

Completed Edpuzzle Video Notes:

MAD, Lesson 3, May 6.

Check over these notes from Tuesday and fill in anything you missed.



10-3

Mean Absolute Deviation (MAD)

Mean Absolute Deviation is: average distance between each data value and the mean.

Example: Find MAD for the following data set:

16 18 19 20 21

① Find the mean:

$$\frac{16 + 18 + 19 + 20 + 21}{5} = 18.8$$

② Subtract.

$$\begin{array}{r} 18.8 \\ -16 \\ \hline 2.8 \end{array} \quad \begin{array}{r} 18.8 \\ -18 \\ \hline 0.8 \end{array} \quad \begin{array}{r} 19 \\ -18.8 \\ \hline 0.2 \end{array} \quad \begin{array}{r} 20 \\ -18.8 \\ \hline 1.2 \end{array} \quad \begin{array}{r} 21 \\ -18.8 \\ \hline 2.2 \end{array}$$

③ Find mean again.

$$\frac{2.8 + 0.8 + 0.2 + 1.2 + 2.2}{5} = 1.4$$

MAD

More video notes:

1. The table shows points scored by a basketball player in his last seven games. Find the mean absolute deviation. Describe what the mean absolute deviation represents.

Points Scored			
17	22	17	30
15	17	8	

- 1 ~~Find the mean.~~ Find the mean.

$$\frac{17 + 22 + 17 + 30 + 15 + 17 + 8}{7} = 18$$

- 2 Subtract (use absolute value/always positive).

$$\begin{array}{r} 18 \\ -17 \\ \hline 1 \end{array} \quad \begin{array}{r} 22 \\ -18 \\ \hline 4 \end{array} \quad \begin{array}{r} 18 \\ -17 \\ \hline 1 \end{array} \quad \begin{array}{r} 30 \\ -18 \\ \hline 12 \end{array} \quad \begin{array}{r} 18 \\ -15 \\ \hline 3 \end{array} \quad \begin{array}{r} 18 \\ -17 \\ \hline 1 \end{array} \quad \begin{array}{r} 18 \\ -8 \\ \hline 10 \end{array}$$

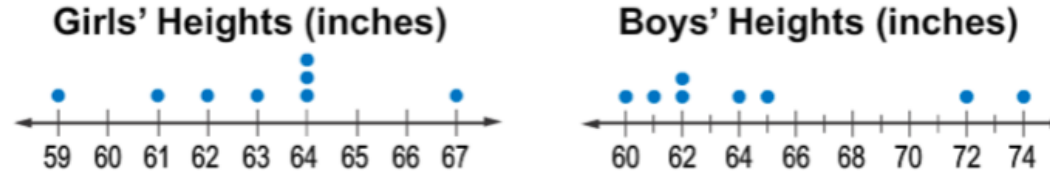
- 3 ~~Find the average of the absolute values.~~ Find the average of the absolute values.

$$\frac{1 + 4 + 1 + 12 + 3 + 1 + 10}{7} \approx 4.57$$

- 4 The mean absolute deviation is about 4.57. This means that the average distance between the mean points per game and the actual points per game is 4.57 points.

More video notes:

2. The dot plots show the heights of the girls and boys in the glee club.



- Find the mean absolute deviation for each set of data.
- Write a few sentences comparing their variation.

1 a. Find the mean of the girls' heights.

$$\frac{59 + 61 + 62 + 63 + 64 + 64 + 64 + 67}{8} = 63 \quad \text{The mean is 63 inches.}$$

2 Subtract (use absolute value/always positive).

$\begin{array}{r} 63 \\ -59 \\ \hline 4 \end{array}$	$\begin{array}{r} 63 \\ -61 \\ \hline 2 \end{array}$	$\begin{array}{r} 63 \\ -62 \\ \hline 1 \end{array}$	$\begin{array}{r} 63 \\ -63 \\ \hline 0 \end{array}$	$\begin{array}{r} 64 \\ -63 \\ \hline 1 \end{array}$	$\begin{array}{r} 64 \\ -63 \\ \hline 1 \end{array}$	$\begin{array}{r} 64 \\ -63 \\ \hline 1 \end{array}$	$\begin{array}{r} 67 \\ -63 \\ \hline 4 \end{array}$
							$\frac{14}{8} = 1.75 \text{ MAD}$

3 Find the mean of the boys' heights.

$$\frac{60 + 61 + 62 + 62 + 64 + 65 + 72 + 74}{8} = 65 \quad \text{The mean is 65 inches.}$$

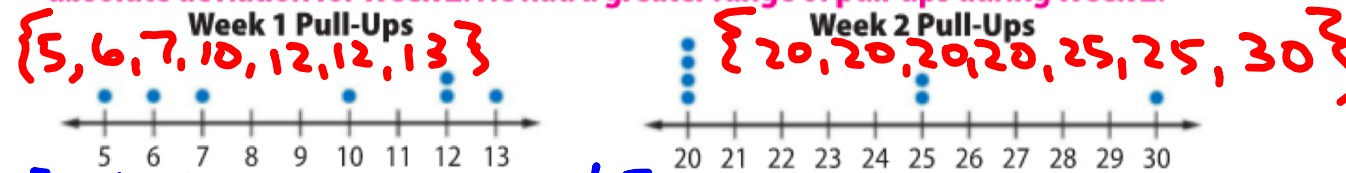
4 Subtract.

$\begin{array}{r} 65 \\ -60 \\ \hline 5 \end{array}$	$\begin{array}{r} 65 \\ -61 \\ \hline 4 \end{array}$	$\begin{array}{r} 65 \\ -62 \\ \hline 3 \end{array}$	$\begin{array}{r} 65 \\ -62 \\ \hline 3 \end{array}$	$\begin{array}{r} 65 \\ -64 \\ \hline 1 \end{array}$	$\begin{array}{r} 65 \\ -63 \\ \hline 2 \end{array}$	$\begin{array}{r} 72 \\ -65 \\ \hline 7 \end{array}$	$\begin{array}{r} 74 \\ -65 \\ \hline 9 \end{array}$
						$\frac{32}{8} = 4 \text{ MAD}$	

- 5 b. The mean absolute deviation for the girls' heights is much less than that of the boys' heights. The data for the girls are closer together than the data for the boys.

Please check. Checkmark each answer you get correct and circle or x the incorrect answers and fill in correct answers. When finished, put this into your notebook after your completed notes. Label your page "Lesson 3 May 6."

2. The dot plots show the number of pull-ups Joe did each day during two different weeks. Find the mean absolute deviation for each set of data. Round to the nearest hundredth. Then write a few sentences comparing their variation. (Example 2) **Week 1: 2.82 pull-ups; Week 2: 3.27 pull-ups; Sample answer: The mean absolute deviation for Week 1 is less than the mean absolute deviation for Week 2. He had a greater range of pull-ups during Week 2.**



$$5 + 6 + 7 + 10 + 12 + 12 + 13 = 65 \div 7 = 9.3$$

$$9.3 \quad 9.3 \quad 9.3 \quad 10 \quad 12 \quad 12 \quad 13$$

$$\begin{array}{r} 5.0 \\ -9.3 \\ \hline 4.3 \end{array} + \begin{array}{r} 6.0 \\ -9.3 \\ \hline 3.3 \end{array} + \begin{array}{r} 7.0 \\ -9.3 \\ \hline 2.3 \end{array} + \begin{array}{r} 10 \\ -9.3 \\ \hline 0.7 \end{array} + \begin{array}{r} 12 \\ -9.3 \\ \hline 2.7 \end{array} + \begin{array}{r} 12 \\ -9.3 \\ \hline 2.7 \end{array} + \begin{array}{r} 13 \\ -9.3 \\ \hline 3.7 \end{array} = 19.7 \div 7 = 2.82$$

Find the mean and the mean absolute deviation of each data set.

- 5 Ages of children at a family reunion: 0, 5, 7, 3, 9, 12, 5, 2, 4, 3

$$0 + 5 + 7 + 3 + 9 + 12 + 5 + 2 + 4 + 3 = 50 \div 10 = 5$$

$$5 - 0 = 5$$

$$5 - 5 = 0$$

$$7 - 5 = 2$$

$$5 - 3 = 2$$

$$9 - 5 = 4$$

$$12 - 5 = 7$$


$$5 - 5 = 0$$

$$5 - 2 = 3$$

$$5 - 4 = 1$$

$$5 - 3 = 2$$

$$5 + 0 + 2 + 2 + 4 + 7 + 0 + 3 + 1 + 2 = 26 \div 10 = 2.6$$


 Name _____
 Unit ____ Lesson ____ Due Date _____
PRACTICE


The prices for a gallon of regular gasoline at six area gas stations are listed below. Find the mean absolute deviation (rounded to the nearest cent). Describe what the mean absolute deviation represents.

\$3.59 \$3.79 \$3.74 \$3.57 \$3.83 \$3.62

$$\text{mean} = 3.59, 3.59, 3.62, 3.74, 3.79, 3.83 \rightarrow \$3.69$$

$$\text{differences} = \underline{0.12} \quad \underline{0.02} \quad \underline{0.07} \quad \underline{0.05} \quad \underline{0.1} \quad \underline{0.14}$$

$$\text{MAD} : \textcircled{0.1 = \$10}$$


 Name _____
 Unit ____ Lesson ____ Due Date ____
PRACTICE

Find the mean absolute deviation of each set of data. Round to the nearest tenth if necessary. Describe what the mean absolute deviation represents.

Test Scores			
94	85	73	93
89	83	79	81

$$\text{mean} = 84.6$$

$$\text{differences} = \underline{11.6} \quad \underline{5.6} \quad \underline{3.6} \quad \underline{1.6} \quad \underline{0.4} \quad \underline{4.4} \quad \underline{8.4} \quad \underline{9.4}$$

$$\text{MAD} = 5.6$$

Welcome to our class

IN THIS CLASSROOM
WE DON'T
give up,
BUT WE DO
give our
best effort

HARD
WORK
PAYS
OFF

W
E
L
C
O
M
E

7th Grade
Homework

Reteach WS

Video notes

ALEKS time and topics due Monday night



Lesson 3 Reteach

Mean Absolute Deviation

The **mean absolute deviation** is the average distance between each data value and the mean.

Example The table shows the weights of several of the football players on a junior high school football team. Find the mean absolute deviation. Describe what it represents.

Football Players' Weights (pounds)							
118	148	173	156	202	194	175	138

Step 1 Find the mean.

$$\frac{118 + 148 + 173 + 156 + 202 + 194 + 175 + 138}{8} = 163$$

Step 2 Find the absolute value of the differences between each data value and the mean. (Subtract each value from the mean.)

$$|118 - 163| = 45 \quad |148 - 163| = 15 \quad |173 - 163| = 10 \quad |156 - 163| = 7$$

$$|202 - 163| = 39 \quad |194 - 163| = 31 \quad |175 - 163| = 12 \quad |138 - 163| = 25$$

Step 3 Find the mean again.

$$\frac{45 + 15 + 10 + 7 + 39 + 31 + 12 + 25}{8} = 23$$

The mean absolute deviation is 23. This means that the average distance between the mean weight and the actual weights is 23 pounds.

Exercises

Find the mean and the mean absolute deviation of each data set.

The number of fish in 7 aquariums is 4, 9, 15, 8, 7, 3 and 10. Find the mean absolute deviation. Round to the nearest hundredth. Describe what the mean absolute deviation represents.

The dot plots below show the top ten test scores for each of Mrs. Winthrop's Period A and Period B science classes. Find each MAD. Which data set has a smaller mean absolute deviation? What does this mean?



92, 94, 95, 95, 95, 96, 97, 97, 99, 100