

Measures of Central Tendency Questions

I. Travel Distance

The ten members of the freshmen basketball team meet early every morning for practice. A survey was taken to see how far each player had to travel to practice. The results, in blocks, are as follows:

12 8 14 4 16 7 4 128 11 9

1. Find the mean, median, and mode of the data.

Mean _____ Median _____ Mode _____

2. Why isn't the mode a very good indicator of travel distance for the team?
3. What is wrong with using the mean to examine travel distance for the team?
4. Why is median the best indicator for this data?
5. Remove the outlier and find the mean of the remaining nine data? New Mean _____

II. First Year Teacher

A first year teacher was asked to report to the department chair on how well her students performed on the first pre-algebra test. School policy required teachers to assign a zero score to students that missed any test until that test was made up. Two students were absent the day of the test. The following is data for all 16 students in her class.

84 91 78 94 79 82 0 98 75 0 86 81 98 77 85 90

1. Find the mean, median, and mode of the data.

Mean _____ Median _____ Mode _____

2. What does she report to her department chair? Explain

III. Commissions

The highest annual commissions paid on sales by the Top-Flite Shoe Corporation were listed in its newsletter.

- 1) What is the mode of the commissions?
- 2) What is the mean of the commissions?
- 3) What is the median of the commissions?

Region	Commission	Region	Commission
1	\$20,000	8	20,000
2	17,500	9	18,500
3	18,000	10	22,000
4	16,000	11	29,500
5	20,000	12	20,000
6	19,000	13	20,500
7	21,500		

- 4) Which measure of central tendency would you report to attract new salespeople interested in making a large commission?
- 5) If the sales representative from region 4 is replaced with a representative earning a commission of 20,000, what are the mean, median, and mode?

IV. Final Exams

The following final exam grades were posted in the library. Make a frequency table using the following classes:

- 1) Make a frequency table using the following classes:

61-70, 71-80, 81-90, 91-100

14	79	68	87	84	92
96	74	94	98	89	94
97	88	80	94	67	88
100	98	88	74	88	88

- 2) What are the measures of central tendency?

Mean _____ Median _____ Mode _____

- 3) What is the new mean if the first student retakes the test and scores 99? Compare this to just adding to the end of the original list of scores. Is there a difference?
- 4) From this experience, explain why you would or would not just add your new bowling score to a previous average to compute a new average. What should you do in order to properly compute your bowling average?

V. Negotiations

Tom is head of the employees' union in Beehive Marketing Corporation. He is talking to Mr. Owens, the president, and trying to negotiate for higher wages for all employees. Because the cost of living is skyrocketing and because no employee in the union earns more than \$18,000, Tom is hoping to get Mr. Owens to improve wages.

Mr. Owens argument is that his costs are going up too and therefore the company is receiving less profit. He thinks the average salary is \$22,000 and doesn't believe the company can afford to raise wages.

At the union meeting, one new employee said that sales clerks make \$10,000 per year, \$4000 less than most workers. This employee is hoping to get the minimum raised to at least \$16,000.

Tom decided to do a careful analysis of the salary information he received from the payroll department. After he makes his analysis, he will present his conclusions to Mr. Owens and the board of directors. Pretend you are Tom. Analyze the statistics below. Then prepare your position for presentation to Mr. Owens and the Beehive board of directors.

In your presentation, discuss the varying opinions about the salaries of the workers. Explain why they are valid or not.

In addition, compare the present salary scale with two different scenarios (possible solutions) to the problem. Support your solutions with data.

Be certain to include measures of central tendency, data spreads, and graphs in your presentation.

Job Title	Number of employees	Salary
President	1	\$250,000
Vice-President	2	130,000
Business Manager	3	55,000
Department Managers	12	18,000
Workers	30	15,000
Payroll Clerk	3	13,500
Secretary	6	12,000
Sales Clerk	10	10,000
Custodian	5	8,000
TOTAL	72	\$1, 593, 500

VI. Will This Raise my Grade to an A???

A student must have a 94% average or better at Madison High in order to receive an A grade. Kathy was trying really hard to earn straight A's and was on course except for her 2nd period science class and her 5th period algebra class as she had a 92% in each class with only one test left in each. The final day and final test finally arrived for both classes. As she finished her test in science she found out that she scored 98%. She waited around until the teacher entered her score on the computer and was told that she had raised her grade to an A. She then focused on her algebra test and did equally well earning 98% on that exam. She didn't bother staying around while the teacher entered her score, but went home feeling rather confident she had accomplished her goal and earned straight A's in all of her classes. However, when her report card arrived a week later she still had an A- in algebra. What went wrong?

1) Write one or two sentences possibly explaining why Kathy hadn't earned an A in algebra.

Perhaps some additional data will bring a better insight into what actually happened.

The grade in science was based solely on three test scores during the testing term. Kathy's first two scores were 88% and 96%. Her average to that point was 92%.

The grade in algebra was based on a total of seven test scores during the testing term. Kathy's first six test scores were as follows: 96%, 88%, 84%, 99%, 90%, and 95%. Her average to that point was 92%.

2) What additional insight does this information provide as to why Kathy didn't receive an A grade in algebra?

3) What final test score was needed for Kathy to earn an A in algebra?

4) What did you learn from this activity?