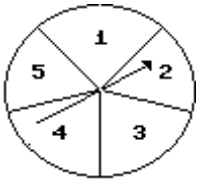
MGF 1106 Math for Liberal Arts I Summer 2008 - Worksheet 9 (11.4, 11.5, 11.6)
Dr. Schnackenberg

Group Names_____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Use the theoretical probability formula to solve the problem. Express the probability as a fraction reduced to lowest terms.

1) Use the spinner below to answer the question. Assume that it is equally probable that the pointer will land on any one of the five numbered spaces. If the pointer lands on a borderline, spin again. 1) _____



Find the probability that the arrow will land on 2 or 4.

2) You are dealt one card from a standard 52-card deck. Find the probability of being dealt an ace or a 9. 2) _____

3) A die is rolled. The set of equally likely outcomes is {1, 2, 3, 4, 5, 6}. Find the probability of getting a 7. 3) _____

4) You are dealt one card from a standard 52-card deck. Find the probability of being dealt a picture card. 4) _____

5) A single die is rolled twice. The set of 36 equally likely outcomes is {(1, 1), (1, 2), (1, 3), (1, 4), (1, 5), (1, 6), (2, 1), (2, 2), (2, 3), (2, 4), (2, 5), (2, 6), (3, 1), (3, 2), (3, 3), (3, 4), (3, 5), (3, 6), (4, 1), (4, 2), (4, 3), (4, 4), (4, 5), (4, 6), (5, 1), (5, 2), (5, 3), (5, 4), (5, 5), (5, 6), (6, 1), (6, 2), (6, 3), (6, 4), (6, 5), (6, 6),}. Find the probability of getting two numbers whose sum is less than 13. 5) _____

Use the empirical probability formula to solve the exercise. Express the answer as a fraction. Then express the probability as a decimal, rounded to the nearest thousandth, if necessary.

6) The table below represents a random sample of the number of deaths per 100 cases for a certain illness over time. If a person infected with this illness is randomly selected from all infected people, find the probability that the person lives 3-4 years after diagnosis. 6) _____

Years after Diagnosis	Number deaths
1-2	15
3-4	35
5-6	16
7-8	9
9-10	6
11-12	4
13-14	2
15+	13

The chart below shows the percentage of people in a questionnaire who bought or leased the listed car models and were very satisfied with the experience.

Model A	81%
Model B	79%
Model C	73%
Model D	61%
Model E	59%
Model F	57%

7) With which model was the greatest percentage satisfied? Estimate the empirical probability that a person with this model is very satisfied with the experience. Express the answer as a fraction with a denominator of 100. 7) _____

Solve the problem.

8) Amy, Jean, Keith, Tom, Susan, and Dave have all been invited to a birthday party. They arrive randomly and each person arrives at a different time. In how many ways can they arrive? In how many ways can Jean arrive first and Keith last? Find the probability that Jean will arrive first and Keith will arrive last. 8) _____

9) A group consists of 6 men and 5 women. Five people are selected to attend a conference. In how many ways can 5 people be selected from this group of 11? In how many ways can 5 men be selected from the 6 men? Find the probability that the selected group will consist of all men. 9) _____

10) A box contains 24 widgets, 4 of which are defective. If 4 are sold at random, find the probability that (a) all are defective (b) none are defective. 10) _____

11) If you are dealt 5 cards from a shuffled deck of 52 cards, find the probability that all 5 cards are picture cards. 11) _____

You are dealt one card from a 52-card deck. Find the probability that you are not dealt:

12) a 4. 12) _____

In 5-card poker, played with a standard 52-card deck, ${}_{52}C_5$, or 2,598,960 different hands are possible. The probability of being dealt various hands is the number of different ways they can occur divided by 2,598,960. Find the probability of not being dealt this type of hand.

13) Four of a kind: 4 cards with the same number, plus 1 additional card, if the number of ways this hand can occur is 624, and the probability of this hand is $\frac{624}{2{,}598{,}960}$ 13) _____

Solve the problem.

14) A card is dealt from a 52-card deck. What is the probability of not being dealt a queen of hearts? 14) _____

You randomly select one card from a 52-card deck. Find the probability of selecting:

15) an ace or a 8? 15) _____

The chart shows the probability of dying from four conditions in the U.S. Express all probabilities as decimals to three decimal places. Assume all events are mutually exclusive.

Causes of Death	Percentage of all Deaths
Disease A	30.3%
Disease B	23.0%
Disease C	5.8%
Disease D	4.7%

16) What is the probability of dying from disease A or B? 16) _____

Solve the problem that involves probabilities with events that are not mutually exclusive.

17) In a class of 50 students, 31 are Democrats, 13 are business majors, and 3 of the business majors are Democrats. If one student is randomly selected from the class, find the probability of choosing a Democrat or a business major. 17) _____