

Ex 4.1

Q1 (v) $2, \underset{+1}{3}, \underset{+3}{6}, \underset{+5}{11}, \underset{+7}{18}, \underset{+9}{27}, \underset{+11}{38}, \underset{+13}{51}, \underset{+15}{66}$
(x) $2, \underset{+4}{6}, \underset{+6}{12}, \underset{+8}{20}, \underset{+10}{30}, \underset{+12}{42}, \underset{+14}{56}$
(xv) $\frac{1}{2}, \frac{1}{6}, \frac{1}{12}, \frac{1}{20}, \frac{1}{30}, \frac{1}{42}, \frac{1}{56}$

Q2 (iii) $T_n = n^2 - 2n$
 $T_1 = (1)^2 - 2(1) = -1$
 $T_2 = (2)^2 - 2(2) = 0$
 $T_3 = (3)^2 - 2(3) = 3$
 $T_4 = (4)^2 - 2(4) = 8$
-1, 0, 3, 8

(vi) $T_n = \frac{n}{n+2}$
 $T_1 = \frac{1}{1+2} = \frac{1}{3}$
 $T_2 = \frac{2}{2+2} = \frac{2}{4} = \frac{1}{2}$
 $T_3 = \frac{3}{3+2} = \frac{3}{5}$
 $T_4 = \frac{4}{4+2} = \frac{4}{6} = \frac{2}{3}$
 $\frac{1}{3}, \frac{1}{2}, \frac{3}{5}, \frac{2}{3}$

(ix) $T_n = n \cdot 2^n$
 $T_1 = 1 \cdot 2^1 = 2$
 $T_2 = 2 \cdot 2^2 = 8$
 $T_3 = 3 \cdot 2^3 = 24$
 $T_4 = 4 \cdot 2^4 = 64$

Q3

5, 9, 13, 17,

$5^{\text{th}} \text{ min} = 21 \text{ cm}$

Q4

Week 1	→	1	(+1)
Week 2	→	2	(+2)
Week 3	→	4	(+3)
Week 4	→	7	(+4)
Week 5	→	11	(+5)
Week 6	→	16	
		22	
		29	

= The 8th Week.

Q6

$$T_n = (-2)^{n+1}$$

$$T_1 = (-2)^{1+1} = (-2)^2 = 4$$

$$T_6 = (-2)^{6+1} = (-2)^7 = -128$$

$$T_{11} = (-2)^{11+1} = (-2)^{12} = 4096$$

Q8

(i) $T_n = 4n - 2$: 2, 6, 10, 14 = C

(ii) $T_n = 2n^2$: 2, 8, 18, 32 = B

(iii) $T_n = n(n+1)$: 2, 6, 12, 20 = D

(iv) $T_n = 2^n$: 2, 4, 8, 16 = A

Q9 (i) 5, 6, 7, 8, 9 $\rightarrow T_n = n+4$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $5+0 \quad 5+1 \quad 5+2 \quad 5+3 \quad 5+4$
 $5+(n-1)$

(ii) 2, 4, 6, 8, 10 $T_n = 2n$
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$
 $1 \times 2 \quad 2 \times 2 \quad 3 \times 2 \quad 4 \times 2 \quad 5 \times 2$

(iii) 2, 5, 8, 11, 14 $T_n = 3n-1$
 $2, \quad 2+3, \quad 2+6, \quad 2+9, \quad 2+12$
 $2+(n-1), \quad 2+3(n-1), \quad 2+(3n-1),$
 $2+3n-3$

(iv) 1, 4, 9, 16, 25 $T_n = n^2$
 $1^2, \quad 2^2, \quad 3^2, \quad 4^2, \quad 5^2$

(v) 2, 5, 10, 17, 25 $\Rightarrow T_n = n^2 + 1$
 same as part (iv) plus 1

Q10 0, 1, 1, 2, 3, 5, 8, 13, 21

add the 2 previous terms

\Rightarrow Next 4 Terms are 34, 55, 89, 144