Mean Absolute Deviation

1. Robert Is trying to decide whether to move to New York City or to San Francisco. A table of temperatures (in degrees Fahrenheit) and absolute deviations for New York City follows:

Average Temperature in New York City												
Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Temperature	39	42	50	61	71	81	85	84	76	65	55	47
Absolute Deviation	24	21	13	2	8	18	22	21	13	2	8	16

a) The absolute deviations for the monthly temperatures are shown in the above table. Use this information to calculate the MAD. Explain what the MAD means in words.

b) Complete the following table, and then use the values to calculate the MAD for the San Francisco data distribution.

Average Temperature in San Francisco												
Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Temperature	57	60	62	63	64	67	67	68	70	69	63	58
Absolute Deviation												

c) Comparing the MAD values for New York City and San Francisco, which city would Robert choose to move to if he is interested in having a lot of variability in monthly temperatures? Explain using the MAD.

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a) The absolute deviations for the monthly temperatures are shown in the above table. Use this information to calculate the MAD. Explain what the MAD means in words.

The sum of the absolute deviations is 168*. The MAD is the average of the absolute deviations. The MAD is* 14 *degrees because* $\frac{168}{12} = 14$*. On average, the monthly temperatures in New York City differ from the mean of* 63 *degrees Fahrenheit by* 14 *degrees.*

b) Complete the following table, and then use the values to calculate the MAD for the San Francisco data distribution.

The sum of the absolute deviations is 42*. The MAD is the mean of the absolute deviations. The MAD is* 3.5 *degrees because* $\frac{42}{12} = 3.5$*.*

Average Temperature in San Francisco												
Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Temperature	57	60	62	63	64	67	67	68	70	69	63	58
Absolute Deviation	7	4	2	1	0	3	3	4	6	5	1	6

c) Comparing the MAD values for New York City and San Francisco, which city would Robert choose to move to if he is interested in having a lot of variability in monthly temperatures? Explain using the MAD.

New York City has a MAD of 14 *degrees, as compared to* 3.5 *degrees in San Francisco. Robert should choose New York City if he wants to have more variability in monthly temperatures.*