

1.1 pg 16

5a) $t_n = -4 + 6(n-1)$
 $170 = -4 + 6(n-1)$
 $174 = 6(n-1)$
 $29 = n-1$
 $n = 30$

b) $t_n = \frac{11}{5} - \frac{1}{5}(n-1)$
 $-14 = \frac{11}{5} - \frac{1}{5}(n-1)$
 $-\frac{81}{5} = -\frac{1}{5}(n-1)$
 $81 = n-1$
 $n = 82$

c) $t_n = -3 + 4(n-1)$
 $97 = -3 + 4(n-1)$
 $100 = 4(n-1)$
 $25 = n-1$
 $n = 26$

d) $t_n = 14 - 1.5(n-1)$
 $-10 = 14 - 1.5(n-1)$
 $-24 = -1.5(n-1)$
 $16 = n-1$
 $n = 17$

6 a) $t_1 = 6$ $3d = 27 \therefore d = 9$ $6, 15, 24, 33, \dots$
 $t_4 = 33$

b) $t_1 = 8$ $3d = 33 \therefore d = 11$ $8, 19, 30, 41, \dots$
 $t_4 = 41$

c) $t_1 = 42$ $3d = -15 \therefore d = -5$ $42, 37, 32, 27, \dots$
 $t_4 = 27$

7a) $5, 8, 11, 14, 17$

b) $t_n = 5 + 3(n-1)$ or $t_n = 3n + 2$

c) $t_{50} = 152$ $t_{200} = 602$

d) slope = 3 $d = 3$

e) $y_{int} = 2$ $t_n = 3n + 2$

8 a) $34 = 6 + (n-1)4$
 $28 = 4(n-1)$
 $7 = n-1$
 $n = 8$
✓

b) $34 = 3n-1$
 $35 = 3n$
 $11\frac{2}{3} = n$
x

there is t_{11}
and t_{12} but
not $t_{11\frac{2}{3}}$

c) $34 = 12 + 5.5(n-1)$
 $22 = 5.5(n-1)$
 $4 = (n-1)$
 $n = 5$
✓

$$8d) t_n = 3 + 4(n-1)$$

$$34 = 3 + 4(n-1)$$

$$31 = 4(n-1)$$

$$\frac{31}{4} = n-1$$

$$\frac{35}{4} = n \text{ (not possible, } n \in \mathbb{N})$$

$$9. t_n = t_1 + (n-1)d$$

$$110 = t_1 + (16-1)7$$

$$110 = t_1 + 105$$

$$t_1 = 5$$

$$10. t_n = 5y - 3y(n-1)$$

$$\text{or } t_n = 8y - 3yn$$

$$t_{15} = 8y - 45y$$

$$t_{15} = -37y$$

$$11. 5x+2, 7x-4, 10x+6$$

$$\begin{array}{cc} \curvearrowright & \curvearrowright \\ 2x-6 & 3x+10 \end{array}$$

$$3x+10 = 2x-6$$

$$x = -16$$

$$*t_3 - t_2 = t_2 - t_1$$

$$-78, -116, -154$$

$$12. x, y, z$$

$$\curvearrowright \\ y-x$$

$$z = y + (y-x)$$

$$z = 2y - x$$

$$13. \text{ ~~10, 16, 22, 28, ...~~ }$$

$$10, 16, 22, 28, \dots$$

$$t_n = 10 + 6(n-1)$$

$$t_n \text{ (perimeter)} = 6n + 4$$

$$b) t_9 = 58$$

$$c) 76 = 6n + 4$$

$$72 = 6n$$

$$n = 12$$

Figure 12

14 a) 0, 8, 16, 24, ... (tee off times)

$$c) \begin{aligned} t_n &= 0 + 8(n-1) \\ t_n &= 8n - 8 \end{aligned} \quad (\text{general rule})$$

b) 1 hour = 60 min

$$60 = 8n - 8$$

$$68 = 8n$$

$n = 8.5$ 8 full groups is 32 players.

$$d) \frac{132}{4} = 33 \text{ groups} \quad \begin{aligned} t_n &= 8(33) - 8 \\ t_n &= 256 \\ &= 4 \text{ hr } 16 \text{ min} \\ &\text{is } 12:16 \text{ pm} \end{aligned}$$

15. total Area : $22 \times 27 = 594$
 $\frac{-48}{546}$ (Day 1)
 546 remains

$546 \div 26$ remaining days
 21 sq in per day

16. $t_6 = 11$ $t_{15} = 29$ $9d = 18$
 $d = 2$

$11 = t_1 + 5d$ $29 = t_1 + 14d$ or $t_n = 1 + 2(n-1)$ or $2n-1$
 $29 = t_1 + 28$
 $t_1 = 1$

b) $100 = 2n-1$
 $101 = 2n$
 $n = 50.5$ (the 51st day)

17 a)

C	1	2	3	b) $t_n = 4 + 2(n-1)$
H	4	6	8	or $t_n = 2n + 2$ $H = 2C + 2$

c) $202 = 2C + 2$
 $200 = 2C$
 100 Carbon atoms.

18 28: $t_n = 28n$
 $1000 = 28n$
 $n = 35.7$
 $\therefore 35$ terms

$t_1 = 28$ $d = 28$ $t_n = 28 + 28(n-1)$ or $t_n = 28n$
 last term $t_{35} = 980$

7: $t_n = 7n$
 $500 = 7n$ $600 = 7n$
 $n = 71.4$ $n = 85.7$
 $\therefore t_{72} = 504$ $\therefore t_{85} = 595$

$t_1 = 504$ $d = 7$ $t_n = 504 + 7(n-1)$
 or $7n + 497$
 14 terms $t_{14} = 595$

$$22 \quad \begin{array}{cc} 1986 & 1657 \\ 2007 & 1048 \end{array}$$

$$21d = -609 \\ d = -29 \text{ beekroep/yr}$$

$$23. \quad \begin{array}{l} t_1 = 3.8 \\ t_{20} = 113.2 \end{array}$$

$$19d = 109.4 \\ d = 5.76 \text{ (increasing by 5.76 million carats/yr)}$$

$$24 \quad 50, 70, 90, \dots \quad t_n = 50 + 20(n-1) \quad \text{or} \quad t_n = 20n + 30$$

$$t_{12} = 20(12) + 30$$

$$t_{12} = 270 \text{ (radius)}$$

$$C = 2\pi r$$

$$C = 1696.5 \text{ m}$$

$$25a) \quad 13:54, 13:59, 14:04, 14:09, 14:14, \dots \quad t_1 = 13:54 \quad d = 0:05$$

$$b) \quad t_n = 13:54 + 0:05(n-1) \quad \text{or} \quad 0:05n + 13:49$$

c) assume arithmetic

$$d) \quad n = 24 \quad \begin{array}{l} 0:05(24) + 13:49 \\ 120 \text{ ~~seconds~~ } + 13:49 \\ 2 \text{ min} + 13:49 \\ 15:49 \end{array}$$