

Due by 5:00pm Friday, September 4. Send a PDF with your solutions to blins@hsc.edu.

1. In a study of the relationship between socioeconomic class and unethical behavior, 129 University of California undergraduates at Berkeley were asked to identify themselves as having low or high social-class by comparing themselves to others with the most (least) money, most (least) education, and most (least) respected jobs. They were also presented with a jar of individually wrapped candies and informed that the candies were for children in a nearby laboratory, but that they could take some if they wanted. After completing some unrelated tasks, participants reported the number of candies they had taken.
 - (a) Identify the main research question of the study.
 - (b) Who or what are the individuals in this study, and how many are included?
 - (c) The study found that students who were identified as upper-class took more candy than others. How many variables were recorded for each subject in the study in order to conclude these findings? State the variables and their types (categorical or quantitative).

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2. Suppose you want to estimate the percentage of videos on YouTube that are cat videos. It is impossible for you to watch all videos on YouTube so you use a random video picker to select 1000 videos for you. You find that 2% of these videos are cat videos. Determine which of the following is a variable, an individual, a sample statistic, or a population parameter.

- (a) Percentage of all videos on YouTube that are cat videos.
- (b) 2%.
- (c) A video in your sample.
- (d) Whether or not a video is a cat video.

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3. (True or False) A YouTube video without any cats is still part of the population of interest in the example above.
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4. Chia Pets - those terra-cotta figurines that sprout fuzzy green hair - made the chia plant a household name. But people also use chia seeds to try to lose weight. In one 2009 study, researchers recruited 38 men and 38 women and divided them randomly into two groups: treatment or control. One group was given 25 grams of chia seeds twice a day, and the other was given a placebo. After 12 weeks, the scientists found no significant difference between the groups in appetite or weight loss.

(a) Was this an experiment or an observational study? How can you tell?

(b) If people in this study who were given chia seeds had lost significantly more weight, could we conclude that chia seeds *caused* the weight loss? Why or why not?

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5. To find out if male or female college students talk more, researchers randomly selected 47 student volunteers at one college. The students wore a voice recorder for several days. The recorders were set to randomly record speech throughout the day so that the researchers could estimate how many words each student said per day. The data for the study can be downloaded as a spreadsheet from this link: <http://people.hsc.edu/faculty-staff/blins/StatsExamples/talking.xlsx>.

(a) Make a single histogram that shows the number of words the 47 students spoke per day (ignoring gender). Would you say that the data is skewed left, right, or neither?

(b) Make side-by-side box-and-whisker plots comparing the five number summaries of words per day for male vs. female college students.

(c) Find the mean and the standard deviation of the number of words spoken by the men separately by the women in the sample.
