

## Scotland's Highland Games

*Stone Throws: Mean, Median, Mode, Range, and M.A.D.*

The Highland Games are a centuries old sporting event and festival that celebrates Scottish heritage. Games are based on unique aspects of life in the Scottish Highlands, such as bagpipe playing, dancing, and drumming. Some of the most popular competitions are the heavy athletics involving kilted contestants contending in demonstrations of athleticism and strength. There are many heavy athletic events like: the *caber toss*, the *bar and sheaf toss*, *stone put* and *Scottish hammer throw*.

**Part 1:** Fiona and Sophie are practicing in the *stone put* at the Highland Games. This entails hurling a 8 to 18 pound stone as far as possible. During practice, both competitors throws the 10 pound stone in the following distances (in ft):

**Fiona:**

5	10	10	10	10	12	15	20	20	25	30	30
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**Sophie:**

8	10.5	10.5	12	12	12	15	18	20	25	28	35
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- Find the mean of Fiona's stone throws:
- Find the median of Fiona's stone throws:
- Find the mode and range of Fiona's stone throws:
- Find the mean of Sophie's stone throws:
- Find the median of Sophie's stone throws:
- Find the mode and range of Sophie's stone throws:

**Part 2:** Compare the two competitors.

- a. Compare the two means. Which stone thrower has a longer distance when comparing the means?
  
- b. Compare the medians. Which stone thrower has a longer distance when comparing the medians?
  
- c. Looking at Fiona’s stone throws, which number(s) affect the mean, but not the median?

**Part 3:** Using the Mean Absolute Deviation (MAD), find out the following information:

- a. Find the Mean Absolute Deviation (MAD) of Fiona and Sophie’s stone throws.

Fiona: Mean Absolute Deviation (MAD)				Sophie: Mean Absolute Deviation (MAD)			
Data	Mean	Difference	Abs Value	Data	Mean	Difference	Abs Value
5				8			
10				10.5			
10				10.5			
10				12			
10				12			
12				12			
15				15			
20				18			
20				20			
25				25			
30				28			
30				35			
		Sum:				Sum:	
		Count:				Count:	
		M.A.D.=				M.A.D.=	

- b. What does the MAD tell you about each set of data?
  
- c. Overall, which measure of center best describes distance in stone throws, the mean or the median? Why?