LESSON #1: WHAT IS SUMMATION (SIGMA NOTATION)?

Do Now:

1. Find the sum: $1 + 2 + 3 + 4 + 5 =$

- **SUMMATION NOTATION** is when you use the sigma symbol "∑" to write a sum rather than a bunch of + symbols.
- It is basically a convenient form of shorthand.
- The Do Now could be represented in summation notation as:

$$\sum_{n=1}^{5} n$$

- This reads: "the sum over n from one to five of n"

- As another example, we have "the sum over I from one to seven of i²"

$$\sum_{i=1}^{7} i^2 = 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 + 7^2 = 140$$

- You try:

$$\sum_{n=0}^{6} 2n =$$

1) $\displaystyle\sum_{i=0}^{4} i$

2) $\displaystyle\sum_{k=2}^{7} k$

3) $\displaystyle\sum_{j=3}^{6} j^2$

4) $\displaystyle\sum_{k=0}^{5} 3^k$

5) $\displaystyle\sum_{k=1}^{5} 3k$

6) $3\displaystyle\sum_{k=1}^{5} k$

7) $4\displaystyle\sum_{i=4}^{7} (i+2)$

8) $\displaystyle\sum_{n=0}^{3} \frac{1}{(n+1)^2}$

Let's Practice:

1) $\displaystyle\sum_{k=0}^{6} 2k$	2) $\displaystyle\sum_{i=1}^{5} (i+1)$
3) $\displaystyle\sum_{j=0}^{4} j^2$	4) $\displaystyle\sum_{j=1}^{3} j^3$
5) $\displaystyle\sum_{n=2}^{5} (n-2)^2$	6) $\displaystyle\sum_{n=0}^{3} 2^n$
7) $\displaystyle\sum_{n=1}^{4} \frac{1}{n}$	8) $\displaystyle\sum_{k=0}^{5} (10-k)$
9) $\displaystyle\sum_{i=3}^{7} (2-i)^2$	10) $5\displaystyle\sum_{n=1}^{4} (n-1)$
11) $3\displaystyle\sum_{i=1}^{5} (i-1)$	12) $5\displaystyle\sum_{n=4}^{6} (n+1)$

EXIT TICKET

1) $\displaystyle\sum_{j=1}^{6} j$	2) $\displaystyle\sum_{j=3}^{8} j^{2}$
3) $3\displaystyle\sum_{i=7}^{12} (i - 5)$	4) $4\displaystyle\sum_{n=1}^{5} (n - 3)$