SEQUENCES CH 1

- a sequence is a list of numbers, often with a pattern

For example:

① 3, 7, 11, 15, 19, 23 ... (+4 +4 +4)
- Arithmetic Sequence → adding the same #

② 20, 18, 16, 14, 12, 10
- Arithmetic

③ 2, 4, 8, 16, 32, 64, ... (×2 ×2 ×2)
- Geometric Sequence → mult by the same number

④ 1, 1, 2, 3, 5, 8, 13 (+ + =)
Fibonacci's Sequence

⑤ 1, 1, 2, 1, 1, 3, 1, 1, 4, 1, 1, 5 Barker's Sequ!

Arithmetic Sequences

4, 7, 10, 13, 16, ... term n → t_n

term 1 → $a = t_1$

term 4 → t_4

terms: $t_1, t_2, t_3, \ldots t_n$

common difference: d (# that we add each time)

In our example, the common difference was 3

Ex: $-3, -1, 1, 3, 5, \_\_$

$t_1 = -3$

$d = 2$

$t_1 = -3$

$t_2 = -3 + 1 \cdot 2 = -1$

$t_3 = -3 + 2 \cdot 2 = 1$

$t_4 = -3 + 3 \cdot 2 = 3$

$t_5 = -3 + 4 \cdot 2 = 5$

$t_6 = -3 + 5 \cdot 2 = 7$

$\vdots$

$t_{25} = -3 + 24 \cdot 2 = 45$

$\vdots$

$t_{700} = -3 + 699 \cdot 2 = 1395$ (700 − 1)

$$t_n = t_1 + (n-1) \cdot d$$

$t_n = t_1 + (n-1) \cdot d$

$t_1 = 7$

$d = 2$

$t_{37} = 7 + (37-1)(2)$

$t_{37} =$

$t_{37} = 7 + 36 \cdot 2$

$t_{37} = 79$

The 'n' must be a number from the set of Natural numbers

$n \in N$