

- Five-figure summary
- Understanding distributions

Central tendency: Types of averages

- Mean:
 - Total of observations divided by total number of observations
- Median:
 - The middle observation
- Mode:
 - The most frequent observation

Practice: Types of averages

What is the most appropriate measure of central tendency for each situation?

- Ideal temperature for Spring
- Fruit for the class
- Confidence in cooking

Five-figure summary

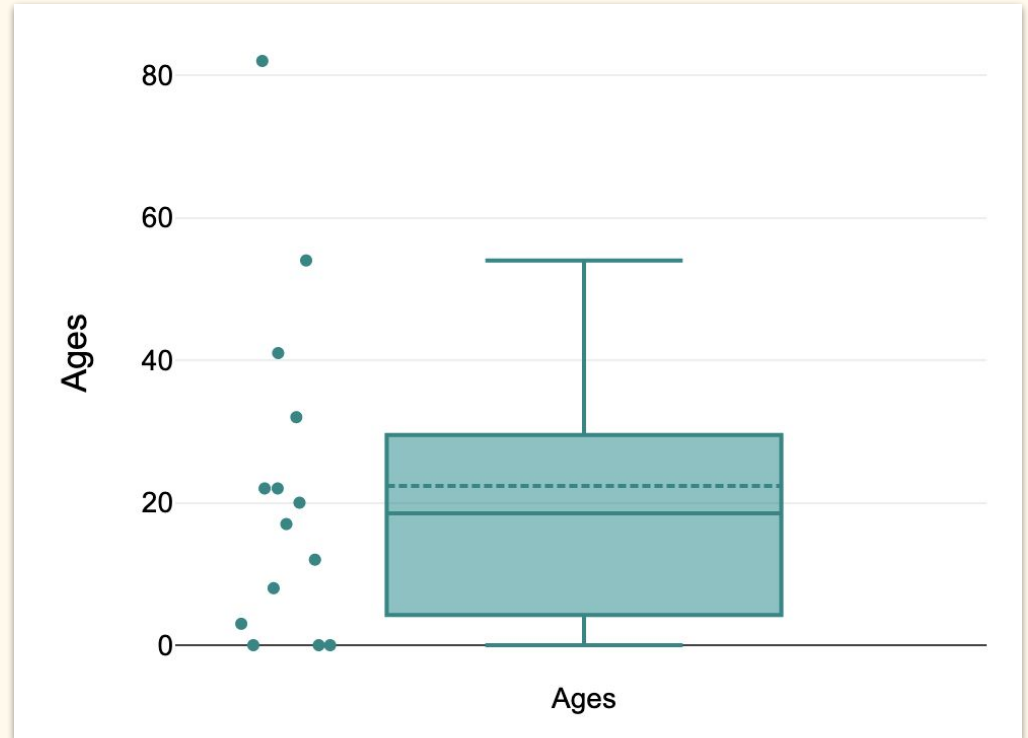
- Median
- Lower quartile
 - Marks the value that represents 25% of the data
- Upper quartile
 - Marks the value that represents 75% of the data
- Minimum observation
- Maximum observation

*mean is occasionally used and presented in a five-figure summary

Presenting the five figure summary

Ages:

8, 20, 82, 3, 17, 0, 0,
22, 12, 22, 54, 0, 32, 41



Practice: Five figure summary

Let's plot our class' ideal temperature for spring!

You will need to calculate the:

- Median and mean
- Upper quartile
- Lower quartile
- Minimum observation
- Maximum observation

Practice: Five figure summary

60	65	Around 70 degrees	maybe around the 60s, 74 the highest	65
70 degrees	75 Fahrenheit	67	65 degrees!	22
65-70 Degrees	50-70 degrees	75 degree Fahrenheit	70 degrees	60 degrees Fahrenheit
60* F	I like it cool	65	70	62
70 degrees	65 degrees F	70	Between 57-62	67

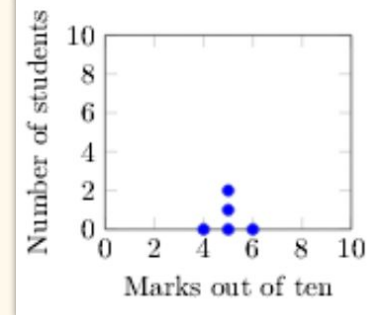
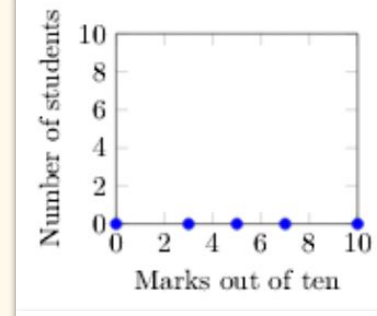
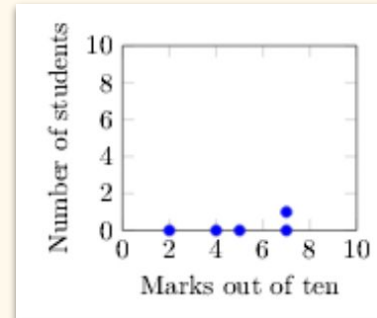
Practice: Five figure summary

67	74	70	70	55-60 with a nice breeze
65	35	20	65 degrees	65
65-70	72	70	70 winds	70
50	60	50 degrees	70 degrees	70

Spread and Distribution

Purpose of standard deviation

Subject	Marks out of ten	Mean Average	Median average
French	2, 4, 5, 7, 7	5	5
Religious Studies	0, 5, 10, 7, 3	5	5
History	5, 5, 4, 6, 5	5	5



Calculating the standard deviation (population)

$$\sigma = \sqrt{\frac{\sum_{i=1}^n (x_i - \mu)^2}{n}}$$

Calculating the standard deviation

- Calculate the mean
- Calculate the deviation
 - Difference between the observation and the mean
- Calculate the sum of the squared deviation

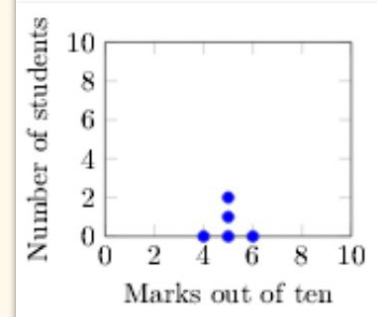
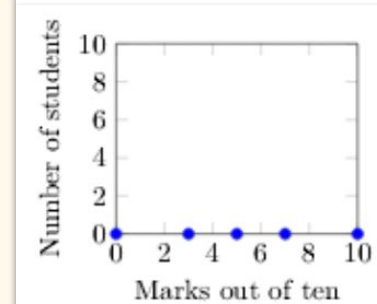
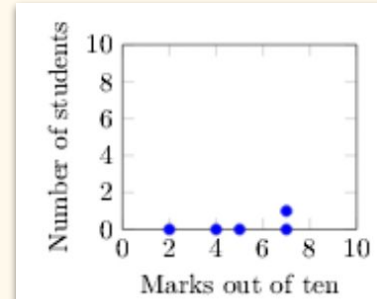
Calculating the standard deviation

- Calculate the variance
 - How spread out is the data
- Calculate the standard deviation
 - Square root of variance

$$\text{Variance} = \frac{\text{sum of the squared deviations}}{\text{number of observations}}$$

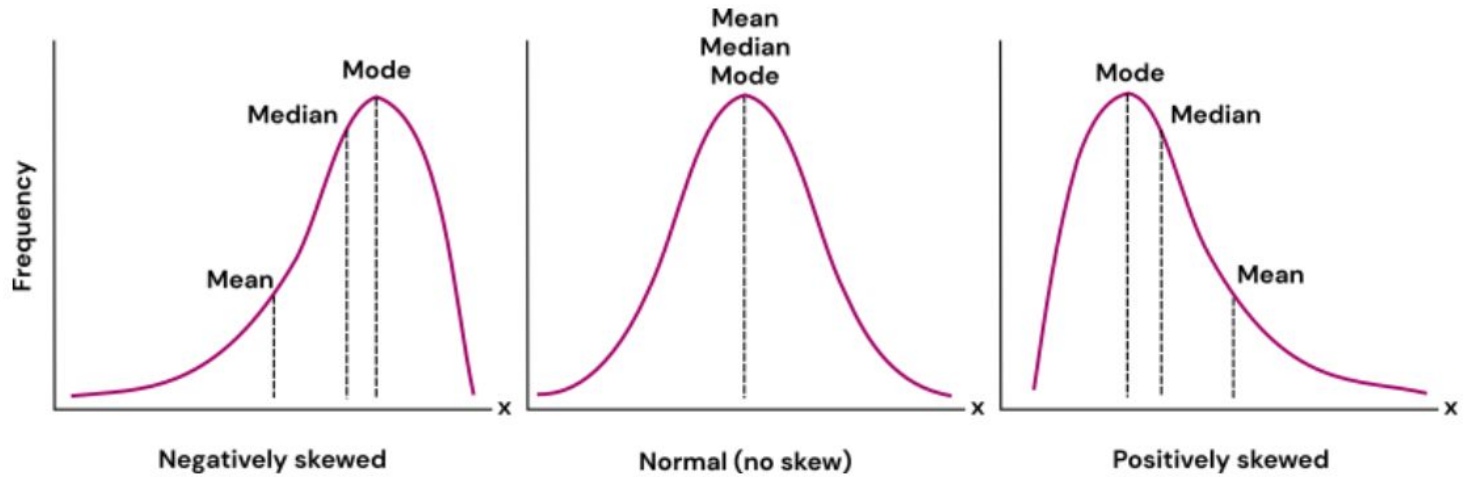
Calculate the standard deviation

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Understanding skewness and kurtosis

Skewness



Distribution of skew and kurtosis

