

Math 7H - Unit 6

Day 7 - Mean Absolute Deviation

Lesson Objectives:

- I can use measures of variability to draw informal inferences about a population.

We have used the IQR to describe the variability (spread) of a set of data. Another way to describe the variability of a set of data is to use its mean absolute deviation. The mean absolute deviation of a set of data is the average distance between each data value and the mean of the set of data.

Steps to find the Mean Absolute Deviation

- Find the mean.
- Find the difference between each data value and the mean.
- Take the absolute value of each difference.
- Take the average (mean) of the absolute values.

The table shows the number of contacts eight friends have stored in each of their cell phones.

Number of Contacts Stored			
52	48	60	55
59	54	58	62

- Find the mean of the data. **56**
- Find the mean absolute deviation.
- Overall, are the data values close to the mean or far away from the mean?

Explain.

$$\begin{array}{l}
 52 - 56 = -4 \Rightarrow 4 \\
 48 - 56 = -8 \Rightarrow 8 \\
 60 - 56 = 4 \Rightarrow 4 \\
 55 - 56 = -1 \Rightarrow 1 \\
 59 - 56 = 3 \Rightarrow 3 \\
 54 - 56 = -2 \Rightarrow 2 \\
 58 - 56 = 2 \Rightarrow 2 \\
 62 - 56 = 6 \Rightarrow 6
 \end{array}$$

$$MAD = 3.75$$

The table shows the maximum speeds of eight roller coasters at an amusement park. Find the mean absolute deviation of the set of data. Describe what the mean absolute deviation represents.

Maximum Speeds of Roller Coasters (mph)			
58	88	40	60
72	66	80	48

$$\text{mean} = 64$$

$$\begin{array}{l}
 58 - 64 = -6 \Rightarrow 6 \\
 88 - 64 = 24 \Rightarrow 24 \\
 40 - 64 = -24 \Rightarrow 24 \\
 60 - 64 = -4 \Rightarrow 4 \\
 72 - 64 = 8 \Rightarrow 8 \\
 66 - 64 = 2 \Rightarrow 2 \\
 80 - 64 = 16 \Rightarrow 16 \\
 48 - 64 = -16 \Rightarrow 16
 \end{array}$$

$$MAD = 12.5$$

The table shows the maximum flying speeds of the ten fastest birds worldwide. Find the mean absolute deviation of the set of data. Round to the nearest hundredth. Describe what the mean absolute deviation represents.

Speeds of Top Ten Fastest Birds (mph)				
88	77	65	70	65
72	95	80	106	68

$$\text{mean} = 78.6$$

$$\begin{array}{l}
 88 - 78.6 = 9.4 \Rightarrow 9.4 \\
 77 - 78.6 = -1.6 \Rightarrow 1.6 \\
 65 - 78.6 = -13.6 \Rightarrow 13.6 \\
 70 - 78.6 = -8.6 \Rightarrow 8.6 \\
 65 - 78.6 = -13.6 \Rightarrow 13.6 \\
 72 - 78.6 = -6.4 \Rightarrow 6.4 \\
 95 - 78.6 = 16.4 \Rightarrow 16.4 \\
 80 - 78.6 = 1.4 \Rightarrow 1.4 \\
 106 - 78.6 = 27.4 \Rightarrow 27.4 \\
 68 - 78.6 = -10.6 \Rightarrow 10.6
 \end{array}$$

$$MAD = 10.92$$

Homework

Mean Absolute Deviation WKS

* Individual Think Time *



What to do if you get stuck...

- Reread the problem. Did you write it down correctly?
- Reread your notes. Is there a problem similar that we did together in class?
- Find a problem similar in your book. Try this one to see if it helps.
- Skip the problem until the end of Individual Think Time. Then ask an "educated" question of a neighbor or Mrs. Call.

Today we're working by...

