



Math Virtual Learning

Math 7/Pre-Algebra

Mean Absolute Deviation (MAD)

April 29, 2020



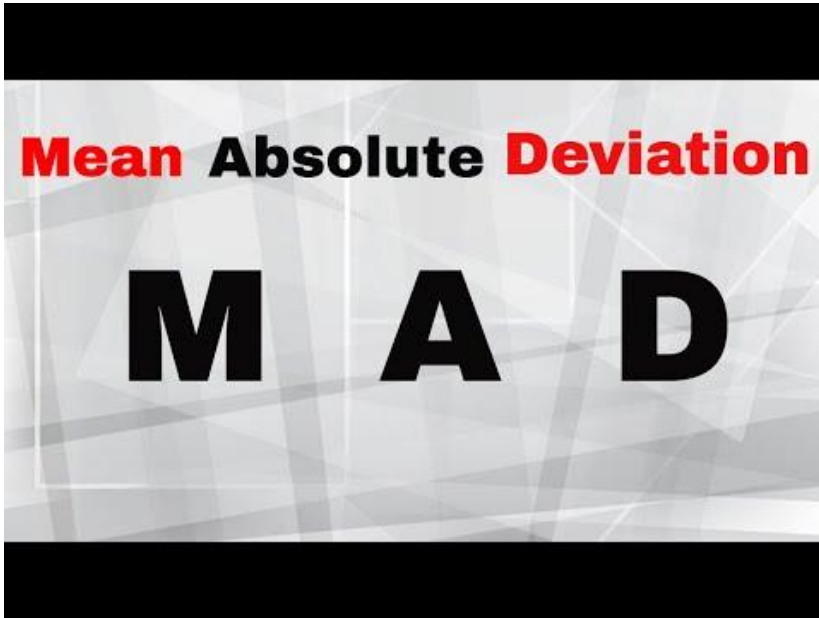
Grade 7/Mean Absolute Deviation
Lesson: April 29, 2020

Objective/Learning Target:

Students will find the MAD and use it to compare two data sets.

Let's Get Started:

Click on one of the Video Links:



MEAN ABSOLUTE DEVIATION

WHAT IS MEAN ABSOLUTE DEVIATION?

It is the average distance of all of the elements in a data set from the mean of the same data set.

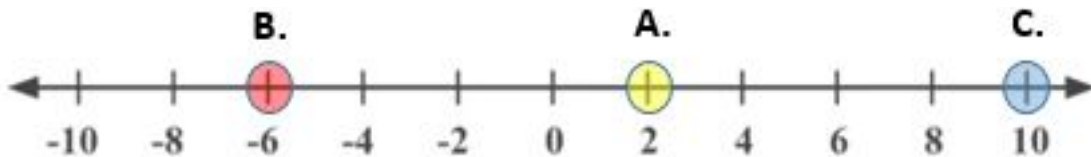
Warm-Up

Absolute Value is the distance a number is from *zero* on a number line.

The math symbols $| |$ tell us to find the absolute value of a number. For example, $|-3|$ means what is the absolute value of -3 or how far is -3 from zero?

Distances are **always** positive, so absolute values are always positive.

- 1.) How far away from zero is point A?
- 2.) How far away from zero is point B?
- 3.) How far away from zero is point C?



Find the absolute value.

4)

$$|-11| = \boxed{}$$

5)

$$|7| = \boxed{}$$

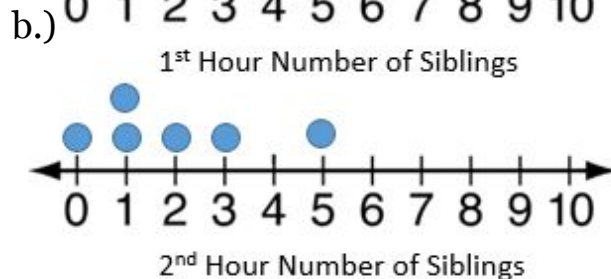
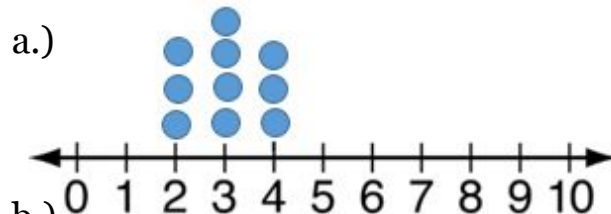
6)

$$|-4| = \boxed{}$$

Which set of data is consistent (tight together) and which is spread out?

Consistent: _____

Spread out: _____



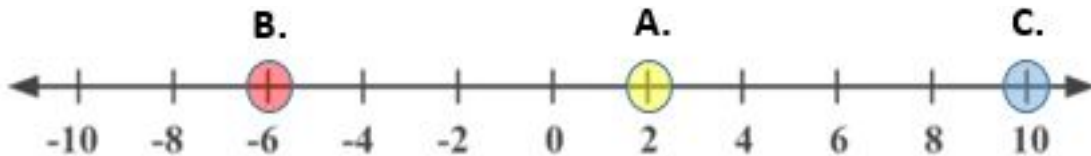
Warm-Up Answer Key

Absolute Value is the distance a number is from *zero* on a number line.

The math symbols $| |$ tell us to find the absolute value of a number. For example, $|-3|$ means what is the absolute value of -3 or how far is -3 from zero?

Distances are **always** positive, so absolute values are always positive.

- 1.) How far away from zero is point A? **2**
- 2.) How far away from zero is point B? **6**
- 3.) How far away from zero is point C? **10**



Find the absolute value.

4)

$$|-11| = \boxed{11}$$

5)

$$|7| = \boxed{7}$$

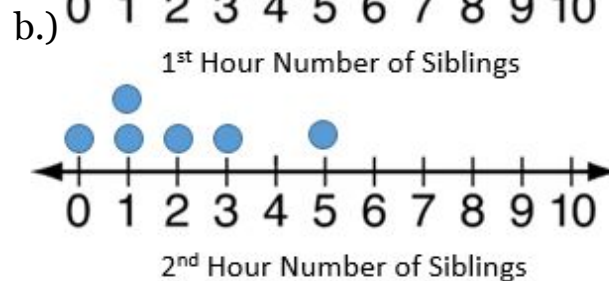
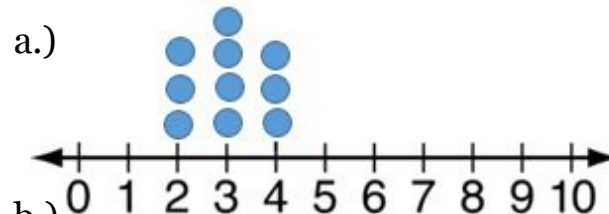
6)

$$|-4| = \boxed{4}$$

Which set of data is consistent (tight together) and which is spread out?

Consistent: **a**

Spread out: **b**



Guided Practice

To find the mean:

$$1+3+4+5+6+8 = 27$$

$$\frac{27}{6} = 4.5$$

Sum of Absolute Values = 11

Number of data points = 6
(1,3,4,5,6,8)

$$\text{MAD } \frac{11}{6} = 1.83$$

Find the mean absolute deviation of each set of data. Round your answer to two decimal places.

1) 3, 1, 5, 4, 8, 6 **Example**

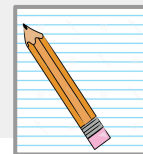
Data	Mean	Difference	Absolute Value
1	4.5	-3.5	3.5
3	4.5	-1.5	1.5
4	4.5	-0.5	0.5
5	4.5	0.5	0.5
6	4.5	1.5	1.5
8	4.5	3.5	3.5
		Sum	11

Mean Absolute Deviation = 1.83

2) 78, 45, 60, 33, 84 **YOUR turn**

Data	Mean	Difference	Absolute Value
		Sum	

Mean Absolute Deviation = _____



YOUR turn
Guided
Practice
Answers

To find the mean:

$$33+45+60+78+84 = 300$$

$$\frac{300}{5} = 60$$

Sum of Absolute Values = 84

Number of data points = 5
(33, 45, 60, 78, 84)

$$\text{MAD } \frac{84}{5} = 16.8$$

2) 78, 45, 60, 33, 84

Data	Mean	Difference	Absolute Value
33	60	-27	27
45	60	-15	15
60	60	0	0
78	60	18	18
84	60	24	24
		Sum	84

Mean Absolute Deviation = 16.8

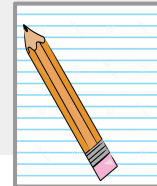
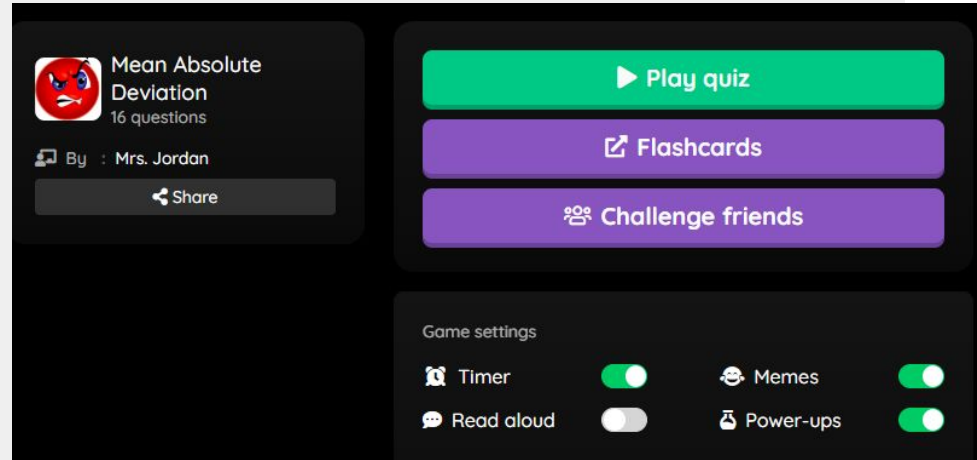
Additional Practice

[Mean Absolute Deviation \(MAD\) - Quizizz](#)

1. Click on the link above.
2. Choose either “Play Quiz” or “Flashcards.”

Tip: There are questions about HOW to find the MAD as well as definitions.

Suggestion: Use your calculator and scratch paper to help you.



Practice:
Answer the questions on a piece of paper.

1.) 11, 9, 36, 28, 7, 41

Data	Mean	Difference	Absolute Value
Sum			

Find the mean absolute deviation of the following sets of data.

2.) 3, 3, 5, 1, 9, 9

3.) 2, 7, 7, 8, 2, 7, 9

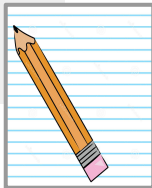
Mean Absolute Deviation = _____

4.) The percentage of Facebook users from different age groups is shown below. Find the mean absolute deviation of the following data set.

Mean = _____

Mean Absolute Deviation = _____

Facebook users (in %)			
13 - 17	18 - 25	26 - 34	35 - 44
11	29	23	18



Practice: Answer Key

To find the mean:

$$7+9+11+28+36+41 = 132$$

$$\frac{132}{6} = 22$$

Sum of Absolute Values = 78

Number of data points = 6
(15, 13, 11, 6, 14, 19)

$$\text{MAD} \frac{78}{6} = 13$$

1.) 11, 9, 36, 28, 7, 41

Data	Mean	Difference	Absolute Value
7	22	-15	15
9	22	-13	13
11	22	-11	11
28	22	6	6
36	22	14	14
41	22	19	19
		Sum	78

Mean Absolute Deviation = 13

Find the mean absolute deviation of the following sets of data.

2.) 3, 3, 5, 1, 9, 9

$$\text{Mean: } 1+3+3+5+9+9 = 30 \quad \frac{30}{6} = 5$$

Number	1	3	3	5	9	9
Distance	4	2	2	0	4	4

$$4+2+2+0+4+4 = 16 \quad \frac{16}{6} = 2.7 \text{ MAD}$$

3.) 2, 7, 7, 8, 2, 7, 9

$$\text{Mean: } 2+2+7+7+7+8+9 = 42 \quad \frac{42}{7} = 6$$

Number	2	2	7	7	7	8	9
Distance	4	4	1	1	1	2	3

$$4+4+1+1+1+2+3 = 16 \quad \frac{16}{7} = 2.3 \text{ MAD}$$

4.) The percentage of Facebook users from different age groups is shown below. Find the mean absolute deviation of the following data set.

$$\text{Mean: } 11+29+23+18 = 81 \quad \frac{81}{4} = 20.25$$

$$\text{Distance: } 9.25+8.75+2.75+2.25 = 23 \quad \text{Mean} = \underline{20.25}$$

$$\frac{23}{4} = 5.75 \quad \text{Mean Absolute Deviation} = \underline{5.75}$$

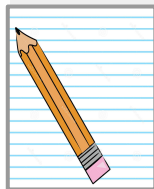
Facebook users (in %)			
13 - 17	18 - 25	26 - 34	35 - 44
11	29	23	18

Additional Links

[Calculating Mean Absolute Deviation - Khan Academy](#)

- Click on the link above.
- If you need more help, you can
 - ◆ Watch the video provided
 - ◆ Look at the example provided
- Type your answer in the answer box and press enter.
- If needed, you can “See a step-by-step solution.”

Tip: You may want to have a calculator and scratch paper available to help you.



Math > 6th grade > Data and statistics > Mean absolute deviation (MAD)

- ▶ Mean absolute deviation (MAD)
- ▶ Mean absolute deviation example
- ▶ Practice: Mean absolute deviation (MAD)

Next lesson
Comparing data displays

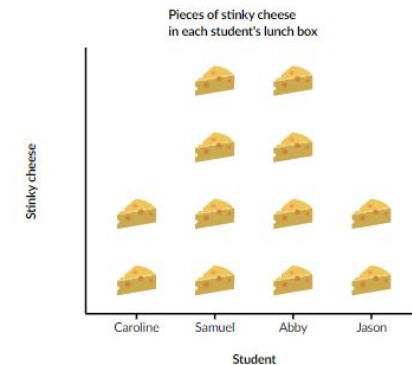
Way to go! [See a step-by-step solution.](#)

You might need: Calculator

Find the mean absolute deviation (MAD) of the data in the pictograph below.

pieces of stinky cheese

= 1 piece of cheese



Show Calculator

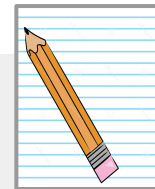
Report a problem

Nice work! ✕
You got it. 3 more!

Do 4 problems

Next question

Additional Links



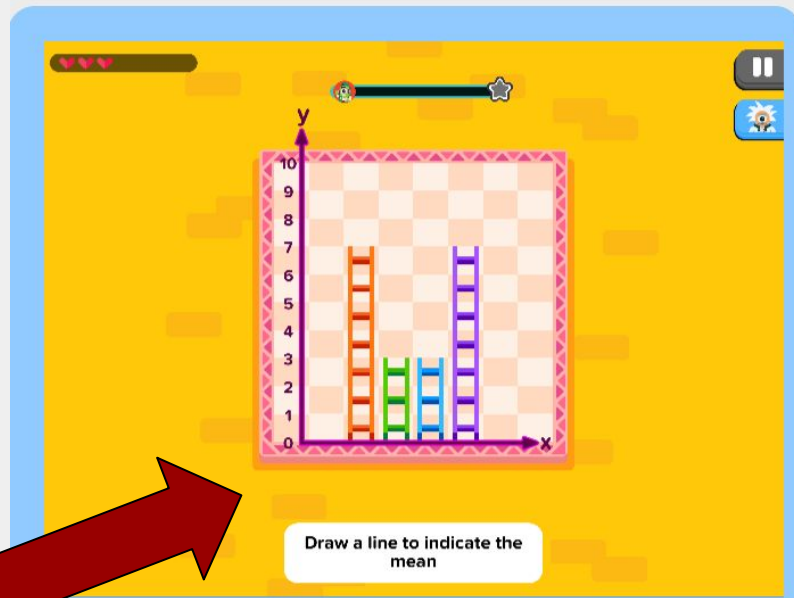
[Mean Absolute Deviate "Snakes and Ladders" Game - Zapzapmath](#)

- Click on the link above.
- Scroll down until you see this picture.



Wait for the game to load (it will load in this location).

- Watch the short video describing how to play. The game will start when the video is finished.
- ★ Find the mean of the ladders (add the number of rungs on each ladder and divide by how many ladders there are). Use your mouse to draw a line across the screen showing the value of the mean.

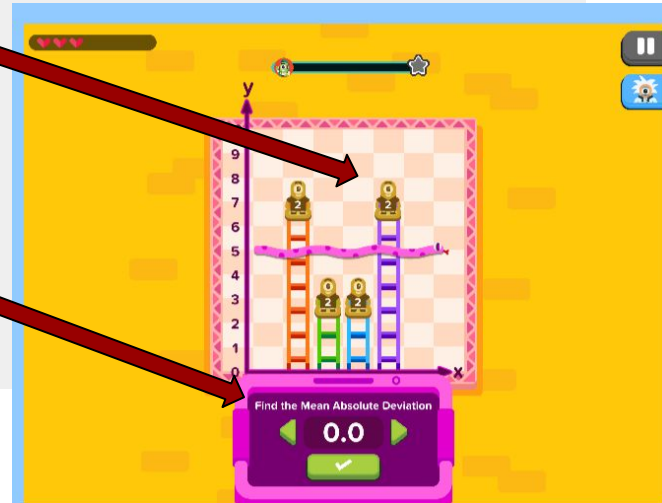
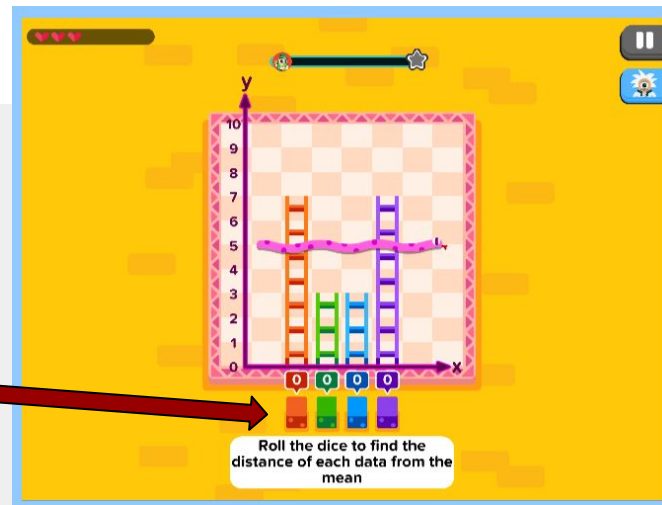


Directions continued on the next slide.

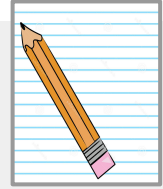
Additional Links

"Snakes and Ladders" continued

- ★ Roll the dice to represent the distance each ladder's height is from the mean line (the snake). If it's the exact same height as the mean line, leave it at zero.
- ★ Little brown sloths will appear to show the distance each ladder is from the mean to help you find the Mean Absolute Deviation.
- ★ Add the numbers inside each sloth and divide by the number of sloths there are to find the MAD and use the green arrows to enter that value in the answer box. Click the CHECKMARK when you're ready to submit your answer.
- ★ If you're correct, you've completed the level and will be given a new set of ladders to play with.



Challenge Practice



[Calculating Mean Absolute Deviation - IXL](#)

- ❑ Click on the link above.
- ❑ Use your scratch paper and calculator to help you.
- ❑ Type your answer in the answer box.
- ❑ Click “submit.”
- ❑ If needed, click “**Learn with an example.**”

Algebra 1 > KK.6 Mean absolute deviation A5C

[Learn with an example](#)

In the data set below, what is the mean absolute deviation?

5 3 3 8 6

If the answer is a decimal, round it to the nearest tenth.

mean absolute deviation (MAD):

Submit