

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Mean Absolute Deviation MAD

**Deviation:** indicates how far a data value is from the mean

- Find the difference of the data value and the mean
  - If the data value is greater than the mean the answer will be positive
  - If the data value is smaller than the mean the answer will be negative

**Absolute Deviation:** absolute value of each deviation

- All deviations turn positive

**Mean Absolute Deviation (MAD):** the mean of the absolute deviation values

The MAD helps to describe how spread out the data values are.

- the smaller the MAD tells the data values are more clustered
- the larger the MAD tells the data values are more spread out.

**The Parker and Smith families each have 5 children.**

Parker family: Marina 14; Joe 6; Carmen 9; Enrique 3; Liza 3

Smith family: Rachel 11; Sadie 12; Allie 9; Billy 12; Nancy 6

Find the mean ages for each family.

$$\text{Parker: } \frac{14 + 6 + 9 + 3 + 3}{5} = \frac{35}{5} = 7$$

$$\text{Smith: } \frac{11 + 12 + 9 + 12 + 6}{5} = \frac{50}{5} = 10$$

Find the deviation and absolute deviation for each child

Parker Family

Mean 7

Name	Age	Deviation from mean	Absolute Deviation from mean
Marina	14	7	7
Joe	6	-1	1
Carmen	9	2	2
Enrique	3	-4	4
Liza	3	-4	4

Smith Family

mean 10

Name	Age	Deviation from mean	Absolute Deviation from mean
Rachel	11	1	1
Sadie	12	2	2
Allie	9	-1	1
Billy	12	2	2
Nancy	6	-4	4

Determine the Mean Absolute Deviation (MAD) for each family.

Parker family MAD:  $\frac{7+1+2+4+4}{5} = \frac{18}{5} = 3.6$

Smith family MAD:  $\frac{1+2+1+2+4}{5} = \frac{10}{5} = 2$

Which family's children are closer together in age? How do you know?

Smith family. Each child is about 2 years from the average age vs about 3.6 years in the Parker family