

Review Sheet Statistics

Name _____

Date _____

1. Candy bar researchers want to know whether more teenagers or adults buy their product. Is this research topic best investigated through an experiment or observational study?

2. Your local movie theatre is looking at adding a matinee to their weekend movie schedules. To help them make a decision on this, they want to find out how many people would attend this matinee movie. A researcher makes phone calls to random members in your town. Is this a biased or unbiased sample?

3. The wait times for all customers from 11 A.M. – 3 P.M. at your local bank are normally distributed with a mean of 4.7 minutes and a standard deviation of 3 minutes. Are these numerical values parameters or statistics?

4. A researcher wants to test the effectiveness of a new vaccine used to help resist pneumonia. The following statement describes the experimental design:

The researcher is given 8 people who will be a part of this experiment. Four people are given the pneumonia vaccine and the other four are assigned the placebo. After 6 months, the members of the study are re-evaluated.

- a. Identify a potential problem, if any, with the experimental design.
- b. Describe how you could improve the potential problem, if any, with the experimental design.

A normal distribution has a mean of 35 and a standard deviation of 3. Find the probability that a randomly selected x -value from the distribution is in the given interval.

5. greater than 32

6. at most 32

7. at least 41

8. between 29 and 38

9. less than 38

10. Your school leaders are considering a change of venue for this year's Junior/Senior Prom. They have tasked the student council with gathering information from the student body regarding the issue. Because 1740 students are enrolled at your school, the council decides to survey a sample of students. Your school has 430 freshmen, 441 sophomores, 427 juniors, and 442 seniors. A random, unbiased survey is agreed upon and administered to 435 students. The results are that 46% of the students want to keep the prom where it is and 54% of the students want to change the venue. From this survey, can the school determine which option the student body prefers? Explain.

11. A randomized comparative experiment tests whether a hair growth supplement increases the human hair growth rate (in centimeters). The control group has nine people and the treatment group, which receives the hair supplement, has nine people. The table below shows the results. Round your answers to the nearest hundredth, if necessary.

	Hair Growth (cm)								
Control Group	C, 12.1	C, 13.2	C, 11.9	C, 14.3	C, 14.1	C, 12.7	C, 13.5	C, 11.9	C, 13.7
Treatment Group	T, 15.2	T, 17.1	T, 18.3	T, 17.6	T, 18.8	T, 16.8	T, 15.9	T, 17.3	T, 17.5

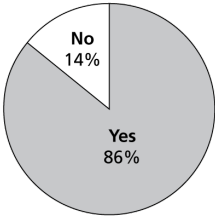
- a. Find the mean yields of the control group, $\overline{X}_{\text{control}}$, and the treatment group, $\overline{X}_{\text{treatment}}$.
- b. Find the experimental difference of the means, $\overline{X}_{\text{treatment}} - \overline{X}_{\text{control}}$.
- c. Display the data in a double dot plot below.

12. In a recent survey of 3500 randomly selected U.S. drivers, 62% said they had received at least one speeding ticket.

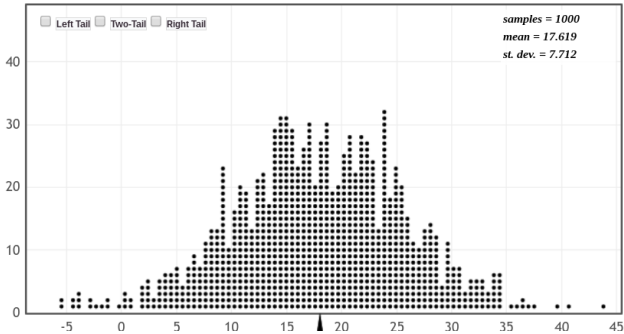
- a. Identify the population and the sample.
- b. Find the margin of error for the survey.
- c. Give an interval that is likely to contain the exact percent of U.S. drivers who have received at least one speeding ticket with 95% certainty.

d. You survey 50 drivers at your school. The results are shown in the graph at the right. Which survey would you use to estimate the percent of U.S. drivers who have received at least one speeding ticket? Explain your answer below.

U.S. Drivers Who Have Received at Least One Speeding Ticket



13.The simulation on the left shows 1,000 resamplings based on the difference between tea and coffee drinks rates interferon. Is there evidence of a significant difference in interferon in tea versus in coffee? Why or why not?



of

1. Which statements describe the transformations of the graph of $f(x) = x^2 + x$ represented by $g(x) = (3x)^2 + (3x) - 2$? Choose as many choices as apply.

- A. a vertical stretch by a factor of 3

B. a vertical shrink by a factor of $\frac{1}{3}$
- C. a horizontal shrink by a factor of $\frac{1}{3}$

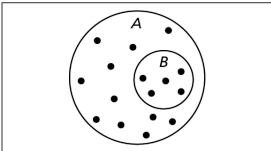
D. a horizontal stretch by a factor of 3
- E. a vertical translation 2 units up

F. a vertical translation 2 units down
- G. a horizontal translation 2 units right

H. a horizontal translation 2 units left

2. Use the diagram to explain why the equation is true for the sets pictured.
 $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

B is entirely inside A: $P(A \cup B) = P(A) + P(B) - P(B) = P(A)$



3. Use the sequence $\frac{1}{2}, -\frac{5}{2}, \frac{25}{2}, -\frac{125}{2}, \dots$ to answer the following.

- Describe the pattern.
- Write the next term.
- Graph the first five terms.
- Write a rule for the n th term.

4. A survey asked male and female students about whether they prefer Sign Language class or French class. The table shows the results of the survey.

		Class		
		Sign Language	French	Total
Gender	Female		19	
	Male			43
	Total	54		95

- Complete the two-way table
- What is the probability that a randomly selected student is male and prefers French class?
- What is the probability that a randomly selected female student prefers sign language?
- Are gender and language independent?
- Fill in the following relative frequency table:

		Class		
		Sign Language	French	Total
Gender	Female	0.3474		0.5474
	Male			0.4526
	Total	0.5684		1

Test 1 AP Statistics

Name: _____

Part 1: Multiple Choice.

Circle the letter corresponding to the best answer.

1. The heights of American men aged 18 to 24 are approximately Normally distributed with a mean of 68 inches and a standard deviation of 2.5 inches. Only about 5% of young men have heights outside the range

- (a) 65.5 inches to 70.5 inches
- (b) 63 inches to 73 inches
- (c) 60.5 inches to 75.5 inches
- (d) 58 inches to 78 inches
- (e) none of the above

2. Use the information in the previous problem. About what percentage of the men are over 70.5 inches tall?

- (a) 2.5
- (b) 5
- (c) 16
- (d) 32
- (e) 68

3. The area under the standard Normal curve corresponding to $-0.3 < Z < 1.6$ is

- (a) 0.3273
- (b) 0.4713
- (c) 0.5631
- (d) 0.9542
- (e) none of the above

4. The distribution of the time it takes for different people to solve a certain crossword puzzle is strongly skewed to the right, with a mean of 30 minutes and a standard deviation of 15 minutes. The distribution of z-scores for those times is

- (a) Normally distributed, with mean 30 and standard deviation 15.
- (b) Skewed to the right, with mean 30 and standard deviation 15.
- (c) Normally distributed, with mean 0 and standard deviation 1.
- (d) Skewed to the right, with mean 0 and standard deviation 1.
- (e) Skewed to the right, but the mean and standard deviation cannot be determined without more information.

5. A fire department in a rural county reports that its response time to fires is approximately Normally distributed with a mean of 22 minutes and a standard deviation of 11.9 minutes. Approximately what proportion of their response times is over 30 minutes?

- (a) 0.03
- (b) 0.21
- (c) 0.25
- (d) 0.75
- (e) 0.79

