HW #63: SHOW ALL WORK on the worksheet

1. Last year the Wolverine football team scored the following number of points in its 10 games.
   Number of points: 17, 7, 28, 21, 24, 35, 14, 10, 31, 20
   Find the mean, median, mode, range, and standard deviation of the data.

2. Explain what happens to the mean, the median, the range, and the standard deviation when the same constant value is added to each value in a data set.

3. The table below shows the price of a round trip ticket to and from your vacation destination on five different airlines.

Airline A	$307
Airline B	$291
Airline C	$300
Airline D	$288
Airline E	$268

   a. Find the mean and median of the ticket prices.
   b. Find the range and standard deviation of the ticket prices.
   c. 10% sales tax is added to the price of each ticket. Use what you know about multiplying each value in a data set by a constant to find the mean, median, range, and standard deviation of the total costs of the tickets.

4. Suppose the test scores on an exam show a normal distribution with a mean of 82 and a standard deviation of 5.
   a. Within what range do about 95% of the scores fall?
   b. About what percent of the scores are between 77 and 92?

5. The class average on a test was 85, with a standard deviation of 3.8. Find the probability that a student received at least a 76 on the test.

Match the sample of students with the correct sampling method.

____ 6. every seventh student on the class list

a. random
b. self - selected
c. systematic
d. convenience

____ 7. mail a response card

a. random
b. systematic
c. self - selected
d. convenience

____ 8. the first 40 students who enter the office

a. random
b. systematic
c. self - selected
d. convenience

9. When 900 voters were polled, 53% said they were voting *yes* on an initiative measure. Find the margin of error and the interval that is likely to contain the true population percent.

10. Maria read in the newspaper that 59% of voters in her city were voting "no" on a local initiative measure. The newspaper article stated that 772 people were originally polled. What is the margin of error for the survey? Find the interval that is likely to contain the true population percent.

11. According to a recent survey, 45% of American teenagers in a random sample said they prefer thick crust pizza to thin crust. If the margin of error is $\pm 6\%$, about how many students were surveyed?

12. Identify the type of sample and describe the population of the survey. Then tell if the sample is potentially biased. Explain your reasoning.
A telemarketer calls every tenth number in a phone book.

13. Identify the type of sample and describe the population of the survey. Then tell if the sample is potentially biased. Explain your reasoning.
The first 50 students to arrive at school are surveyed.

14. Each year the junior class goes on a field trip. You want to poll the class to find out where they would like to go. There are 141 students in the junior class. Describe a method for selecting a random sample of 20 juniors.

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Answer Section

1. 20.7; 28; ≈ 8.58
2. Sample answer: When a constant value is added to every value in a data set, the mean and the median are translated by the constant value, while the range and the standard deviation remain the same.
3. a. \$290.80; \$291
   b. \$39; $\approx$ \$13.23
   c. \$319.88; \$320.10; \$42.90; \$14.55
4. a. $72 \leq x \leq 92$
   b. about 81.5%
5. 0.9918
6. C
7. C
8. D
9. ±3.3%; between 49.7% and 56.3%
10. ±3.6 %; between 55.4% and 62.6%
11. about 278 students
12. Sample answer: Systematic; the population is all the people with phone numbers listed in the phone book; the sample is not biased, because no prejudgments are made regarding the numbers selected.
13. Sample answer: Convenience; the population is all students who attend the school; the sample is not biased, because the surveyor has no control over who arrives at school first.
14. Answers may vary. Sample answer: Make a list of all 141 juniors. Assign each junior a different integer from 1 to 141. Generate 20 unique random integers. Poll the 20 students that correspond to the 20 integers you generated.