

شكراً لتحميلك هذا الملف من موقع المناهج الإماراتية



شرح الدرس الثالث data population Analyzing من الوحدة الثامنة

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تاريخ نشر الملف على موقع المناهج: 2023-10-27 05:55:42 | اسم المدرس: محمد زياد

التواصل الاجتماعي بحسب الصف الحادي عشر المتقدم



روابط مواد الصف الحادي عشر المتقدم على تلغرام

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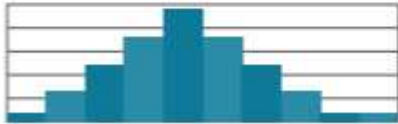
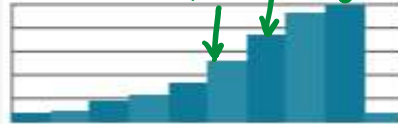

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المزيد من الملفات بحسب الصف الحادي عشر المتقدم والمادة رياضيات في الفصل الأول

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Symmetric Distribution	Negatively Skewed Distribution	Positively Skewed Distribution
The mean and median are approximately equal, and the data are approximately symmetric about the center.	Typically, the median is greater than the mean and less data is on the left side of the graph.	Typically, the mean is greater than the median and less data is on the right side of the graph.
 <p>6 8 10 12 14 16 18 20 22</p> <p>mean = 13.1 median = 13.2</p>	 <p>6 8 10 12 14 16 18 20 22</p> <p>mean = 14.8 median = 16.7</p>	 <p>6 8 10 12 14 16 18 20 22</p> <p>mean = 12.7 median = 11.6</p>

mean \approx median \approx mode

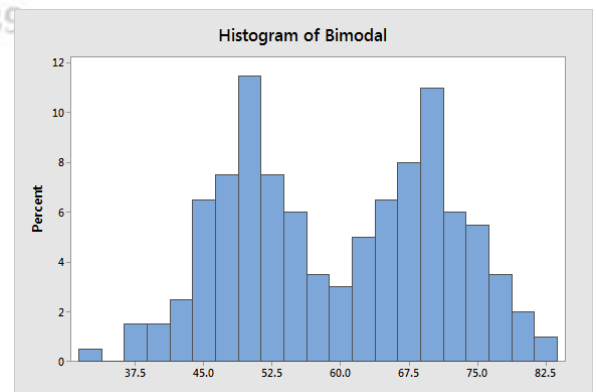
mean $<$ median $<$ mode

mode $<$ median $<$ mean

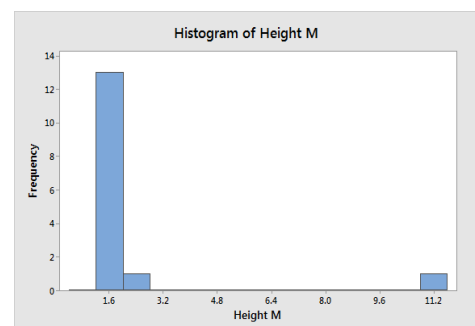
The mean accurately reflects the center of the data. However, when a distribution is skewed, the mean is not as reliable.

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A **bimodal** distribution has two distinct peaks.

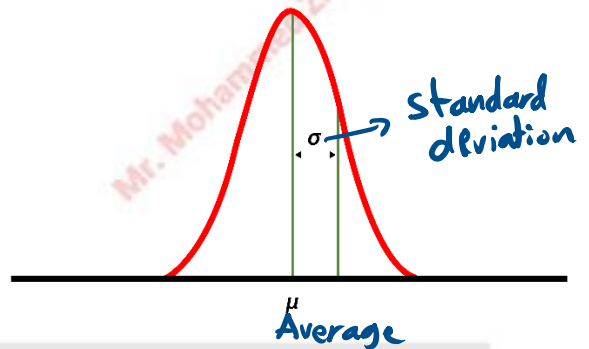
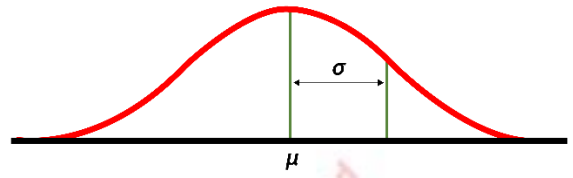


Outliers, which are extremely high or low values when compared to the rest of the values in a data set, have a strong effect on the mean of a data set. When a distribution is skewed or has outliers, the mean lies away from the majority of the data toward the tail and may not accurately describe of the data



Standard Deviation:

It is a spread measure which describes how the data deviate from the mean



The majority of the population lies within one standard deviation from the mean $[M - \sigma, M + \sigma]$

Key Concept • Finding the Standard Deviation

- Step 1 Find the mean μ .
- Step 2 Find the square of the difference between each data value x_n and the mean, $(x_n - \mu)^2$.
- Step 3 Find the sum of all the values in Step 2.
- Step 4 Divide the sum by the number of values in the set of data n . This value is the variance.
- Step 5 Take the square root of the variance.

$$\text{Formula: } \sigma = \sqrt{\frac{\sum_{k=1}^n (x_k - \mu)^2}{n}}$$

Ex1: 1. **BARBER** A barber wants to purchase new professional shears from a Web site. The prices of all of the shears are shown in the table. Use the standard deviation formula to find and interpret the standard deviation of the data. Round your answers to the nearest cent.

Cost of Shears (\$)			
50	165	55	79
84	68	38	42

$$M = \frac{50 + 165 + 55 + 79 + 84 + 68 + 38 + 42}{8} = 72.6$$

x	$(x - M)$	$(x - M)^2$
50	-22.6	510.76
165	92.4	8537.76
55	-17.6	309.76
79	6.4	40.96
84	11.4	129.96
68	-4.6	21.16
38	-34.6	1197.16
42	-30.6	936.36
	Sum	11683.88

$$\sigma = \sqrt{\frac{11683.88}{8}} = 38.21$$

$$72.6 - 38.21 = 34.39$$

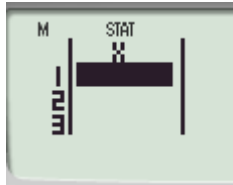
$$72.6 + 38.21 = 110.81$$

The majority of the prices are between 34.39 and 110.81

Finding Standard deviation using calculator:



mode 3 1



Fill the table

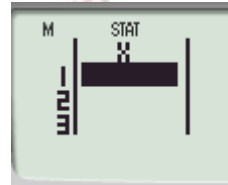
then **AC**

shift 1 4 3 =

$\sigma_x =$



menu 6 1



Fill the table

then **AC**

OPTN 2

SD

\bar{x}	=72.625
$\sum x$	=581
$\sum x^2$	=53879
$\sigma^2 x$	=1460.484375
σx	=38.21628416
$s^2 x$	=1669.125

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Ex2: Use a calculator to find the mean and standard deviation of the set of data. Round to the nearest tenth

150, 153, 125, 136, 143, 150, 166, 148, 150, 173, 150, 153, 143, 142, 153

$$\text{Mean} = \bar{x} = 149$$

$$\text{SD} = \sigma = 10.9$$

Comparing Distributions

8. **GRADES** Mr. Williams recorded students' test scores of his two Geometry classes. Use the mean and standard deviation to compare the distributions.

Geometry Class 1				
58	90	95	70	85
90	100	95	75	85
95	70	90	85	75
90	95	90	98	98

Geometry Class 2				
70	80	95	55	65
40	80	85	85	100
65	85	90	70	80
80	80	85	90	70

$$\bar{x} = 86.45$$

$$\sigma = 11.01$$

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$$\bar{x} = 77.5$$

$$\sigma = 13.74$$

Class 1 has higher average of 86.45 but Class 2 has higher spread with a standard deviation of 13.74

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