Statistics Unit 1 worksheet: Resistant and non resistant measures

Name _____ Date _____ Period _____

1. Chloe took nine spelling quizzes this term, each scored out of 20. Her scores were 17, 20, 15, 19, 0, 18, 16, 20, 19. The 0 is for a quiz she forgot to hand in, and her teacher agrees to drop it.

(a) Find the mean and the median of all nine scores.

(b) Find the mean and the median of the eight scores left after the 0 is dropped.

(c) Which of the two summaries did dropping the 0 move more? Explain why in terms of what each summary uses.

2. Amara posts cooking videos online. Her last ten videos last, in minutes, 12, 9, 15, 8, 13, 11, 16, 10, 14, 12.

(a) Find the mean, the median and the IQR of the ten lengths.

(b) She then posts a livestream that lasts 56 minutes. Find the mean, the median and the IQR of the eleven lengths.

(c) Amara says, "The median and the IQR are resistant, so adding a video cannot change them at all." What is right about her statement, and what is wrong?

3. Diego practices sketching every day. From Monday to Friday he sketched for 25, 30, 35, 30, 30 minutes. On Saturday he spent 120 minutes at an art workshop.

(a) Find the mean and the MAD of the five weekday times.

(b) Find the mean and the MAD of all six days.

(c) Find the IQR of all six days.

(d) Diego wants one number for how much his sketching time usually changes from day to day. Should he report the MAD from (b) or the IQR from (c)? Explain.

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4. The nine members of a book club finished these numbers of books this summer:
4, 7, 5, 9, 6, 8, 5, 13, 6. A tenth member joins and reports her own number of books, a whole number.

(a) Find the mean and the median of the nine members.

(b) Whatever the tenth member reports, the median of the ten can be only one of two values. Find both, and say which reports give each.

(c) Find the mean of the ten if the tenth member finished 50 books. Explain why her 50 moves the mean so much more than it moves the median.

5. Say whether each statement is true or false. For a true statement, give a list that shows it can happen. For a false statement, give a list that shows it is wrong.

(a) Raising the smallest value of a list can change Q_1.

(b) Doubling the largest value of a list doubles the range.

(c) If the mean and the median of a list are equal, the list has no outliers by the 1.5 IQR rule.

6. Nine houses on one street were sold last year. Their prices, in thousands of dollars, were 248, 236, 262, 230, 896, 251, 244, 255, 240.

(a) Find the mean and the median price.

(b) How many of the nine houses sold for more than the mean?

(c) A family thinking of moving to the street wants one number for what a house there usually costs, and one for how much the prices usually vary. Which center and which measure of spread should they use? Find the spread you choose, and explain your choice.

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