Averages

Basic

Represent a particular value

$$\text{Avg}\ (A) = \frac{\text{Sum of obs.}\ (S)}{\text{No. of obs.}\ (N)}$$

$$\text{Sum of obs.} = \text{Avg} \times \text{No. of obs.}$$

$$\text{No. of obs.} = \frac{\text{Sum of obs.}}{\text{Avg}}$$

Auto Drivers

Day 1 → 100 ✓

\+

2 → 200 ✓

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3 → 300 ✓

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4 → 400 ✓

4 days → 1000

Avg = 250

250 ✓

Averages

→ Sum of 'n' natural no's = $\frac{n(n+1)}{2}$

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

→ Sum of squares of 'n' natural no's = $\frac{n(n+1)(2n+1)}{6}$

$$\text{Avg} = \frac{\frac{n(n+1)(2n+1)}{6}}{n} = \frac{(n+1)(2n+1)}{6}$$

Averages

→ Sum of cubes of 'n' natural no's

$$= \frac{n^2(n+1)^2}{4} \Big/ \left[\frac{n(n+1)}{2}\right]^2$$

$$\text{Avg} = \frac{\frac{n^2(n+1)^2}{4}}{n} = \frac{n(n+1)^2}{4}$$

Averages

→ Avg of odd no's from 1 to n

$$Avg = \frac{\text{Last odd no.} + 1}{2}$$

→ Avg of even no's from 1 to n

$$Avg = \frac{\text{last even no.} + 2}{2}$$

1 to 10

1, 3, 5, 7, 9

$\frac{9+1}{2} = 5$

2, 4, 6, 8, 10

$\frac{10+2}{2} = 6$

Averages

→ Avg of 1st 'n' consecutive odd no's is n

1, 3, 5, 7, 9 → 5

1, 3, 5, 7 → 4

1, 3, 5 → 3

→ Avg of 1st 'n' consecutive even no's is n+1 ✓

2, 4, 6 → 4

2, 4, 6, 8 → 5

2, 4, 6, 8, 10 → 6