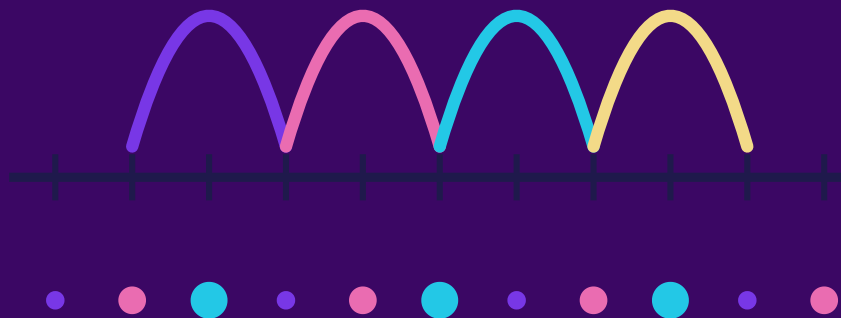


Arithmetic Progressions

 **n th term**

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

Sum of first n terms

$$S_n = \frac{n}{2} [2a + (n - 1)d] = \frac{n}{2} (a + l)$$

From S_n

$$a_n = S_n - S_{n-1}$$

 n th term from the end (last term l)

$$l - (n - 1)d$$

Three terms in AP; middle term

$$a - d, a, a + d; \quad b = \frac{a+c}{2}$$

Natural numbers

$$1 + 2 + \cdots + n = \frac{n(n+1)}{2}$$