

## Place of Power – Knot of Knowledge

Please **read carefully**. Answer the questions and **reread the problems carefully** to be sure that you have followed the directions. **Show your work** to receive full credit.

1. Suppose that your classmates were debating about whether going to college is really worth it. Based on the following data of annual salaries (rounded to the nearest thousands of dollars) for college graduates and high school graduates with no college experience, does it appear that going to college is indeed worth the effort? The data are from people in their second year of employment.

	Annual Salary in Thousands of Dollars														
<b>College Grad</b>	41	67	53	48	45	60	59	55	52	52	50	59	44	49	52
<b>High School Grad</b>	23	33	36	29	25	43	42	38	27	25	33	41	29	33	35

- A. Calculate the sample mean salary for college graduates and for high school graduates. **Round to the nearest thousand dollar.** Notice that the chart is in thousands of dollars, so 41 in the chart means \$41,000.

College Grad \_\_\_\_\_

High School Grad \_\_\_\_\_

- B. Calculate the **difference** between the sample mean salary for college graduates and for high school graduates.
- C. **On the same scale**, draw dot plots of the two distributions. Give the dot plot a **title** on the top and a **label** on the bottom.

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D. Based on the dot plots **compare** the shape, center, and spread of the distributions from part c.

i. Shape:

ii. Center:

iii. Spread:

E. Calculate the MAD for each distribution. **Round to the nearest thousand dollar.**

	Annual Salary in Thousands of Dollars														
<b>College Grad</b>	41	67	53	48	45	60	59	55	52	52	50	59	44	49	52
<b>Absolute Deviation</b>															
<b>High School Grad</b>	23	33	36	29	25	43	42	38	27	25	33	41	29	33	35
<b>Absolute Deviation</b>															

	MAD
<b>College Grad</b>	
<b>High School Grad</b>	

F. Based on the MADs, is the variability about the same?

G. What do the MADs represent in the context of the problem?

H. Based on your calculations, is going to college worth the effort? Part of your reasoning should involve the number of MADs that separate the sample means.



Sample Answers:

1a. \$52,000, and \$33,000

b. \$19,000

c. Did you use the same scale for both number lines? Make a title (Annual Salary) and a label (Thousands of \$)?

d. both symmetrical, College Grads have a higher center, they have a similar spread

e. \$5,000 and \$5,000

f. yes

g. The salaries typically fall within \$5,000 of the mean for each data set.

h. Yes, going to college is worth it. The difference in the means is \$19,000 which is about 4 times the (typical difference) MAD of \$5,000.

2. Yes, the mean male hand-spans are 2 MADs (1.0) greater than the female mean ( $21.6 - 19.6 = 2$ ). Also, the male size centers around 22cm, which is the maximum value for females.

3. Large so that it will be more accurate.

4. Min: 2.5 LQ: 4 Median: 6.5 UQ: 7 Max: 8.5

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