Test   MIDTERM   STATS   CAU   (Show Work)   Summer 2017

1. For any three events, A, B, and C,
   $P(A \text{ or } B \text{ or } C) = P(A) + P(B) + P(C) - P(A \cap B) - P(A \cap C) - P(B \cap C) + P(A \cap B \cap C)$. Use the table to find
   $P(A \cup C)$.

Event	$P(A)$	$P(B)$	$P(C)$	$P(A \cap B)$	$P(A \cap C)$	$P(B \cap C)$	$P(A \cap B \cap C)$
Probability	0.2	0.2	0.5	0.3	0.3	0.1	0.8

2. An experiment consists of rolling a number cube. What is the probability of rolling a number greater than 4?
   Express your answer as a fraction in simplest form.

3. The table shows the distribution of the labor force in the United States in the year 2000. Suppose that a
   worker is selected at random. Find the probability that a female works in the Industry field. Express your
   answer as a decimal, and round to the nearest thousandth.

	Agriculture	Industry	Services
Male	3,132,000	25,056,000	50,112,000
Female	667,000	8,004,000	57,362,000

4. The number of calls received by a crisis hotline during 18 randomly selected days is listed. Identify the
   outlier, and describe how it affects the mean and the standard deviation.

50	57	77	66	53	72
51	88	82	70	62	64
69	88	98	65	14	68

5. A grocery store will only accept yellow onions that are at least 2.75 in. in diameter. A grower has a crop of
   onions with diameters that are normally distributed, with a mean diameter of 3 in. and a standard deviation of
   0.25 in. What percent of the onions will be accepted by the grocery store?

   Find the mean, median, and mode of the data set. Round to the nearest tenth.

6. test scores on a math exam:
   78, 86, 97, 70, 90, 93, 90, 81, 70, 96, 86, 84, 89, 71, 90, 96, 98, 78, 73, 72, 95, 74

   Make a box-and-whisker plot of the data.

7. average daily temperatures in Tucson, Arizona, in December:
   66, 58, 66, 52, 55, 58, 55, 58, 64, 48, 54, 64, 66, 59, 48, 56, 48, 59, 58, 64

Find the values of the 30th and 90th percentiles of the data.

8. 18, 9, 7, 5, 11, 7, 17, 20, 19, 2, 17, 12, 5, 1, 13, 12, 11, 15, 16, 20

Find the outlier in the set of data.

9. 22, 17, 14, 36, 15, 10, 12, 16

Find the range and interquartile range of the data. Round to the nearest tenth.

10. 50, 36, 43, 37, 8, 36, 20, 39, 41, 46

11. The table shows the results of a survey of college students. Find the probability that a student is taking a humanities class, given the student is male. Round to the nearest thousandth.

First Class of the Day for College Students

	Male	Female
Humanities	90	65
Science	70	90
Other	70	55

Find the mean and standard deviation of the of data. Round to the nearest tenth.

12. 43, 37, 66, 62, 52, 62, 64, 54

13. Susan keeps track of the number of tickets sold for each play presented at The Community Theater. Within how many standard deviations of the mean do all the values fall?
117, 160, 144, 79, 79, 150, 67, 140, 162, 150, 145, 132

14. In a sample of 118 teenagers, 22 have never been to a live concert. Find the sample proportion for those who have never been to a live concert.

15. A set of data with a mean of 48 and a standard deviation of 3.5 is normally distributed. Find the values that are 2 standard deviations from the mean.

16. A bag contains hair ribbons for a spirit rally. The bag contains 8 black ribbons and 4 green ribbons. Lila selects a ribbon at random, then Jessica selects a ribbon at random from the remaining ribbons. What is the probability that Lila selects a black ribbon and Jessica selects a green ribbon? Express your answer as a fraction in simplest form.

17. Make a box-and-whisker plot of the data. Find the interquartile range.

7, 9, 11, 12, 13, 15, 12, 17, 18, 12, 9, 7, 12, 15, 18, 10

18. The numbers of cookies in a shipment of bags are normally distributed, with a mean of 54 and a standard deviation of 5. What percent of bags of cookies will contain between 44 and 64 cookies?

19. The scores on an exam are normally distributed, with a mean of 72 and a standard deviation of 10. What percent of the scores are less than 82?

20. The circle graph shows the probability distribution for how often people went to the grocery store last week.
    a. Draw a bar graph of the distribution.
    b. Find P(visited the grocery store at least once).

1 trip, 41%

no trips, 8%

3+ trips, 13%

2 trips, 38%