PROBABILITY & STATISTICS PROJECT

Directions.
In this project, you are going to graphically present and calculate statistics of a set of data that you gather. In addition, you will use the data to answer various probability/counting questions. The information below will instruct you on how to gather your data and what you will then do with the data.

The Data.
You will gather the ages (in years) of all of your immediate family members (parents, siblings) and extended family members (grandparents, aunts, uncles, cousins). You should gather no more than 20 ages (in the case that you have a large family).

Graphically Presenting the Data.
You will be presenting the data in a number of ways. Use a separate page for each.
1. A table, with all the data present, that shows the individuals, their relationship to you, and age.
2. A stem-and-leaf plot that shows all the ages in your set of data.
3. A stem-and-leaf plot that shows all the ages of males and females "back-to-back".
4. A circle graph, with percent labels, that shows the amount of individuals in the age categories below.
   babies (0 - 1);   children (2 - 12);   teens (13 - 19);   young adults (20 - 29);
   adults (30 - 69);   seniors (70 +)

Statistics.
Calculate and present the following statistics for your data. Be sure to show all calculations in a neat and organized manner. Also, include labels for each calculation. Use a separate page for each item.
1. a. Mean, median, and mode age for all data.
   b. Find quartiles and draw a box-and-whisker plot for all data.
2. a. Mean, median, and mode age for all males.
   b. Find quartiles and draw a box-and-whisker plot for all males.
3. a. Mean, median, and mode age for all females.
   b. Find quartiles and draw a box-and-whisker plot for all females.

Probability/Counting.
Use your collected data to answer the questions that appear on the "Probability/Counting Questions" page. Show all work and answers in the space provided.

Project Materials/Assembly.
Other than the probability questions sheet, all work should be done on unlined or graph paper.
Each page of the project should appear in the same order as mentioned in this document.
Include a title page for your project that includes your name. You may bind your project as you choose (stapling is recommended).

Grading.
The following will be used in determining your grade: completeness, accuracy, neatness, organization, and presentation. This project will have the same weight as a test.

Your project will be due: Monday March 13th.

YOU CAN EARN 20 POINTS EXTRA CREDIT IF TURNED IN BY THURSDAY MARCH 10TH

Examples

Example Table

Individual	Relationship to Me	Age
Sally Smith	Myself	13
Carol Smith	My Mom	42
Jeff Smith	My Dad	45
Blanch Jones	My Grandmother (Mom's side)	73

Example of Work & Work Labeling

Statistics for all males:

Mean:
1. Sum of age's:
    4 + 9 + 23 + 1 + 35 + 70 = 142
2. Number of males:
    6
3. Mean age:
    142 / 6 ≈ 24

Median:
1. Ages in order:
    1, 4, 9, 23, 35, 70
2. Middle two values:
    9 & 23
3. Median:
    (9+23)/2 = 16

Box-and-Whisker Plot for all females:

Median:
1. List all ages in order:
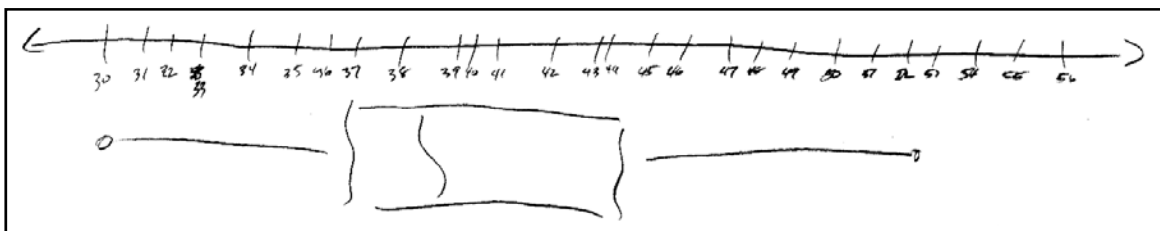   2, 5, 8, 19, 23, 39, 42, 69, 72
2. Median of all ages:
    23

Lower Quartile:
1. List all ages, lower than median, in order:
    2, 5, 8, 19
2. Median of lower ages:
    (5 + 8) / 2 = 6.5

Upper Quartile:
1. List all ages, higher than median, in order:
    39, 42, 69, 72
2. Median of higher ages:
    (42 + 69) / 2 = 55.5

Example of a Poorly Drawn Box-and-Whisker Plot

PROBABILITY/COUNTING QUESTIONS	
	Name

Directions
Use the data that you have collected for your Probability & Statistics Project to answer the following questions. All work and answers should be done in the space provided.

Questions
Assume that you put the names of each person in your data collection in a hat. Each question involves selecting a name or names from the hat.

1. What is the probability that you will choose a person in the children or teen category?

2. What are the odds against you choosing a person from the children or teen category?

3. What is the probability of you choosing a person from the adult category, and then, without replacing the name, choosing someone from the children category?

4. What is the probability of you choosing a person from the young adults or adults category, and then, after replacing the name, choosing someone from the children category?

5. A driver comes to pick up members of your family for a family reunion. The van holds 7 people, not including the driver. Assuming that none of the babies will be riding in the van, how many different ways can 7 people be chosen to ride in the van?

6. Your family plays a money game where the first person chosen wins $1, the second person chosen wins $5, the third person chosen wins $10, and the fourth person chosen wins $50. Since you won the $50 prize during the last game, you are in charge of the choosing this time (so you cannot win). How many different winning scenarios are possible in this play of the money game?