

Math 153 - Quiz 1

August 30, 2012

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (3 points) A certain publicly-traded company has 567,859 stockholders. The company president plans to conduct a survey to study the number of shares held by individual stockholders.

- (a) Are the numbers of shares held by stockholders discrete or continuous? Briefly explain.

DISCRETE - ONE CANNOT OWN A FRACTIONAL PORTION OF SHARES OF STOCK, ONLY 0, 1, 2, ... SHARES.

- (b) Identify the level of measurement (nominal, ordinal, interval, ratio) for the numbers of shares held by stockholders.

RATIO - ONE CAN OWN TWICE AS MANY SHARES AS ANOTHER

- (c) If the survey is conducted by calling 20 randomly selected stockholders from each of the 50 United States, is simple random sampling being used? Briefly explain.

No, NOT ALL SAMPLES OF 1000 ARE EQUALLY LIKELY.

FOR EXAMPLE, IT IS IMPOSSIBLE TO GET 1000 PEOPLE FROM A SINGLE STATE.

- (d) If a sample of 1000 stockholders is obtained, is the average number of shares per stockholder a parameter or a statistic?

STATISTIC

- (e) Suppose the survey is conducted by mailing a questionnaire that stockholders are to complete and return. What is wrong with this approach?

IT IS A VOLUNTARY RESPONSE SURVEY.

IT'S LIKELY THAT ONLY THOSE WHO FEEL

STRONGLY WILL PARTICIPATE.

2. (1 point) What is the major difference between an observational study and an experiment?

IN AN OBSERVATIONAL STUDY WE SIMPLY OBSERVE AND RECORD. IN AN EXPERIMENT, WE APPLY A "TREATMENT" TO MODIFY THE SUBJECTS.

3. (1 point) A survey in New Zealand asked the following question: "Should spanking, as part of good parental correction, be a criminal offense?" What is wrong with this survey question?

IT IS A LOADED QUESTION!
THE QUESTION SEEMS TO BE SAYING THAT LAW AGAINST SPANKING WOULD PENALIZE GOOD PARENTS.

4. (1 point) While arguing with his parents, Bobby said, "Ugh! You let Cindy have a sleepover like 2183 times." What is wrong with Bobby's statement?

BOBBY WAS VERY PRECISE, BUT QUITE LIKELY VERY INACCURATE.

5. (4 points) The following are weights (in lbs) at birth of 25 full-term babies.

~~5.8~~ ~~8.9~~ ~~7.8~~ ~~10.2~~ ~~8.6~~
~~8.9~~ ~~8.3~~ ~~6.1~~ ~~9.1~~ ~~6.3~~
~~8.2~~ ~~8.3~~ ~~8.2~~ ~~9.0~~ ~~5.7~~
~~6.6~~ ~~9.9~~ ~~10.3~~ ~~8.1~~ ~~8.8~~
~~7.9~~ ~~8.2~~ ~~6.0~~ ~~9.4~~ ~~7.1~~

(a) Construct both a frequency distribution and a relative frequency distribution. You may use the same table for both.

Weight (lbs)	Frequency	Relative Freq
5.0 - 5.9	2	8%
6.0 - 6.9	4	16%
7.0 - 7.9	3	12%
8.0 - 8.9	10	40%
9.0 - 9.9	4	16%
10.0 - 10.9	2	8%

(b) State your class boundaries, class midpoints, and class width.

Boundaries: 4.95, 5.95, 6.95, ..., 10.95

Midpoints: 5.45, 6.45, 7.45, ..., 10.45

Class width: 1.0