Area

Summation Notation

$$\sum_{i=1}^{n} a_i$$

upper bound

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Lower Bound

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

$$\sum_{i=1}^{n} ka_i = k\sum_{i=1}^{n} a_i$$

$$\sum_{i=1}^{n} a_i \pm b_i = \sum_{i=1}^{n} a_i \pm \sum_{i=1}^{n} b_i$$

Summation Formulas

1. $\sum_{i=1}^{n} c = cn$, c is a constant

2. $\sum_{i=1}^{n} i = \frac{n(n+1)}{2}$

3. $\sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}$

4. $\sum_{i=1}^{n} i^3 = \frac{n^2(n+1)^2}{4}$

$$\sum_{i=1}^{n} \frac{i+1}{n^2} \quad for\ n = 10, 100, and\ 1000$$

$$\frac{1}{n^2} \sum_{1}^{n} i + 1$$

$$\frac{1}{n^2}\left[\sum_{i=1}^{n} i + \sum_{i=1}^{n} 1\right]$$

$$\frac{1}{n^2}\left[\frac{n(n+1)}{2} + n\right]$$

$$\frac{1}{n^2}\left[\frac{n(n+1)}{2} + \frac{2n}{2}\right]$$

$$\frac{1}{n^2}\left[\frac{n^2+3n}{2}\right]$$

$$\boxed{\frac{n+3}{2n}}$$

n=10	n=100	n=1000	n:10,000
0.65	0.515	.5015	.50015