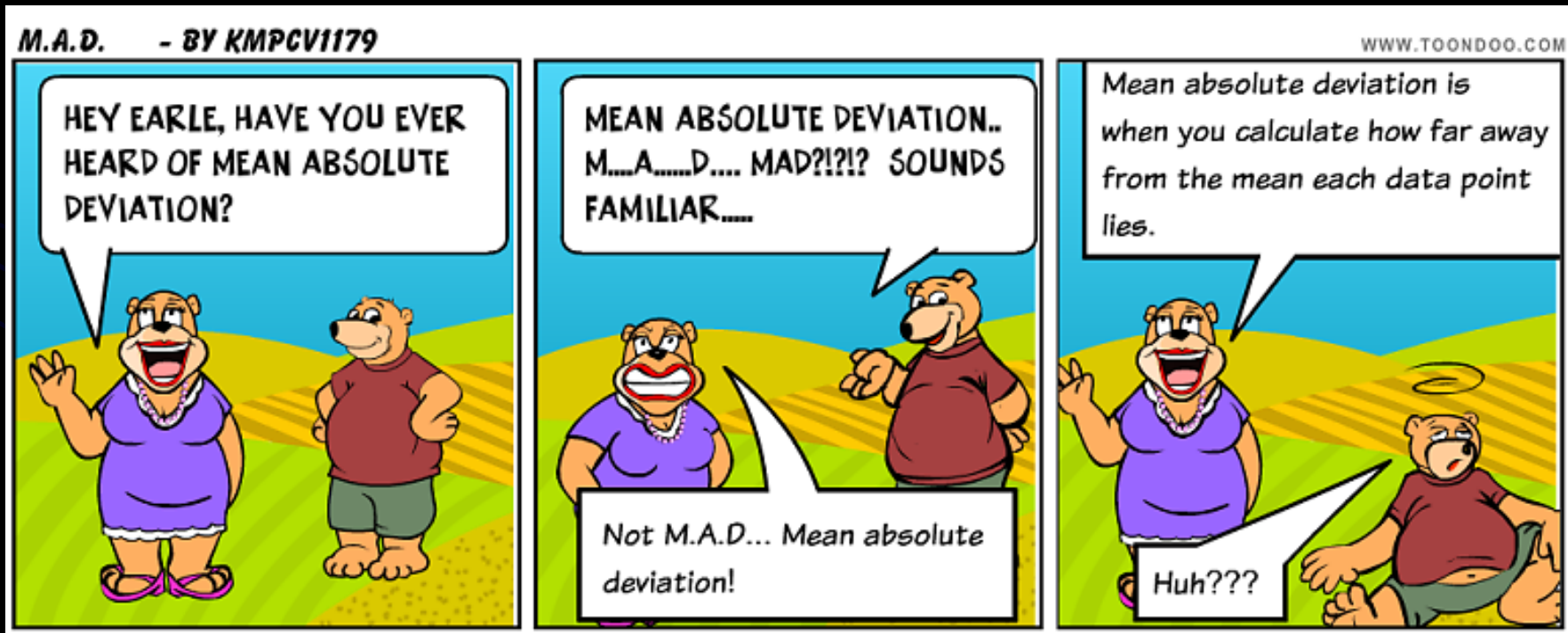


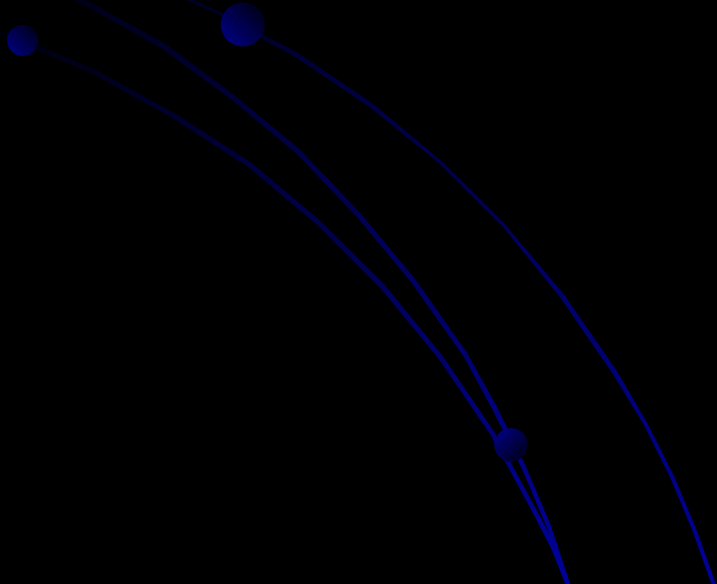
# Mean Absolute Deviation

## What is it?



# Mean Absolute Deviation (MAD)

- Is the average distance of all data values from the mean of the set.
- Wait – What does that mean?



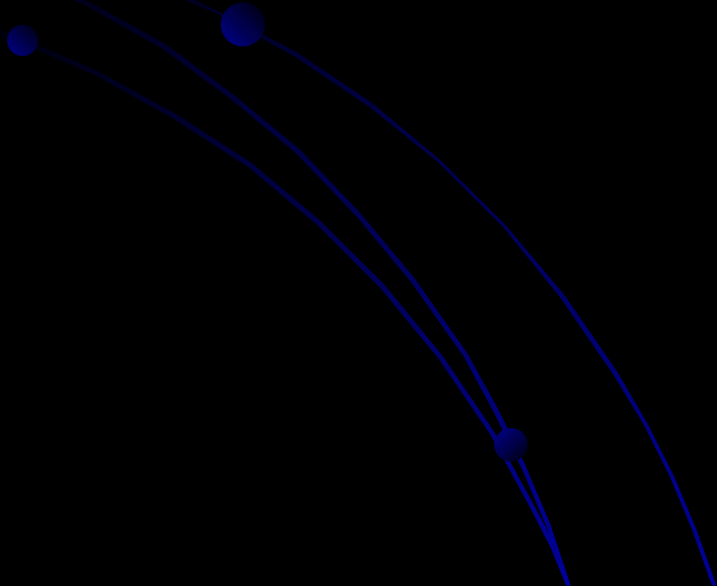
# Let's see what Learnzillion has to say...

<https://learnzillion.com/lessons/536-describe-the-distribution-of-data-using-the-mean-absolute-deviation>



# Steps

- 1) Find the mean of the set
- 2) Find the distance of each value from the mean
- 3) Find the average of those distances



# Let's put this all together in a foldable graphic organizer...

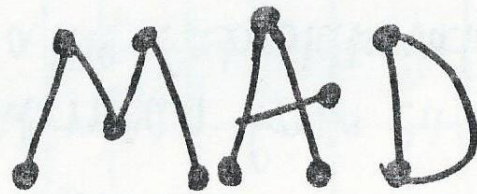
1. **Fold** in half (hot dog fold) and
2. **Cut** so you have three section on the front only (2 cuts)

MAD - the mean of the distances of each value from their mean.

What does that mean?

You are finding the mean twice.

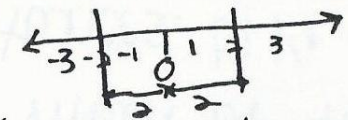
Three steps to:



Mean  
Absolute  
Deviation

Mean - average of numbers

Absolute - Absolute value  
how far a number is from 0 (no neg's)



Deviation - Distance

Step 1

Step 2

Step 3

# Inside the foldable...

Mean Absolute Deviation		
Step 1	Step 2	Step 3

Determine the mean of your data.	Determine the distance of each data value from the mean.	Determine the average of the distances from step 2.
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# Now, let's look at a problem together and solve:

- Laura's softball team scored the following points during six games: 7, 6, 17, 8, 7, 9
- What is the mean absolute deviation of the scores?



# Example 1

- Laura's softball team scored the following points during six games: 7, 6, 17, 8, 7, 9
- What is the mean of the scores?

$$54/6 = 9$$

<i>Original #</i>	<i>Original Mean</i>	<i>Distance from Mean (Deviation) (Absolute Value)</i>	<i>Mean Absolute Deviation MAD</i>
7			
6			
17			
8			
7			
9			

# Continued

- Find the distance from each value to the mean. (Record on your chart)
  - $7-9=$
  - $6-9=$
  - $17-9=$
  - $8-9=$
  - $7-9=$
  - $9-9=$
- 

# Example 1

- Laura's softball team scored the following points during six games: 7, 6, 17, 8, 7, 9
- Find the distance of each value from the mean, or the deviation (in absolute value form)

<i>Original #</i>	<i>Original Mean</i>	<i>Distance from Mean (Deviation) (Absolute Value)</i>	<i>Mean Absolute Deviation MAD</i>
7	9		
6	9		
17	9		
8	9		
7	9		
9	9		

# Continued

- Using the distances (deviations) from the mean
  - $2+3+8+1+2+0=$
- Calculate the mean of this number set to determine the **M**ean **A**bsolute value of the **D**eviations (**MAD**)

# Example 1

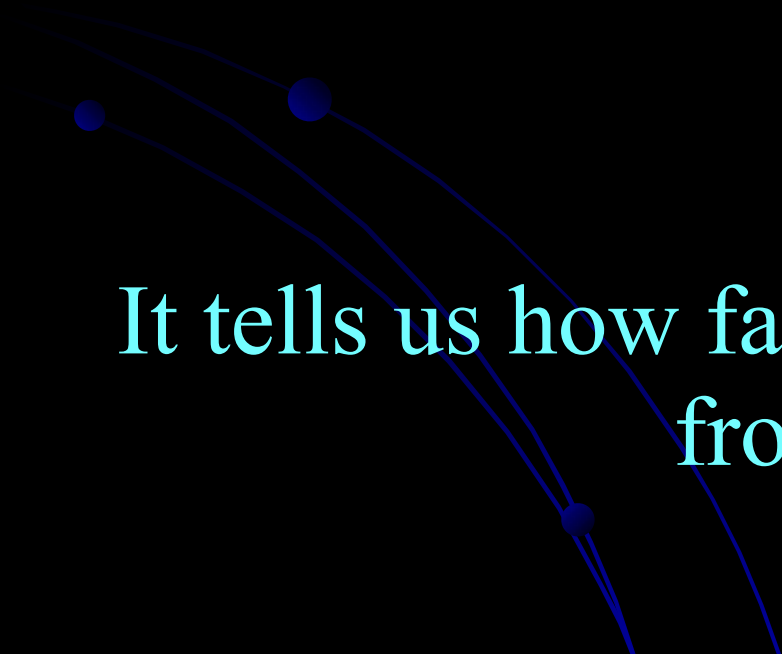
- Laura's softball team scored the following points during six games: 7, 6, 17, 8, 7, 9
- What is the mean absolute deviation?

<i>Original #</i>	<i>Original Mean</i>	<i>Distance from Mean (Deviation) (Absolute Value)</i>	<i>Mean Absolute Deviation MAD</i>
7	9	2	
6	9	3	
17	9	8	
8	9	1	
7	9	2	
9	9	0	

# Why is it called a mean absolute deviation?

Each distance we calculated is called an Absolute Deviation, because it is the Absolute Value of the deviation (how far from the mean).

It tells us how far, on average, all values are from the middle



# What does it all mean?

- What does the mean absolute deviation tell us about the numbers of runs Laura's softball team scored?



The mean absolute deviation tells us that, on average, runs scored are 2.66 points from the mean.

# Partner Practice

1. Find the mean absolute value:

5, 6, 8, 5, 2, 6, 5

2. Find the mean absolute deviation:

21, 23, 18, 27, 30, 24