Case study.
David, a statistician at the United States Air Force, has collected the data on pilots' satisfaction with aviation training. With the data collected, his research team would like to evaluate the current training system and know how to improve it in the future. See the collected data following:

25, 35, 18, 20, 15, 5, 25, 10, 22, 25

- What are the mean, the median, and the mode?

Mean = $\bar{X} = \frac{\Sigma_{i=1}^{10}}{10} = \frac{200}{10} = 20$

To get the median, first order values in an ascending order, which becomes 5, 10, 15, 18, 20, 22, 25, 25, 25, 35.

Median = $\frac{10+1}{2}$th value=5.5th value=The mean between the 5th and the 6th values=$\frac{20+22}{2} = 21$

Mode = The most frequent value = 25

- What are the variance and the standard deviation?

To calculate the variance, and the standard deviations, I recommend you to make an organized table:

X_i	25	35	18	20	15	5	25	10	22	25
$\bar{X}$	20	20	20	20	20	20	20	20	20	20
$X_i - \bar{X}$	5	15	-2	0	-5	-15	5	-10	2	5
$(X_i - \bar{X})^2$	25	225	4	0	25	225	25	100	4	25

Therefore, the sum of squares = $\Sigma_{i=1}^{10}(X_i - \bar{X})^2$ = 25 + 225 + 4 + 0 + ⋯ + 25 + 100 + 4 + 25 = 658

The variance = $s_X^2 = \frac{\Sigma_{i=1}^{10}(X_i - \bar{X})^2}{10-1} = \frac{658}{9} = 73.11$

The standard deviation = $s_X = \sqrt{s_X^2} = \sqrt{73.11} = 8.55$

- What is the relative frequency of the score 25?

For this question and the next one, I recommend you to make a frequency table:

Scores	Frequency
5	1
10	1
15	1
18	1
20	1
22	1

Scores	Frequency
25	3
35	1

The relative frequency fo the score 25 = $\frac{3}{1+1+1+1+1+1+3+1} = \frac{3}{10} = 0.3 = 30\,\%$

- What is the cumulative frequency of the score equal to 18 or lower?

The cumulative frequency of the score equal to 18 or lower = 1 + 1 + 1 + 1 = 4