Why do we need MAD?

Written by: Jim Spiker and Trey Cox

Arizona Mathematics Partnership (AMP)

# Student Handout

1. Given data A: {1,1,1,1,5,5,9,9,9,9}, create a histogram in the space below.



1. Calculate the mean, median and range for the distribution.

Mean: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Median:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Given data set B: {1,5,5,5,5,5,5,5,5,9}, create a histogram in the space below.



1. Calculate the mean, median and range for the distribution.

Mean: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Median:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Given data set C: {1,2,3,4,5,5,6,7,8,9}, create a histogram in the space below.



1. Calculate the mean, median and range for the distribution.

Mean: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Median:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If you were to pick a number at random from each data set, which set is most likely to yield a number that is close to the mean? Which set is most likely to yield a number far from the mean? Which data set would yield a number not close but not far from the mean?
2. For each data set (A, B, and C) make a table  and find the average of the set. This average is called the MAD or mean absolute deviation from the mean. How does the size of the MAD compare to the rank order you put the data sets into in the last question.

Distribution 1

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| X Value |  |  |  |
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Distribution 2

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Distribution 3

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|  |  |  | Mean: |

1. Make up your own data set using 10 values from 1 through 10 similar to the numbers we used in the first exercises. Make the set have the largest possible M.A.D.

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| X Value |  |  |  |
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|  |  |  | Mean: |

1. Make up your own data set using 10 values from 1 through 10 similar to the numbers we used in the first exercises. Make the set have the smallest possible M.A.D.

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| X Value |  |  |  |
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|  |  |  | Mean: |

1. What is a “mean absolute deviation” in your own words and what does it tell us about a data set that other statistics do not? Explain in such a way that one of your students would understand.