Stat 171 - Worksheet for Section 3.1

Name: _____

1. For the following probability experiment, determine the number of outcomes and odentify the sample space: A probability experiment consists of recording a response to the survey statement at the right and the geographic location (NE, S, MW, W) of the respondent.

   (a) Start a tree diagram by forming a branch for each possible response to the survey.

   (b) At the end of each survey response branch, draw a new branch for each possible outcome.

   (c) Find the number of outcomes in the sample space.

   (d) List the sample space.

Does your favorite team's win or loss affect your mood?
Check one response:
☐ Yes
☐ No
☐ Not sure

2. You ask for a student's age at his or her last birthday. Determine the number of outcomes in each event. Then decide whether each event is simple or not. Explain your reasoning.

   (a) Event C: The student's age is between 18 and 23, inclusive.

   (b) Event D: The student's age is between 19 and 21, exclusive.

3. You are purchasing a new car, the possible manufacturers, car sizes, and colors are listed below. How many different ways can you select a car to purchase? Use a tree diagram to check your result.

Manufacturer:	Ford, GM, Honda, Toyota
Car size:	Compact, Midsize
Color:	White (W), Red (R), Black (B), Green (G), Tan (T)

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4. How many license plates can you make when a license plate consists of

   (a) six alphabetical letters, each of which can be repeated?

   (b) six alphabetical letters, each of which cannot be repeated?

   (c) six alphabetical letter, each of which can be repeated, but the first letter cannot be A, B, C, or D?

5. You select a card from a standard deck of playing cards. Find the probability of each event.

   (a) Event D: selecting the nine of clubs.

   (b) Event E: selecting a heart.

   (c) Event F: selecting a diamond, heart, club, or spade.

(d) Event G: selecting a diamond or a face.

6. An insurance company determines that in every 100 claims, 4 are fraudulent. What is the probability that the next claim the company processes will be fraudulent?

   (a) Identify the event. Find the frequency of the event.

   (b) Find the total frequency for the experiment.

   (c) Find the empirical probability of the event.

7. A company is conducting a phone survey of randomly selected individuals to determine the ages of social networking site users. So far, 975 users have been surveyed. What is the probability that the next use surveyed is less than 22 years old.

Ages	**Frequency, f**
18–22	156
23–35	312
36–49	254
50–65	195
> 65	58

8. Based on previous count, the probability of a salmon successfully passing through a dam on the Columbia River is 0.85. Us this statement an example of classical probability, empirical probability, or subjective probability?

9. Use the frequency distribution in Problem 7 to find the probability of randomly selecting a user who is not 18–22 years old.

   (a) Find the probability of randomly selecting a user who is 18–22 years old.

   (b) Subtract the resulting probability from 1.

   (c) State the probability as a fraction and as a decimal.

10. Find the probability of tossing a tail and spinning a number less than 6.

    (a) Find the number of outcomes in the event.

    (b) Find the probability of the event.

11. Your college ID number consists of 9 digits. The first two digits of each number will be the last two digits of the year you are scheduled to graduate. The other digits can be any number from 0 through 9, and each digit can be repeated. What is the probability of getting your college identification number when randomly generating the other seven digits?

    (a) Find the total number of the possible ID numbers.

    (b) Find the probability of randomly generating your ID number.