

# Measures of Variation

- There are 3 values used to measure the amount of dispersion or variation. (The spread of the group)

1. Range

2. Variance

3. Standard Deviation

## Why is it Important?

- You want to choose the best brand of paint for your house. You are interested in how long the paint lasts before it fades and you must repaint. The choices are narrowed down to 2 different paints. The results are shown in the chart. Which paint would you choose?

- The chart indicates the number of months a paint lasts before fading.

Paint A	Paint B
10	35
60	45
50	30
30	35
40	40
20	25
210	210

## Does the Average Help?

- *Paint A:*  $\text{Avg} = 210/6 = 35$  months
- *Paint B:*  $\text{Avg} = 210/6 = 35$  months
- They both last 35 months before fading.  
No help in deciding which to buy.

## Consider the Spread

- *Paint A:* Spread =  $60 - 10 = 50$  months
- *Paint B:* Spread =  $45 - 25 = 20$  months
- Paint B has a smaller *variance* which means that it performs more consistently. Choose paint B.