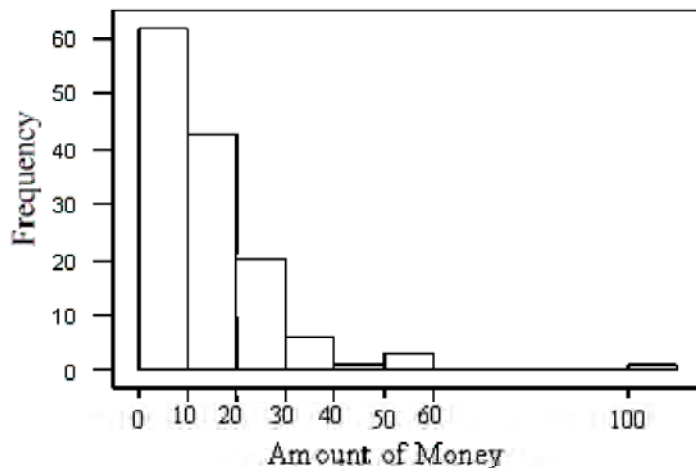


CP Statistics Sem 1 Final Exam Review**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- _____ 1. A particularly common question in the study of wildlife behavior involves observing contests between “residents” of a particular area and “intruders.” In each contest, the “residents” either win or lose the encounter (assuming there are no ties). Observers might record several variables. Which of the following variables is categorical?
- the number of animals involved in the contest.
 - whether the “residents” win or lose.
 - the duration of the contest (in seconds).
 - the total number of contests won by the “residents.”
 - How long the “intruder” lives in the area before it is accepted as a “resident.”
- _____ 2. In a statistics class with 136 students, the professor records how much money each student has in his or her possession during the first class of the semester. The histogram below is of the data collected.



The number of students with over \$30 in their possession is

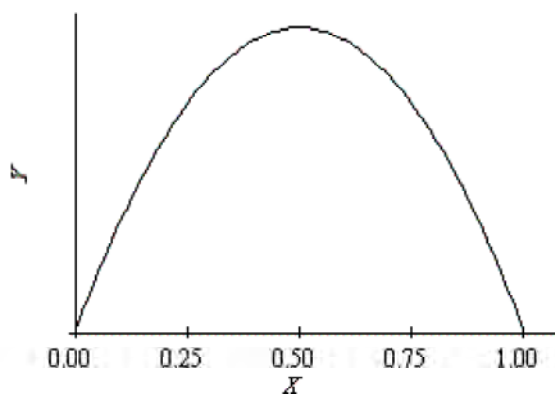
- about 60.
- less than 5.
- more than 100.
- about 10.
- about 30.

- ___ 3. For a physics course containing 10 students, the maximum point total for the quarter was 200. The point totals for the 10 students are given in the stemplot below.

11	6 8
12	1 4 8
13	3 7
14	2 6
15	
16	
17	9

The median point total for this class is

- a. 137. b. 133. c. 130.5. d. 142. e. 130.
- ___ 4. A sample of serum cholesterol levels of six men who visited a cholesterol screening clinic located in the downtown area yielded values of
218 273 210 259 290 232
The mean cholesterol level in this sample is
a. 245.5. b. 247.0. c. 266.0. d. 234.5. e. 229.5.
- ___ 5. A set of data has a median that is much larger than the mean. Which of the following statements is most consistent with this information?
- a. A stemplot of the data is skewed left.
b. A stemplot of the data is symmetric.
c. A stemplot of the data is skewed right.
d. The data set must be so large that it would be better to draw a histogram than a stemplot.
e. None of the above
- ___ 6. For the density curve displayed below, the mean is



- a. 1. b. 0.50. c. 0.25. d. 0.75. e. 0.71.

- ___ 7. A z-score tells you
- the original raw score on which it is based.
 - the percent of the data at that given score
 - how far above or below the mean a score lies.
 - if the distribution it comes from is normal.
 - how far above or below the mean a score lies in standard deviation units
- ___ 8. In a large college class of 150 students, Steven scored a 75 on his final exam worth 100 points. There were 90 students in the class who scored the same as Steven or lower. What percentile is Steven's score on this final exam?
- 75th
 - 80th
 - 70th
 - 60th
 - 65th
- ___ 9. What percent of data in a normal distribution lie with 2 standard deviations of the mean?
- 99.7%
 - 95%
 - 100%
 - 50%
 - 68%
- ___ 10. Using the standard normal distribution tables, what is the area under the standard normal curve corresponding to $Z < -1.10$?
- 0.1357.
 - 0.2704.
 - 0.8643.
 - 0.8413.
 - 0.3643.
- ___ 11. Two variables are said to be negatively associated if
- there is no pattern in the relationship between the two variables.
 - larger values of one variable are associated with smaller values of the other.
 - smaller values of one variable are associated with smaller values of the other.
 - larger values of one variable are associated with larger values of the other.
 - none of the above
- ___ 12. The correlation coefficient measures
- whether there is a relationship between two variables.
 - the strength of the relationship between two quantitative variables.
 - the strength of the linear relationship between two quantitative variables.
 - whether a cause and effect relation exists between two variables.
 - whether or not a scatterplot shows an interesting pattern.
- ___ 13. Suppose a straight line is fit to data having response variable y and explanatory variable x . Predicting values of y for values of x outside the range of the observed data is called
- interpolation.
 - contingency.
 - extrapolation.
 - correlation.
 - causation.

The cost of a repair at an auto mechanic's shop has a fixed charge for the part and an hourly charge for the labor required to make the repair. The equation for the total cost (y) for a repair in terms of the time it takes to do the job is given as $y = 123.75 + 43x$.

- ___ 14. What is the total cost if the repair takes 2 hours to complete?
- a. \$209.75 b. \$43.00 c. \$123.75 d. \$252.75 e. \$166.75
- ___ 15. What is the cost of the part that was replaced?
- a. \$123.75 b. \$252.75 c. \$43.00 d. \$209.75 e. \$166.75
- ___ 16. A market research company wishes to find out whether the population of students at a university prefers brand A or brand B of instant coffee. A random sample of students is selected, and each student is asked first to try brand A and then to try brand B, or vice versa (with the order determined at random). They then indicate which brand they prefer. This is an example of
- a. an experiment.
b. an observational study, not an experiment.
c. a systematic sampling design.
d. a stratified sampling design.
e. a block design.
- ___ 17. In order to take a sample of 90 members of a local gym, I first divide the members into men and women, and then take a simple random sample of 45 men and a separate simple random sample of 45 women. This is an example of a
- a. double-blind simple random sample.
b. stratified random sample.
c. randomized comparative experiment.
d. two-step sample.
e. block design.
- ___ 18. A large insurance company with offices in many different cities would like to survey a sample of its employees concerning medical insurance benefits. The company decides to randomly sample 10 of its 50 offices and, in doing so, take all of the employees in those offices to make up the total sample. This is an example of a
- a. systematic sample.
b. cluster sample.
c. convenience sample.
d. stratified random sample.
e. simple random sample.

A study of human development showed two types of movies to groups of children. Crackers were available in a bowl, and the investigators compared the number of crackers eaten by children watching the different kinds of movies. One kind of movie was shown at 8 a.m. (right after the children had breakfast) and another at 11 a.m. (right before the children had lunch). It was found that during the movie shown at 11 a.m., more crackers were eaten than during the movie shown at 8 a.m.. The investigators concluded that the different types of movies had an effect on appetite.

- ___ 19. The response variable in this experiment is
- the number of crackers eaten.
 - the time the movie was shown.
 - the children in the study.
 - the bowls.
 - the different kinds of movies.
- ___ 20. The results cannot be trusted because
- children are usually too sleepy early in the morning to watch movies.
 - the study was not double-blind. Neither the investigators nor the children should have been aware of which movie was being shown.
 - the time the movie was shown is a confounding variable.
 - the investigators should have used several bowls, with crackers randomly placed in each.
 - the investigators were biased. They knew beforehand what they hoped the study would show.
- ___ 21. Evaluate ${}_9P_3$
- 504
 - 126
 - 84
 - 36
 - 60,480
- ___ 22. Evaluate ${}_7C_2$
- 42
 - 7
 - 2,520
 - 35
 - 21

You are going to play 4 games of tennis against your cousin. Based on your past experience, you estimate that your probability of winning any single game is .56. It is to be assumed that each game outcome is independent of all other games played.

- ___ 23. What is the probability that you win all of the games?
- .078
 - .055
 - .098
 - .058
 - .176
- ___ 24. What is the probability that you lose all of the games?
- .037
 - .067
 - .016
 - .087
 - .085
- ___ 25. What is the probability that you win at least one of the games?
- .953
 - .915
 - .984
 - .963
 - .933

CP Statistics – Chapter Final Exam Review – Free Response Questions
Show all necessary work. Write clearly and completely

1. A doctor randomly selects 40 of his patients aged 20-29 and records their serum HDL cholesterol levels. The results are shown in the table below.

70	56	48	48	53	52	66	48	36	49
28	35	58	62	45	60	38	73	45	51
56	51	46	39	56	32	44	60	51	44
63	50	46	69	53	70	33	54	55	52

- a) Display these data in a stemplot. Be sure it is properly labeled.
- b) Describe the features of this graph. Remember your SOCS.
2. The weights of healthy adult male Labrador Retrievers are approximately Normally distributed with a mean of 77 pounds and a standard deviation of 6 pounds. Use z-scores and Table A to answer the following.
- a) Sketch a normal curve labeling 1, 2 and 3 standard deviations from the mean.
- b) What percentage of healthy adult male Labrador Retrievers weigh less than 70 lbs?
- c) What percentage of healthy adult male Labrador Retrievers weigh more than 90 lbs?
3. The following data pertain to the number of bacteria present in a petri dish at various times in a laboratory experiment.

Hours (x)	1	2	3	4	5
Bacteria (y)	120	135	150	185	200

- a) Write a linear equation that represents the relationship between these variables?
- b) How many bacteria will be present after 8 hours?
- c) How many bacteria were in the dish at the beginning of the experiment?
- c) What is the hourly rate of increase in bacteria?

CP Statistics – Chapter Final Exam Review – Free Response Questions
Show all necessary work. Write clearly and completely

4. A college psychology professor wants to randomly select 40 of her 200 freshman psychology students to participate in an experiment. She is considering two methods: (1) a simple random sample (SRS) and (2) a stratified random sample, by gender.

a) Use the table of random digits below to select the first 5 student numbers for an SRS.

Line 135 66925 55658 39100 78458 11206 19876 87151 31260
Line 136 08421 44753 77377 28744 75592 08563 79140 92454
Line 137 53645 66812 61421 47836 12609 15373 98481 14592

b) Briefly describe a process for selecting a stratified random sample in this setting.

5. All human blood can be “ABO” typed as belonging to one of A, B, O, or AB types. The actual distribution varies slightly among different groups of people, but for a randomly chosen person from North America, the following are the approximate probabilities.

Blood Type	O	A	B	AB
Probability	.45	.40	.11	.04

a) Give 2 reasons why the above is a legitimate probability model.

If a person from North America is selected at random, what is the probability that...

- b) they do not have Type O blood?
c) they have Type A or Type B blood?

If two people from North America are selected at random, what is the probability that...

- d) the first one has Type A blood and the second has Type B blood?
e) they both Type AB blood?