6) \\
 &= 6n - 2
 \end{aligned}$$

10. (a)  $1+2+3+\dots+30$

$$\begin{aligned}
 &= n \frac{(n+1)}{2} = 30 \times \frac{31}{2} \\
 &= 465
 \end{aligned}$$



$$\begin{aligned}
 (b) 3+6+9+\dots+30 &= 3(1+2+3+\dots+10) \\
 &= 3 \times \frac{10 \times 11}{2} \\
 &= 165
 \end{aligned}$$

$$\begin{aligned}
 (c) 5+8+11+\dots+32 &= (3+2) + (6+2) + (9+2) + \dots + (30+2) \\
 &= 3+6+9+\dots+30 + (2+2+\dots+2) \\
 &= 165 + 2 \times 10 \\
 &= 165 + 20 = 185
 \end{aligned}$$

10 Times 2 added

$$\begin{aligned}
 (d) 2+5+8+\dots+29 &= 3-1 + 6-1 + 9-1 + \dots + 30-1 \\
 &= 3 + 6 + 9 + \dots + 30 - (1+1+1+\dots+1) \\
 &= 165 - (1 \times 10) = 165 - 10 = 155
 \end{aligned}$$

10 Times 1 added

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