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## *Problem Set for Unit 1: Representing and Describing Data*

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1. Fill in the blank with *categorical*, *quantitative discrete* or *quantitative continuous*.
- (a) A person's zip code is an example of a ..... variable.
  - (b) The amount of sugar in a can of soda is a ..... variable.
  - (c) The number of countries a student has visited in his or her lifetime is a ..... variable.
  - (d) Color blindness status is a ..... variable.
  - (e) The number of units a student is taking is an example of a ..... variable
  - (f) Gender is an example of a ..... variable.
  - (g) The time it takes to complete the 1<sup>st</sup> exam is an example of a ..... variable.

2. For each graph type below, describe the data type it would be used to represent. The first one is done for you.

Graph Type	Data Type
Bar Graph	One-variable categorical or discrete numerical
Circle graph	
Histogram	
Pictograph	
Scatterplot	
Stem-and-leaf plot	

3. In a recent survey, 40 students were asked how far they travel between home and school each day.

(a) Distance is an example of a ..... variable. (Circle one)

Categorical          Quantitative Discrete          Quantitative Continuous

(b) The results of the survey are given below. Complete the tally chart.

7.5	15	2	9	1	4.9	2	4
4	2	9.6	21	5	6	7.4	7
1	10	4.1	16	5	1.7	10	4
5.2	7	5.6	5	8.2	9	8	9
5	20	3.2	12	7	5	13	6

Interval	Tally
[0, 5)	
[5, 10)	
[10, 15)	
[15, 20)	
[20, 25)	

(c) Complete the frequency distributions.

Interval	Frequency	Relative Frequency	Cumulative Relative Frequency
[0, 5)			
[5, 10)			
[10, 15)			
[15, 20)			
[20, 25)			

(d) Ninety percent of the students surveyed travel less than .....miles to school each day.

(e) Where as .....% of the students travel 5 miles or more each day.

(f) And 50% of the student travel between ..... and ..... miles each day.

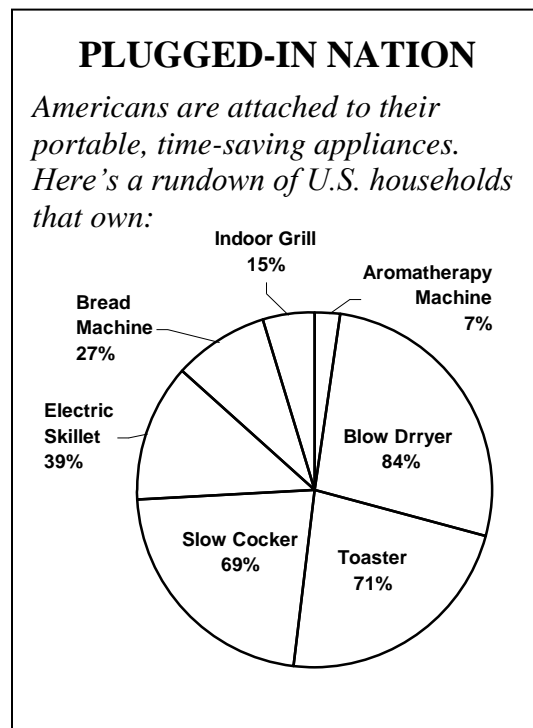
4. Natalie has counted 6 purple, 3 orange, 6 yellow and 12 red skittles in her bag of skittles. Explain to Natalie how to draw a pie chart representing her color distribution

(a) if Natalie is in 1<sup>st</sup> grade (use a circumference model)

(b) if Natalie is in 4<sup>th</sup> grade (use an area model)

(c) if Natalie is in 7<sup>th</sup> grade (use a central angle model)

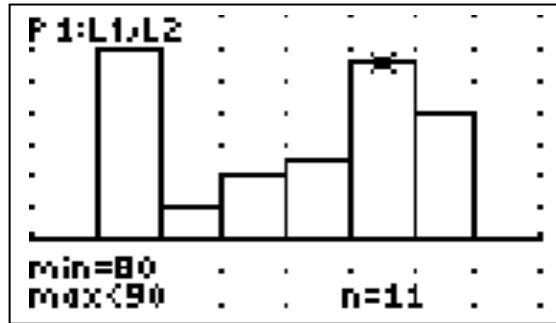
5. Shown below is a re-creation of a graph that was presented in the *Country Sampler Decorating Ideas* magazine (October 2000). Is this an appropriate *statistical* presentation of the data? Explain.



6. The histogram of test scores of all students who took a certain test is given below:

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WINDOW
Xmin=30
Xmax=110
Xscl=10
Ymin=-4
Ymax=14
Yscl=2
Xres=1
    
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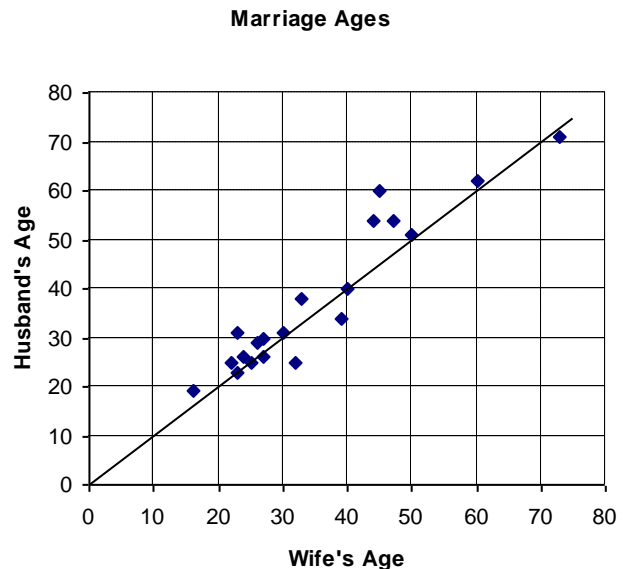
- (a) Describe the shape of this distribution.
- (b) How many students took the test? .....
- (c) How many students scored at least 90? .....
- (d) How many students scored strictly less than 70? .....
- (e) What was the highest test score?
- (f) Approximately what percent of the students scored at least 80% on the test?

7. The following scatterplot records the ages of 20 couples applying for a marriage license in Cumberland County, Pennsylvania June and July 1993.

(a) Does there appear to be an association between husband's age and wife's age? Explain.

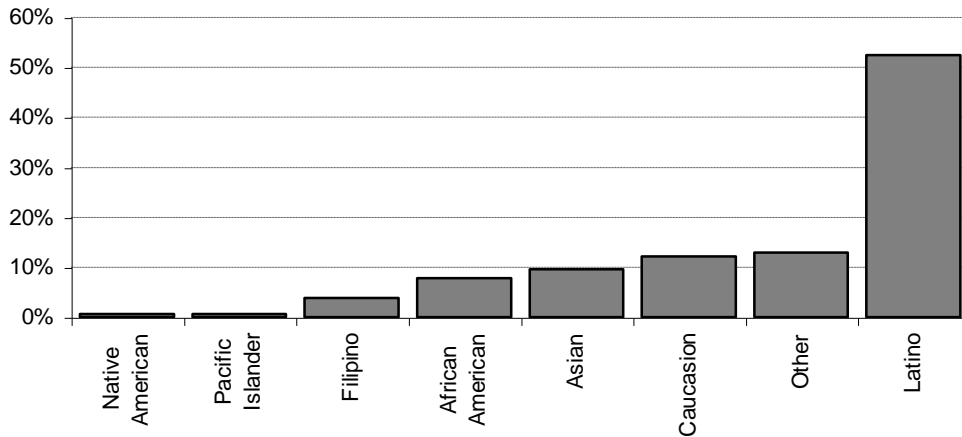
(b) What can you say about a couples' ages that fall exactly on or near the line?

(c) Most of the data points are above the line. What does that tell you?



(d) Locate the data point for the couple that has the largest difference between their ages. What are their ages? How much older is the one than the other?

8. The graph below displays the breakdown by percent of Cerritos College enrollment by ethnicity for Fall 2006.



- (a) Ethnicity is an example of a ..... variable. (Circle one.)

Categorical

Quantitative Discrete

Quantitative Continuous

- (b) According to this information, fill in the blanks

- (c) There are about..... times as many Latino students as Caucasian students.

- (d) The number of Filipino students is about ..... of the number of African American students.

- (e) In Fall 2006, there were 19,885 students enrolled. Approximately, how many of the students enrolled in Fall 2006 were African American?

- (f) In a draft of the written report summarizing the graph for this study, the following statement was given: “ the distribution of ethnicity for Cerritos College students is skewed to the left? Is this a correct statement to make? Explain.

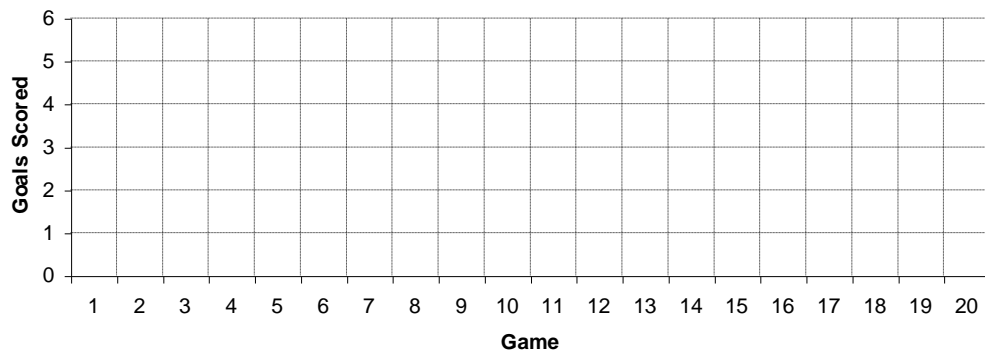
- (g) Would a circle graph be appropriate for this data? Explain.

9. The Sidekicks, a soccer team, played 20 games during the 2005 season. The number of goals scored per game, in the order in which the games were played is given below.

0 1 1 0 2 1 0 0 1 3 1 2 3 2 1 4 2 3 4 5

- (a) Construct a frequency plot (same as line plot or dot plot) for this data. Describe the distribution. What can you say about the Sidekicks performance for the season based on this representation?

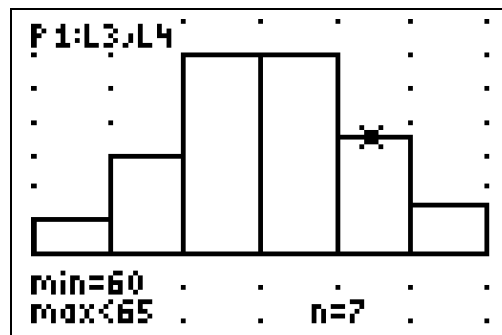
- (b) Now create a line graph plotting number of goals scored for each game in the order of games played. What does this graph convey that the frequency plot did not.



10. The age at inauguration (in years) of the U.S. presidents from Washington to Clinton is given in the graph below.

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WINDOW
Xmin=40
Xmax=70
Xscl=5
Ymin=-4
Ymax=14
Yscl=2
Xres=1
    
```



- (a) Age at inauguration is an example of a .....variable. (Circle one)
- Categorical                      Quantitative Discrete                      Quantitative Continuous
- (b) What kind of graph is this? .....
- (c) What is the shape of the distribution?
- (d) Label the axes of the graph.
- (e) How many presidents are represented in the graph? .....
- (f) What percentage of U.S. presidents was younger than 50 years old at the time of inauguration?
- (g) What percentage of U.S. presidents were 65 years of age or older when inaugurated?
- (h) T. Roosevelt was the president who was youngest when inaugurated. Based on the graph above, can you give the age at inauguration for T. Roosevelt? If yes, give the age. If no explain why not.

11. The life spans of the 35 U.S. presidents from George Washington to Lyndon Johnson are listed below:

President	Life span
1 Washington	67
2 J. Adams	90
3 Jefferson	83
Madison	85
Monroe	73
J.Q. Adams	80
Jackson	78
Van Buren	79
Harrison	68

President	Life span
10 Tyler	71
Polk	53
Taylor	65
Fillmore	74
Pierce	64
Buchanan	77
Lincoln	56
A. Johnson	66
Grant	63

president	Life span
19 Hayes	70
Garfield	49
Arthur	57
Cleveland	71
Harrison	67
McKinley	58
T. Roosevelt	60
Taft	72
Wilson	67

president	Life span
Harding	57
Coolidge	60
Hoover	90
F.D.R.	63
Truman	88
Eisenhower	78
Kennedy	46
L.B. Johnson	64

(a) Form a stem-and-leaf plot of these data. Be sure to include a key.

(b) Describe the shape of this distribution.

(c) What percent of the 35 presidents lived to be more than 80 years old?

(d) What percent of the 35 presidents did not live to be 60 years old?

(e) Write a short paragraph summarizing the life spans of U.S. presidents.

12.

(a) Michael collected data on the favorite colors of everybody in the class. He then drew a line graph of the data, but Rosa said he should have drawn a circle graph. Which student was correct, and why?

(b) Michael asked Rosa if he could have just drawn a bar graph or histogram to represent the data in (b). Rosa said a bar graph would be okay, but not a histogram. Do you agree? Explain.

Also do the following problems from your text:

8 <sup>th</sup> Edition of Text	7 <sup>th</sup> edition of Text
Page 455 # 5	Page 445 # 7
Page 456 # 9 & 10	Page 446 # 11 & 12
Page 461 # 11	Get from 8 <sup>th</sup> edition
Page 482 # 10	Page 493 # 3