1.4 WS

1.

a) $d = 10$

b) 40, 50, 60

c) $a_1 = 10$

$a_n = a_{n-1} + 10$

d) $a_n = 10 + 10(n-1)$

2.

a) $d = 4$

b) 19, 23, 27

c) $a_1 = 3$

$a_n = a_{n-1} + 4$

d) $a_n = 3 + 4(n-1)$

3.

a) $d = -11$

b) 64, 53, 42

c) $a_1 = 97$

$a_n = a_{n-1} - 11$

d) $a_n = 97 - 11(n-1)$

4)

a) $d = -6$

b) $-24, -30, -36$

c) $a_1 = -6$

$a_n = a_{n-1} - 6$

d) $a_n = -6 - 6(n-1)$

5) NO, $7+3 \neq 11$

6) $a_n = 2 + 4(n-1)$

7) $a_1 = 0$

$a_n = a_{n-1} + \frac{1}{2}$

8) $a_n = -4 - 5(n-1)$

9) $a_1 = -2$

$a_n = a_{n-1} + 7$

10) $a_1 = 7$

$a_n = a_{n-1} - 2$

11) $a_1 = 2$ $\quad a_5 = 3.2$

a) $a_n = 2 + d(n-1)$

$3.2 = 2 + d(5-1)$

$1.2 = 4d$

$.3 = d$

$\boxed{a_n = 2 + .3(n-1)}$

b) $13.1 = 2 + .3(n-1)$

$37 = n-1$

$\boxed{38 = n}$

12) $S_9 = \dfrac{9(2+26)}{2}$

$= \boxed{126}$

$2 + 3(n-1)$

$2 + 3(8)$

26

13) $S_{20} = \dfrac{20(3+79)}{2}$

$= \boxed{820}$

$3 + 4(20-1)$

14) $S_{33} = \dfrac{33(5+101)}{2}$

$\boxed{1749}$

$5 + 3(n-1) = 101$

$3(n-1) = 96$

$n = 33$

15) $S_{40} = \dfrac{40\,(100 + {}^{-}173)}{2}$

$100 - 7\,(40-1)$

-173

$\boxed{= -1460}$

16) $S_{121} = \dfrac{121\,(50 + {}^{-}10)}{2}$

$50 - \frac{1}{2}(n-1) = -10$

$-\frac{1}{2}(n-1) = -60$

$n-1 = 120$

$n = 121$

$= \boxed{2420}$

17) $S_{12} = \dfrac{12\,(-2 + 42)}{2}$

$-2 + 4(12-1)$

42

$= \boxed{240}$

18) $[3(1)-5] + [3(2)-5] + [3(3)-5] + [3(4)-5]$

$-2 + 1 + 4 + 7$

$\boxed{10}$

19) $[5(2)+3] + [5(3)+3] + [5(4)+3] + [5(5)+3]$

$13 + 18 + 23 + 28$

$\boxed{82}$

20) $\sum_{n=1}^{20} 3 + 4(n-1)$

21) $\sum_{n=1}^{40} 100 - 7(n-1)$

22) $S_4 = \frac{4(-4-7)}{2}$

$= \boxed{-22}$

23) $\sum_{n=1}^{4} = \frac{4(2.5 + 8.5)}{2}$

$= \boxed{22}$

24) $S_{20} = \frac{20(2 + 23/2)}{2}$

$= \boxed{135}$

25) $S_7 = \frac{7(4+53)}{2}$

$\boxed{199.5}$

26) $172 = \frac{n(4+39)}{2}$

$\boxed{n=8}$

27) $177.5 = \frac{10(2+u_{10})}{2}$

$\boxed{u_{10} = 33.5}$

28) $u_n = 22 - 2(n-1)$

a) $u_7 = 22 - 2(7-1)$

$u_7 = 22 - 12$

$\boxed{u_7 = 10}$

b) $S_7 = \frac{7(22+10)}{2}$

$= \boxed{112}$