2, 4, 6, 8, . . .

1, 4, 7, 10, . . .

n^{th} term of an Arithmetic Sequence

$$a_n = a_1 + (n-1)d$$

$a_1 = 1^{st}$ term

n = number of the term

d = common difference

① 106, 111, 116, . . .

common difference (d)

$111 - 106 = 5$ $\quad d = 5$

121, 126, 131, 136

② $-28, -31, -34, \ldots$

$d = -3$

$-37, -40, -43, -46$

③ 207, 194, 181, . . .

$d = -13$

168, 155, 142, 129

④ $a_1 = 101, d = 9$

101, 110, 119, 128, 137

(5) $a_1 = -60, d = 4$

$-60, -56, -52, -48, -44$

⑥ $a_1 = 210, d = -40$

210, 170, 130, 90, 50

7) $a_1 = 4, d = 6, n = 14$

$a_n = a_1 + (n-1)d$

$a_{14} = 4 + (14-1)6$

$a_{14} = 4 + (13)(6)$

$a_{14} = 4 + 78$

$a_{14} = 82$

(8) $a_1 = -4, d = -2, n = 12$

$a_n = a_1 + (n-1)d$

$a_{12} = -4 + (12-1)(-2)$

$a_{12} = -4 + (11)(-2)$

$a_{12} = -4 - 22$

$a_{12} = -26$

⑨ $a_1 = 80, d = -8, n = 21$

$a_{21} = 80 + (21-1)(-8)$

$a_{21} = 80 + (20)(-8)$

$a_{21} = 80 + -160$

$a_{21} = -80$

(10) a_{10} For $0, -3, -6, -9 \ldots$

$n = 10$

$d = -3$

$a_1 = 0$

$a_{10} = 0 + (10-1)(-3)$

$a_{10} = 0 + (9)(-3)$

$a_{10} = -27$

(11) $18, 25, 32, 39 \ldots$

$a_1 = 18$

$d = 7$

$a_n = a_1 + (n-1)d$

$= 18 + (n-1)7$

$= 18 + 7n - 7$

$= 7n + 11$

(18) $-110, -85, -60, -35 \ldots$

$a_1 = -110$

$d = 25$

$a_n = a_1 + (n-1)d$

$= -110 + (n-1)(25)$

$= -110 + 25n - 25$

$= 25n - 135$

166 is the ____th term of

30, 34, 38, . . .

$a_1 = 30$

$d = 4$

$a_n = 166$

$a_n = a_1 + (n-1)d$

$166 = 30 + (n-1)(4)$

$166 = 30 + 4n - 4$

$166 = 26 + 4n$

$140 = 4n$

$35 = n$

$5, \underset{3}{?}, \underset{1}{?}, \underset{-1}{?}, -3$

$a_1 = 5$

$a_5 = -3$

$n = 5$

$d = ?$

$a_n = a_1 + (n-1)d$

$-3 = 5 + (5-1)d$

$-3 = 5 + 4d$

$-5 \quad -5$

$-8 = 4d$

$\frac{-8}{4} = \frac{4d}{4}$

$-2 = d$