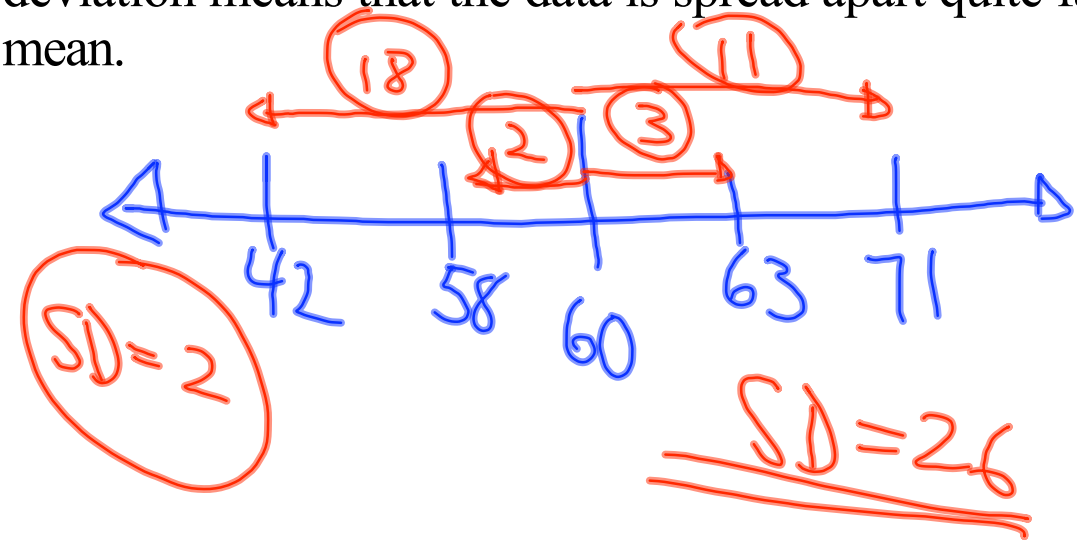
Mar. 26 **Mean and Standard Deviation**

**Mean:** The average of the data *or* the middle of the data. To calculate the mean you total up all of your values and divide by the number of values.

$\bar{x}$ $\mu$ $\sigma$

**Standard Deviation:** Is a measure of how far, on average, each value is from the mean. Standard deviation is called a measure of dispersion. A small standard deviation means that the data is clustered fairly close to the mean. A large standard deviation means that the data is spread apart quite far from the mean.




Eg 2) A company wants to promote its most consistent and productive salesperson. If Jaci sells $80,000 worth of goods with a standard deviation of $9,000 and Jason sells $80,000 worth of stuff with a standard deviation of $6,000, who should the company promote?

Eg 3) Find the mean and standard deviation of the following data:

| | # of Children | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| $L_2$ | Frequency | 3 | 5 | 8 | 6 | 2 |

$L_1$

mean

SD

```
1-Var Stats
x̄=1.958333333
Σx=47
Σx²=123
Sx=1.160178647
σx=1.135751098
↓n=24
```

1 - VAR STATS $L_1$, $L_2$

$\bar{x} = 1.96$ $\sigma = 1.14$

Eg 4) Find the mean and standard deviation of the following data:

| Mark | 57 | 62 | 69 |
|---|---|---|---|
| Frequency | 2 | 5 | 3 |

$\bar{x} = 63.1$ $\sigma = 4.3$

Note: If the data is randomly listed and not contained in a frequency table, then only use L 1 with 1 VAR - STATS

Eg 5) Find the mean and standard deviation for the following data: 17, 19, 14, 16, 15, 13, 11 and 19.

$\bar{x} = 15.5$

$\sigma = 2.65$

## Mean and Standard Deviation of a Binomial Distribution

A multiple choice test has 20 questions. There are 4 choices for each question. A student randomly guesses the answer. Determine the mean and standard deviation of this distribution

n = number of trials — 20
p = probability of success — 0.25

$$Mean = n \times p$$

$20 \times 0.25 = 5$

$$\text{Standard deviation} = \sqrt{n \times p \times (1-p)}$$

$\sqrt{20 \times 0.25 \times (1-0.25)}$

$\sigma = 1.936$

# Assignment:

Pg. 108

2, 3, 4, 6, 8