

**Vocabulary**

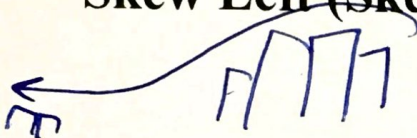
• **Distribution:** How the data is spread out between the min & max.

• **Normal:** • Most data is in the middle



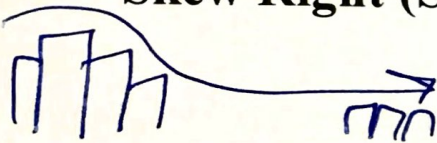
$\bar{x}$  & med are in the same interval!

• **Skew Left (Skew Negative):** • Most data is high & a little data is low.



$\bar{x}$  is lower than median.

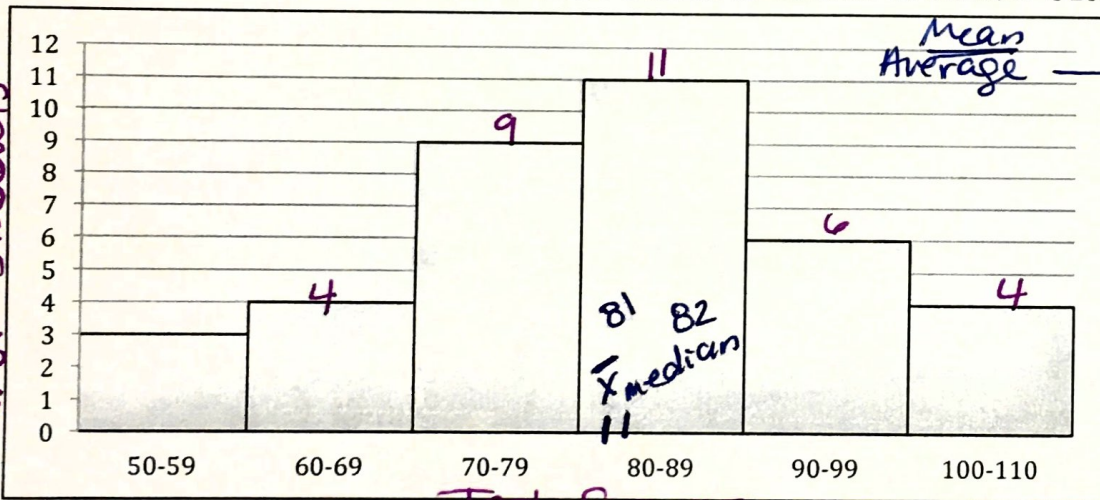
• **Skew Right (Skew Positive):**



• Most data is low  
Some is high

•  $\bar{x}$  is raised above median.

**Ex. 1:** Below are the test results from a math class.  $\bar{x}$  "x bar"



```
1-Var Stats
x̄=81.13513514
Σx=3002
Σx²=250078
Sx=13.44776347
σx=13.26479218
n=37
```

```
1-Var Stats
n=37
minX=51
Q1=73
Med=82 median
Q3=91
maxX=103
```

a) Mark the median and mean in the interval in which they occur.

b) Determine if the distribution is **normal**, skew left, or skew right.

$\bar{x}$  & median happen in the same interval.

c) Label the titles on each axis.

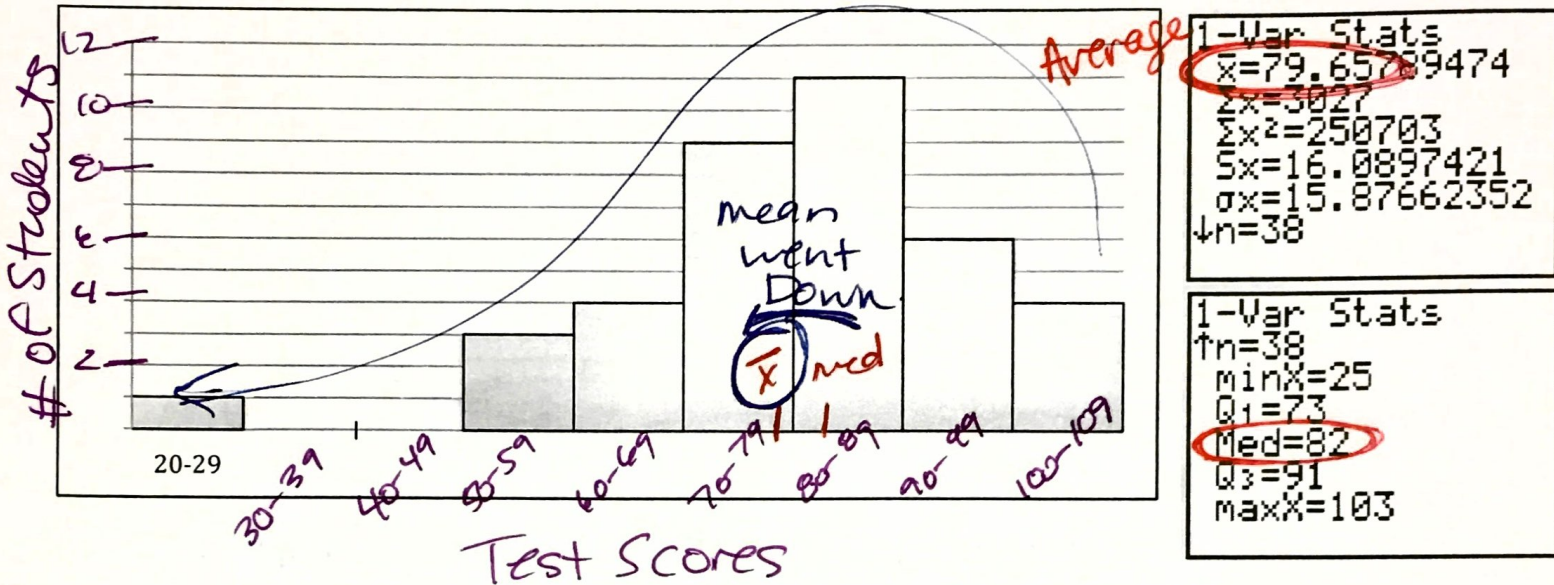
Notes 8-3

Sec 1

Measures of Spread – Std. Deviation & Histograms

Unit 8

Ex. 2: Below is a histogram of the same class except a test score of 25 was added to the data.

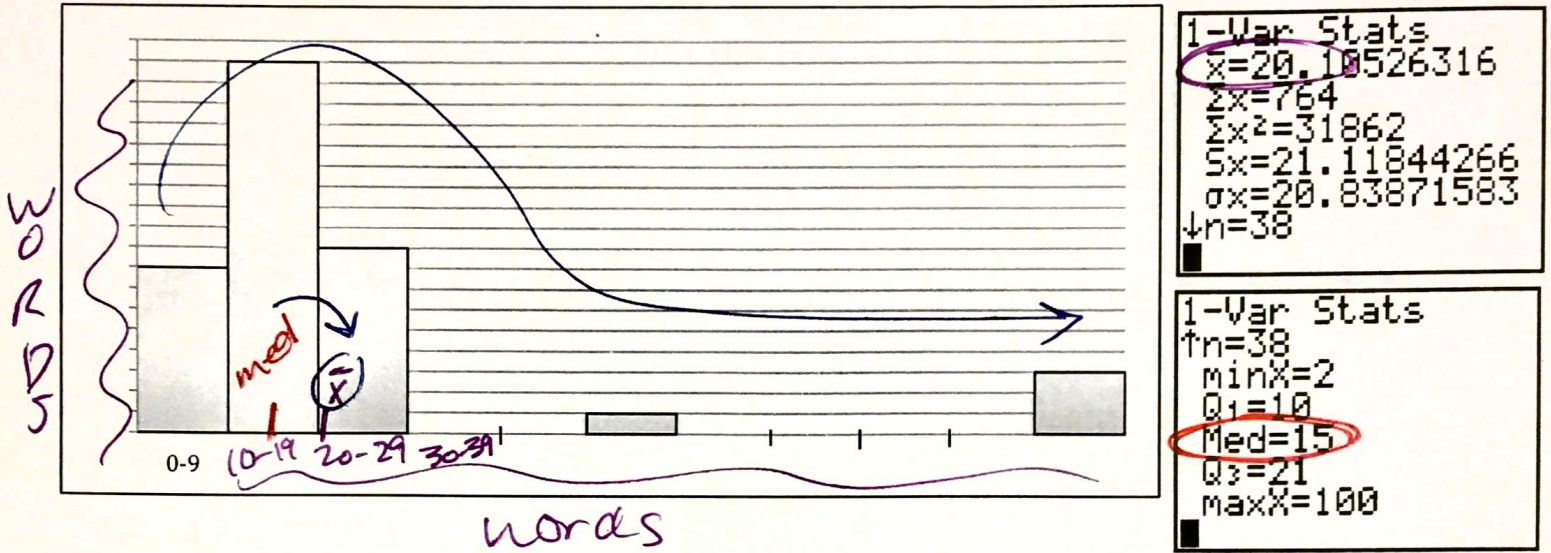


- a) Finish labeling the histogram on both axes and titles.
- b) Mark the median and mean in the interval in which they occur.
- c) Determine if the distribution is normal, skew left or skew right.

$\bar{x}$  is Lower than median.

~~40~~, ~~52~~, ~~72~~, ~~74~~, ~~75~~, ~~81~~, 82, ~~82~~, ~~83~~, ~~87~~, ~~90~~, ~~91~~, ~~100~~  
 82

Ex. 3: A different math classes data is shown below.



- a) Finish labeling the histogram on both axes and titles.
- b) Mark the median and mean in the interval in which they occur.
- c) Determine if the distribution is normal, skew left, or skew right.

**Measures of Spread**

A statistic that tells you how *dispersed*, or spread out, data values are.

**Standard Deviation:** Give or take. "sigma"  
 \* Tells us between what 2 #'s most data lies.

Examples:

$\bar{x} = 30 \text{ min}$

Give or take 5 min.

25 - 35 min.

$\bar{x} = 30 \text{ min}$

Give or take 20 min

10 - 50 min

**Ex. 4:** Find the standard deviation for the waiting times in each data set.

Office A	Office B
14, 17, 18, 19, 20, 24, 24, 30, 32	8, 11, 12, 16, 18 18, 18, 20, 23

a) Find the mean & standard deviation for Office A using your calculator

$$\bar{x} = 22 \quad \sigma = 5.68$$

b) Calculate one standard deviation above and below the mean

Below: 16.32    Mean: 22    Above: 27.68

← -σ                          +σ →

c) Use your graphing calculator to find the standard deviation for Office B

- Hit the **STAT** button.
- Hit **ENTER** on 1: Edit...
- Clear the existing lists
  - Arrow UP to highlight  $L_1, L_2, \dots$
  - Hit **CLEAR**
  - Hit **ENTER**
- Enter the data points using the down arrow or **ENTER** to move down the list.
- Hit the **STAT** button.
- Arrow over to the right to the CALC menu
- Hit **ENTER** on 1: 1-Var Stats
- Tell the calculator which list your data is in by using **2<sup>nd</sup>** then **1** or **2**
- Use the down arrow to move to the second screen of information.

d) Calculate one standard deviation above and below the mean.