



QUANTITATIVE VS. CATEGORICAL VARIABLES



STATISTICS: the study of variation through data

VARIABLE: any characteristic, # or quantity that can be measured or counted

CATEGORICAL: variables that describe a quality or characteristic

QUANTITATIVE: variables that describe a measurable quantity as a #

Let's try these together!

For each of the following variables determine if it is qualitative (categorical) or quantitative (numerical)

N 1 Height

N 2 Arm span

N 3 Ratio of height to arm span

N 4 Time spent sleeping last night

C 5 Whether or not someone went to sleep before midnight

C 6 Month of birth

N 7 Score as a percentage on first test

C 8 Whether or not score on first test was at least 70%

N 9 Distance from home

C 10 Whether or not someone has a cellular phone

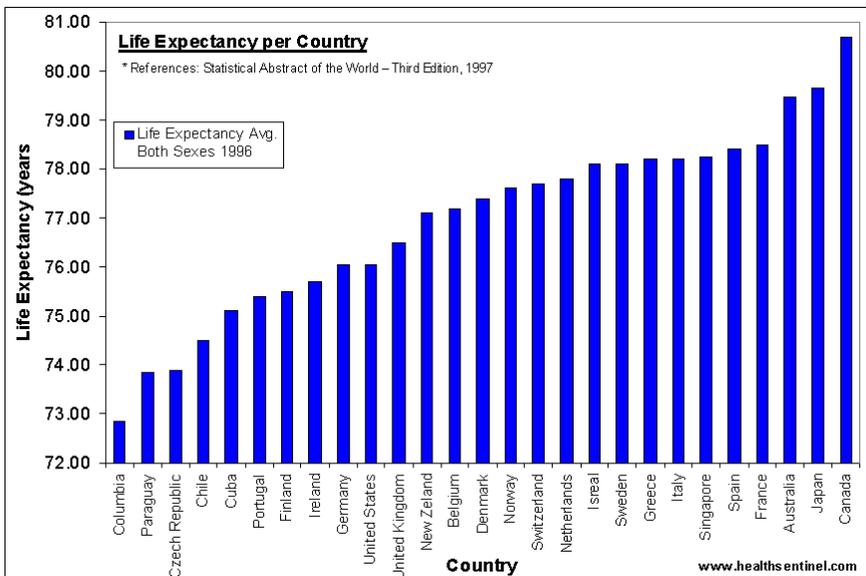
N 11 How many e-mail messages a person has received in past 24 hours

C 12 Whether or not a person has sent at least one e-mail in the past 24 hours.

N 13 Number of letters in a last name

DISPLAYING CATEGORICAL VARIABLES

BAR CHARTS: represents grouped data w/ bars that are proportional to the values they represent



1. What country has the highest life expectancy?

Canada

2. What country has the lowest life expectancy?

Columbia

3. What is the approximate life expectancy of a United States citizen? *between 76 & 77 years*

PIE CHARTS: divides data into slices (all totaling 100%) to illustrate numerical proportion



a. What is the least common method of feeding guests on Mother's Day?

POTLUCK

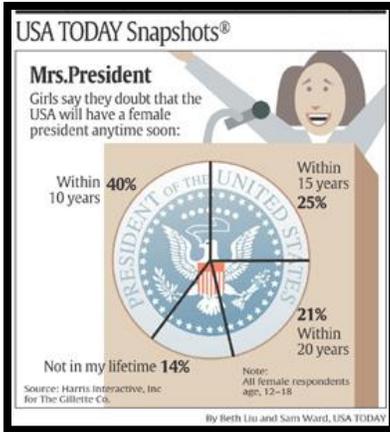
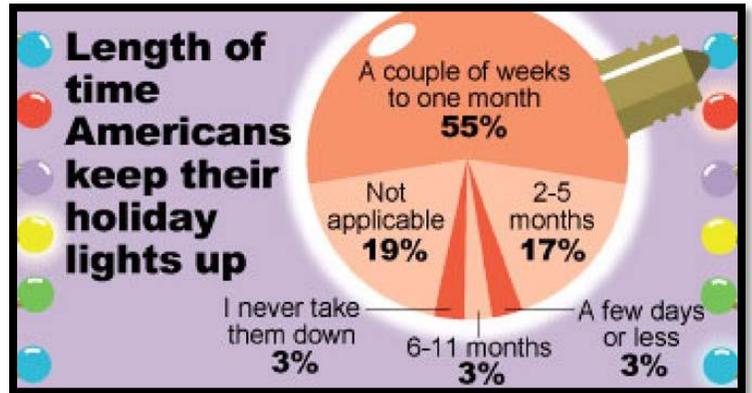
b. If there were 100 people surveyed, approximately how many people would have had their Mom cook on Mother's Day?

38

a. What percentage of people leave up their lights all year round?

39%

b. If 300 people were surveyed, approximately how many would have left their lights for 2-5 months? $17 \times 3 = 51$



a. What percentage of girls think they will see a female president in the next 15 years?

25%

b. 1 in 2.5 (how many) girls believe that they'll see a female president in the next 10 years.

$\frac{40}{100} = 40\% \Rightarrow 4 \text{ in } 10 \Rightarrow 2 \text{ in } 5 \Rightarrow 1 \text{ in } 2.5$

PARCC Practice!

A random sample of 200 teenagers participated in a taste test. Each teenager sampled four choices of fruit drink (labeled A, B, C, and D), and then were asked to pick a favorite. The table shows the result of this taste test.

Based on the info given, which of the given statements are true? **Select all that apply.**

	A	B	C	D	Total
Boys	45	25	30	20	120
Girls	25	10	30	15	80
Total	70	35	60	35	200

a. 40% of the participants were girls. $80/200 = .4$

b. 70% of the participants preferred A. $70/200 = .35$

c. 20/120 of the boys preferred D.

d. 10/35 of the participants who preferred B were girls.

e. The proportion of boys who preferred C is equal to the proportion of girls who preferred C.

$30/120 = .25$

$30/80 = .375$

DISPLAYING QUANTITATIVE VARIABLES

HISTOGRAMS: graphical representation of the distribution of numerical data

Example 1:

The number of home runs by the batter in a local home run derby are listed below. Make a frequency table, pie chart and a histogram that represents the data.

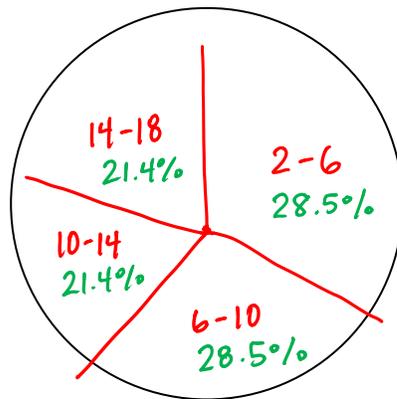
7 17 14 2 7 9 5 12 3 10 4 12 7 15

Frequency Table

Home Run	Frequency
1-5	4
6-9	4
10-13	3
14-17	3

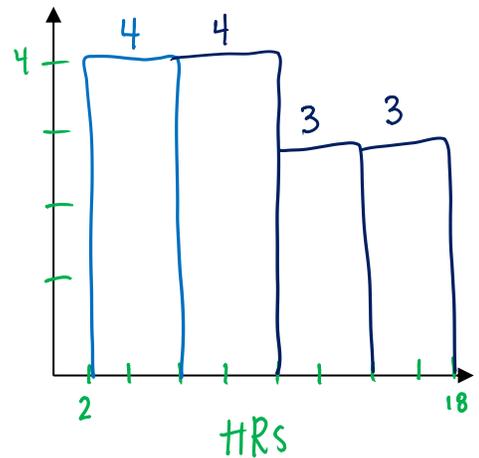
28.5%
28.5%
21.4%
21.4%
14 total

Pie Chart



of batters

Histogram



Try with your partner!

The data below are the numbers of hours per week a group of students spent watching television. Make a frequency table, pie chart and a histogram that represents the data.

7 10 1 5 14 22 6 8 0 11 13 3 4 14 5

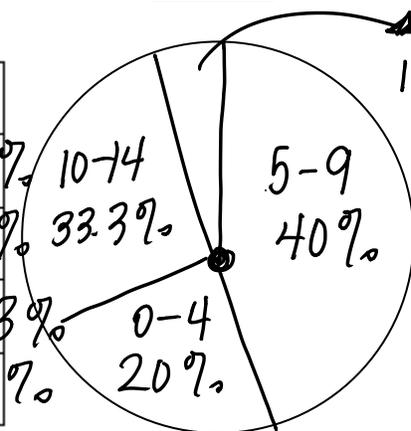
0 1 3 4 5 5 6 7 8 10 11 13 14 14 2 2

Frequency Table

Hours	Frequency
0-4	3
5-9	6
10-14	5
15-17	1

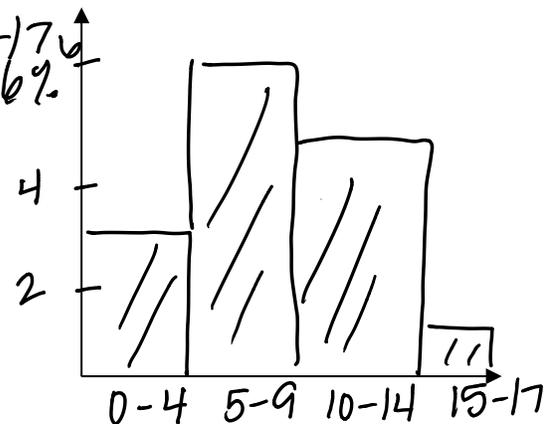
total : 15

Pie Chart



15-17
6.6%

Histogram



GATHERING INFORMATION FROM A HISTOGRAM

Let's Hit the Beach!

A travel agent conducted a survey to find out how many times people go to the beach each year. The results of the survey are shown in the histogram below.

1. Approximately how many people are included in the sample?

65

2. Approximately how many people went to the beach at least 50 times this year?

17

3. Which interval contains the most people in the sample? Write a sentence describing the people in this interval in relationship to all the people in the sample.

40% (the most of all sampled) went to the beach between 25 & 49 times



Fill 'er Up!

The amount of gasoline that 80 drivers bought to fill their cars' gas tanks is shown.

1. Which interval represents the fewest number of drivers?

• 1 - 3 gallons

2. Which intervals have an equal number of drivers?

6.1-9 & 15.1-18 gallons

3. Approximately how many drivers bought at most 9 gallons of gasoline?

22 drivers

