

UMGC STATISTICS 200
MIDTERM SUMMER 2020



INSTRUCTOR PAYNE

Name: _____

1. (20 pts) In a USA Today Internet Poll, readers responded voluntarily to the question, "Do you consume at least one caffeinated beverage every day?" Define the following regarding the **study**.
- a) The population is
- ☐ all internet users.
 - ☐ all internet users that Respond to Polls
 - ☐ all USA Today Readers
 - ☐ all USA Today Readers that voluntarily responded to the internet poll
 - ☐ the proportion of internet users that consume at least one caffeinated beverage per day.
- b) The sample is
- ☐ all internet users.
 - ☐ the number of internet users that Respond to Polls
 - ☐ the percentage of USA Today Readers that respond to all USA Today internet polls
 - ☐ the number of USA Today Readers that voluntarily responded to the USA Today internet poll
 - ☐ the proportion of internet users that consume at least one caffeinated beverage per day.
- c) The parameter is
- ☐ the number of all internet users that responded to the USA Today Internet Poll.
 - ☐ the proportion of all internet users that responded to the USA Today Internet Polls
 - ☐ the proportion of USA Today Readers that consume at least one caffeinated drink every day.
 - ☐ the proportion of all USA Today Readers that voluntarily responded to the USA Today Internet Poll.
 - ☐ the proportion of USA Today internet poll respondents that drink at least one caffeinated drink every day.
- d) The statistic is
- ☐ the number of internet users that responded to the USA Today Internet Poll.
 - ☐ the proportion of all internet users that responded to the USA Today Internet Polls
 - ☐ the proportion of all USA Today Readers that voluntarily responded to the USA Today Internet Poll.
 - ☐ the proportion of USA Today Readers that consume at least one caffeinated drink every day.
 - ☐ the proportion of USA Today internet poll respondents that drink at least one caffeinated drink every day.

2. (10 pts) According to a survey, seven-in-ten adults (72%) have read a book within the past year, whether in whole or in part and in any format, according to a survey conducted in March and April by Pew Research.

Circle one.

Is the 72% a statistic or parameter? Explain

3. (5 pts) The speed of cars passing through the intersection of Blossom Hill Road and the Almaden Expressway varies from 6 to 46 mph and is uniformly distributed. None of the cars travel over 46 mph through the intersection.

In words, define the Random Variable X .

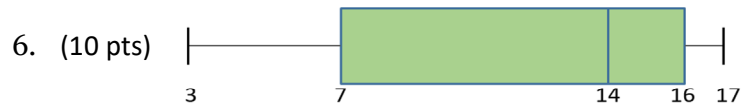
- ☐ The time, in seconds, it takes a car to pass through the intersection.
- ☐ The number of cars passing through the intersection
- ☐ The number of cars driving below 46 mph through the intersection
- ☐ The speed, in mph, of an individual car passing through the intersection

4. (5 pts) A woman in the airport is handing out questionnaires to travelers asking them to evaluate the airport's service. She does not ask travelers who are hurrying through the airport with their hands full of luggage but instead asks all travelers sitting near gates and not taking naps while they wait. Choose one.

- ☐ Stratified
- ☐ Systematic
- ☐ Cluster
- ☐ Convenience
- ☐ Simple Random

5. (10 Pts) State whether the data are symmetrical, skewed to the left, or skewed to the right.

16; 17; 19; 22; 22; 22; 22; 22; 23. Explain your answer.



a. Which quarter has the smallest spread of data

- ☐ 5 – 7
- ☐ 7 – 14
- ☐ 14 – 16
- ☐ 16 – 17

What is that spread?

b. Which quarter has the largest spread?

- ☐ 5 – 7
- ☐ 7 – 14
- ☐ 14 – 16
- ☐ 16 – 17

What is that spread?

c. Find the interquartile range (IQR).

d. Are there more data in the interval 11 – 14 or in the interval 14 – 17? How do you know this?

e. Which interval has the fewest data in it? How do you know this?

- ☐ 3 – 7, because it is the only interval to contain less than 25% of the data.
- ☐ 7 – 13, because it is the only interval to contain less than 25% of the data.
- ☐ 14 – 16, because it contains exactly 25% of the data
- ☐ 16 – 17, because it has the smallest spread.
- ☐ Need more information.

7. (10 pts) 7% of the American population has O-negative blood. If ten people randomly donate blood, what is the probability that at least 1 of them has O-negative blood? Choose all that apply.

☐ $O = 1 - (1 - 0.07)^{10}$

☐ $O = \text{BINOM.DIST}(1, 10, 0.07, \text{TRUE})$

☐ $O = \text{BINOM.DIST}(1, 10, 0.07, \text{FALSE})$

☐ $O = 1 - \text{BINOM.DIST}(0, 10, 0.07, \text{TRUE})$

☐ $O = 1 - (0.07)^1 (1 - 0.07)^9$

☐ $O = 1 - \text{Binompdf}(10, .07, 1)$

☐ $O = \text{Binomcdf}(10, .07, 1)$

8. (10 pts) You buy a lottery ticket from a lottery that costs \$20 per ticket. There are only 200 tickets to be sold in this lottery. In this lottery, there are one \$545 prize, two \$150 prizes, and four \$50 prizes. Please complete the table below or create your own table and find your expected gain or loss. (Round your answer to two decimal places.)
- a) What is the random variable X .

Event	x	$P(x)$	

- b) The expected value is

- c) Explain in words the expected value of a lottery ticket

- | Flossing Frequency for Adults with Gum Disease | | | |
|--|-----------|--------------------|-------------------------------|
| # Flossing per Week | Frequency | Relative Frequency | Cumulative Relative Frequency |
| 0 | 21 | 0.3500 | |
| 1 | 12 | | |
| 3 | | | 0.8833 |
| 6 | 6 | 0.1000 | |
| 7 | 1 | 0.0167 | |

10. (10 Pts) Lori asked 24 students how many hours they had spent doing homework during the previous week. The results are below.

11	10	11	9	11	11	15	12	11	8	13	10
10	13	11	10	13	11	10	12	10	13	12	9

[illegible]