First name: _____ Last name: _____ Student ID: _____

Statistics and Probability

Basic problems

1. Find *n*.

1. 4, 9, 7, *n*, 5, and 4 mean = 9 median = 6	2. *n*, 8, 5, 21, 20, 28, and 20 mean = 16 mode = 20
3. 27, 8, 28, *n*, and 10 range = 21 mean = 16	4. 22, 29, 22, *n*, 9, 15, and 9 range = 23 median = 15

2. Find the probability. Assume that the spinner is separated into equal sections.

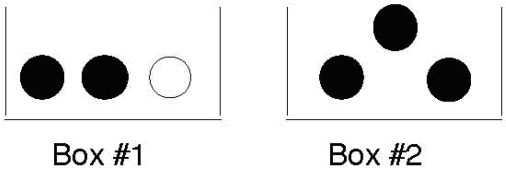
1. You roll a cube which has the numbers 16, 8, 11, 8, 16, and 11 on it. You then spin a spinner which has 7 sections. The letters on the spinner are G, C, G, C, H, C, and B. P(8 and not G)	2. You roll a cube which has the numbers 9, 12, 14, 17, 20, and 21 on it. You then spin a spinner which has 8 sections. The letters on the spinner are H, B, A, G, F, K, E, and D. P(not A and 21, 17, or 12)

3. Find the probability.

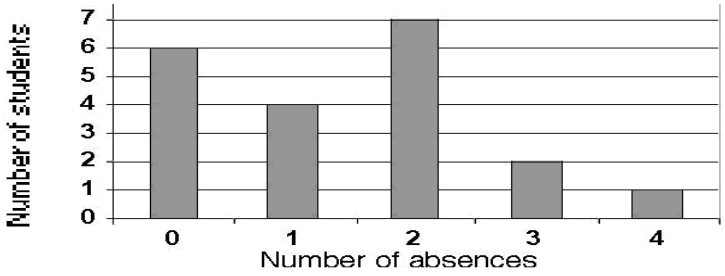
1. A deck of cards has 2 white, 6 brown, 3 orange, 2 red, and 2 blue cards. You pick 2 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(the first card is white and the second card is brown)	2. A deck of cards has 2 brown, 5 green, 6 gray, and 2 red cards. You pick 2 cards from the deck. Cards are <u>not</u> returned to the deck after they are picked. P(the first card is brown and the second card is brown)

Challenge problems

1. There are two boxes as shown. A ball is drawn at random from Box #1 and placed into Box #2. Then a ball is drawn at random from Box #2. Find the probability that the ball drawn from Box #2 is black.



2. Use the information in the chart below to determine the average (mean) number of absences per student.



3. On a recent reality series, contestants performed before an audience and a panel of judges. There were three contestants in the finals. Each contestant received scores from the judges and votes from the audience. Those scores and votes were used as shown in the tables and equation below to make a contestant's Final Score.

Ranking Points	Judges' Scores	Ranking Points	Audience Votes
3	Highest Total	3	Most Votes
2	Second Highest Total	2	Second Most Votes
1	Lowest Total	1	Fewest Votes

Ranking Points from Judges + Ranking Points from Audience = Final Score.
Assume there were no ties from either the audience or the judges. The contestant with the highest Final Score wins. If there is a tie in Final Scores, the contestant with the highest number of audience votes wins. What is the probability that the contestant who wins the audience vote will win the competition?

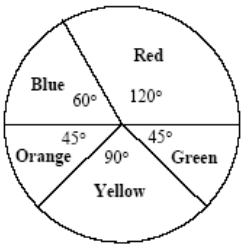
4. A nickel, a dime, and a penny are tossed. What is the probability that they do not all land the same way – they are not all either heads nor are they all tails?

5. The graph below shows the distribution for 100 rolls of two dice.

Which statement is true about the distribution of the sums of the two dice?
The standard deviation measures how spread out numbers are.

a. The standard deviation is 0. b. The mean is 9.09. c. The median is 6.
d. The mean is 6.64 e. The median is 6.5

6. A spinner has five sections with the following five colors and central angles: Blue, 60°; Red, 120°; Green, 45°, Yellow, 90°, and Orange, 45°. In <u>two</u> spins, what is the probability that it will land on either Blue or Yellow at least once?

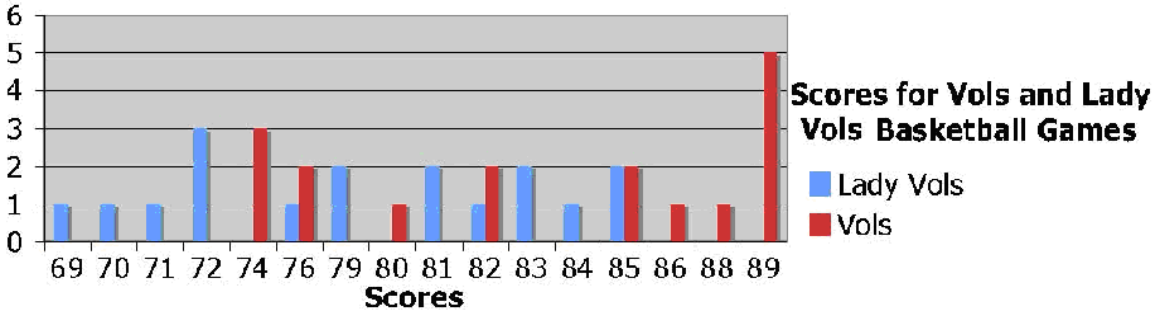


7. The following table gives information about the vehicles driven by the townspeople of Mayberry. Assume each person drives exactly one vehicle.

	Male	Female
Car	8	17
Truck	25	6
S.U.V.	12	15

One person is chosen at random. If you know that the person selected is male, what is the probability that the selected person drives an S.U.V.?

8. The following chart depicts the scores of some games for the Vols and Lady Vols basketball teams this year. Which statement is true for the games in the graph?



a. The mean score of the Vols is greater than the mean score of the Lady Vols.
b. The median score is the same for both teams.
c. The mode is the same for both teams.
d. Both the mean and the median scores for the Lady Vols are greater than those of the Vols.
e. The graph shows that the Vols won more of these games than the Lady Vols.

9. Ann prefers ice cream cups. Ben and Clay prefer ice cream sandwiches. The cafeteria manager puts one coupon for an ice cream cup and two coupons for ice cream sandwiches in a bag. Ann, Ben, and Clay each reach in and without looking draw one coupon from the bag. Each keeps the coupon drawn. What is the probability that exactly two of them get their preference?

10. The ages at which the 43 President of the United States were elected have the following statistics:
    Minimum: 42 years
    First Quartile: 50.5 years
    Median: 55 years
    Third Quartile: 57.5 years
    Maximum: 69 years

The interquartile range is the difference between the third and first quartiles. A data point is considered an "outlier" if it is more than 1.5 times the interquartile range below the first quartile OR 1.5 times the interquartile range above the third quartile. Which of the following statements is false?

a. Theodore Roosevelt's age at election, 42 years, is an outlier.
b. Approximately 50% of the Presidents were between the ages of 50.5 and 57.5 years when they were elected.
c. Approximately 50% of the Presidents were between the ages of 42 and 55 years when they were elected.
d. Approximately 50% of the Presidents were between the ages of 55 and 69 years when they were elected.
e. If John McCain is elected at the age of 72, his age would be an outlier.