

MATH 130.06 Elements of Statistics I

Quiz 1 (15 points)
September 24, 2009

NAME: Key

Answer all questions. Show all your working neatly and indicate your answers clearly.

1. (2 points) In the space provided, indicate whether the variable described is *qualitative* or *quantitative*.

(a) Hair color Qualitative

(b) Height in inches Quantitative

2. (2 points) In the space provided, indicate the sampling method described.

(a) A surveyor groups all MU students by major, and then chooses a random sample of 9 students from within each major. stratified

(b) A surveyor questions every 5th customer entering a clothing store. systematic

3. (4 points) The number of hours spent watching television per week by an MU student is distributed bell-shaped with a mean of 8 hours and a standard deviation of 2 hours.

(a) What is the approximate percentage of students who watch between 4 and 12 hours of television per week?

Within 2 standard deviations of mean,
so 95%

(b) What is the approximate percentage of students who watch more than 14 hours of television per week?

More than 3 standard deviations
above the mean, so

$$\frac{(100 - 99.7)}{2}\% = 0.15\%$$

THERE IS ANOTHER QUESTION ON THE OTHER SIDE OF THE PAPER!!

4. (7 points) The following data represents the number of Mars bars purchased from a vending machine each day for 5 days:

3 8 4 10 5

(Recall: $\bar{x} = \frac{\sum x_i}{n}$ and $s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{n-1}}$.)

- (a) What was the *median* number of Mars bars sold in one day?

3 4 5 8 10

5

- (b) What was the *mean* number of Mars bars sold in one day?

$$\frac{3+4+5+8+10}{5} = \frac{30}{5} = \underline{\underline{6}}$$

- (c) Calculate the *sample standard deviation*, showing all steps.

x_i	\bar{x}	$x_i - \bar{x}$	$(x_i - \bar{x})^2$
3	6	-3	9
8	6	2	4
4	6	-2	4
10	6	4	16
5	6	-1	1
			<hr/>
			34

$$s^2 = \frac{34}{4} = 8.5$$

$$s = \sqrt{8.5} \approx 2.915$$

THE END