Data set - 12 test scores (out of 100)

85, 92, 76, 88, 90, 95, 68, 82, 91, 87, 78, 94

1) Mean (Average)

$$\text{Mean} = \frac{\text{Sum of all scores}}{\text{number of scores.}}$$

$$= \frac{85+92+76+88+90+95+68+82+91+87+78+94}{12}$$

$$= \frac{1026}{12} = 85.5$$

Mean = 85.5

2) Median (middle value)

Step 1: Sort in ascending order

68, 76, 78, 82, 85, 87, 88, 90, 91, 92, 94, 95

Step 2: middle value.

median = avg of 6th and 7th numbers

6th = 87 , 7th = 88

$$\text{Median} = \frac{87+88}{2} = \frac{175}{2} = 87.5$$

Median = 87.5

3. Variance

$$S^2 = \frac{\Sigma (x_i - \bar{x})^2}{n-1}$$

Step 1: Find deviations from mean (85.5)

Score x_i	$x_i - \bar{x}$	$(x_i - \bar{x})^2$
68	$68 - 85.5 = -17.5$	306.25
76	-9.5	90.25
78	-7.5	56.25
82	-3.5	12.25
85	-0.5	0.25
87	1.5	2.25
88	2.5	6.25
90	4.5	20.25
91	5.5	30.25
92	6.5	42.25
94	8.5	72.25
95	9.5	90.25
	Total	729

$$\text{Variance} = \frac{729}{12-1} = \frac{729}{11} \simeq 66.27$$

Variance = 66.27

4. Standard Deviation

$$SD = \sqrt{\text{variance}} = \sqrt{66.27} \simeq 8.14$$

$SD = 8.14$

5. probability of a score >90

Step1 : count scores $>90 \Rightarrow 4$ scores

$$P(x>90) = \frac{4}{12} = \frac{1}{3} \simeq 0.333$$

Probability $\simeq 0.33\ (33\%)$