

THIRUVANANTHAPURAM EDUCATIONAL DISTRICT
MATHEMATICS – UNIT 1
Standard X



AK2MT
101 E

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Answers

1. (a) $5^2 - 1 = 24$
(b) $10^2 - 1 = 99$
(c) 99

2. (a) $d = 77 - 70 = 7$
(b) 20th term - 10th 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, ...

(c) 3

(d) $n = \frac{X_n - X_1}{d} + 1$

$$= \frac{395 - 203}{8} + 1$$

$$= \frac{192}{8} + 1$$

$$= 24 + 1 = 25$$

6. (a) 3 x 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 10th to 18th 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, ...

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



$$\begin{aligned}
 10. \quad \text{(a) } 1+2+3+\dots+30 &= \frac{n(n+1)}{2} = \frac{30 \times 31}{2} \\
 &= 465
 \end{aligned}$$

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

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

10 Times 2 added

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

10 Times 1 added
