Quiz 1.1A AP Statistics Name:

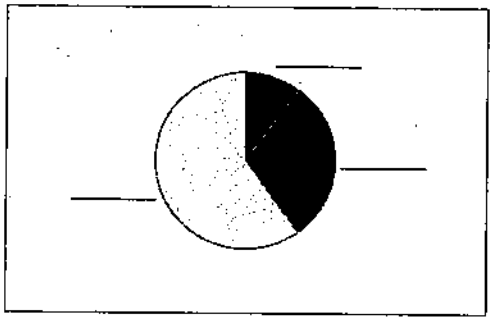
Below is some information about films for the "Best Movie" Academy Award (Oscar) in 2009.

Name	Genre	Budget (millions of dollars)	Total # of Oscar Nominations	Running time (minutes)	MMPA Rating
Avatar	Adventure	237	9	162	PG-13
The Blind Side	Drama	29	2	128	PG-13
District 9	Action	30	4	112	R
An Education	Drama	7	3	95	PG-13
The Hurt Locker	Action	11	9	131	R
Inglourious Basterds	Drama	70	8	153	R
Precious	Drama	10	6	110	R
A Serious Man	Comedy	7	2	106	R
Up	Animated	175	5	96	PG
Up in The Air	Comedy	30	6	109	R

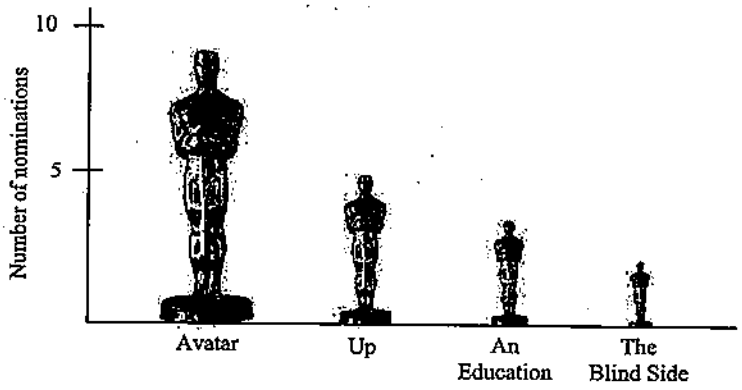
1. What are the individuals in this data set?

2. Identify the variables that were recorded, and indicate whether each one is categorical or quantitative.

3. Here is a pie chart for the distribution of the variable "MMPA rating." Fill in the blanks with the appropriate values of the variable.



4. Below is a graph showing the total number of Oscar nominations for the four films that had PG or PG-13 ratings. What's wrong with the way the information is presented in this graph?



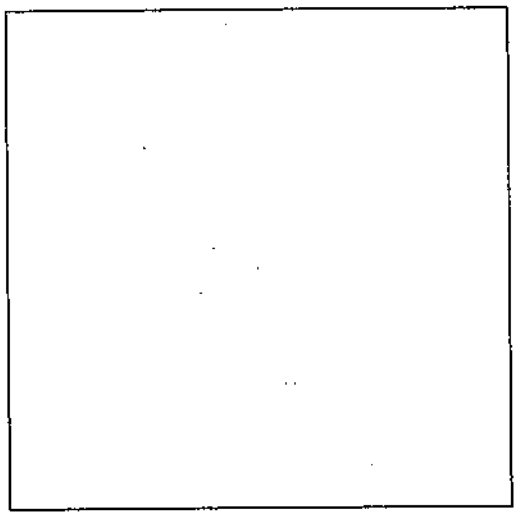
Researchers looking at the relationship between the type of college attended (public or private) and achievement gather the following data on 3265 people who graduated from college in the same year. The variable "management level" describes their job description 20 years after graduating from college.

		Type of College	
		Public	Private
Management level	High	75	107
	Medium	962	794
	Low	732	595

5. Calculate the marginal distribution of management level in percents.

6. Find the conditional distribution of management level for each college type, in percents.

7. Sketch a segmented bar graph for the two conditional distributions in **6.**



8. Write a brief description of what the information in **6.** and **7.** tell you about the relationship between these variables.

Quiz 1.1B AP Statistics Name:

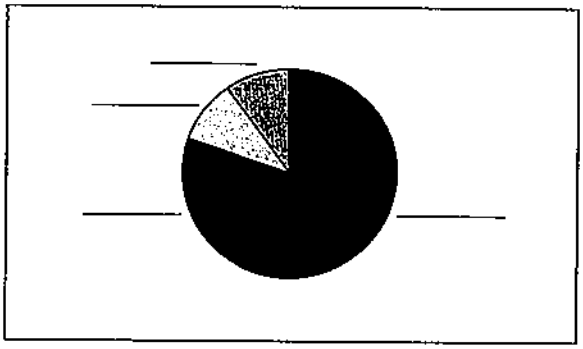
Below is some information about the first ten United States Presidents.

Name	Political Party	Age at Inauguration	Age at Death	State of Birth
George Washington	Federalist	57	67	Virginia
John Adams	Federalist	61	90	Massachusetts
Thomas Jefferson	Democratic-Republican	57	83	Virginia
James Madison	Democratic-Republican	57	85	Virginia
James Monroe	Democratic-Republican	58	73	Virginia
John Quincy Adams	Democratic-Republican	57	80	Massachusetts
Andrew Jackson	Democrat	61	78	South Carolina
Martin Van Buren	Democrat	54	79	New York
William H. Harrison	Whig	68	68	Virginia
John Tyler	Whig	51	71	Virginia

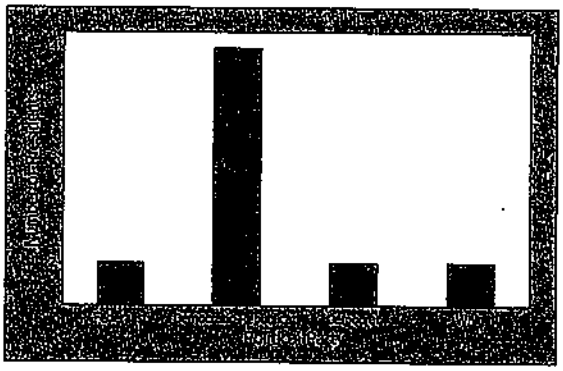
1. What are the individuals in this data set?

2. Identify the variables that were recorded, and indicate whether each one is categorical or quantitative.

3. Here is a pie chart for the distribution of the variable "State of birth." Fill in the blanks with the appropriate values of the variable.



4. Below is a bar graph of the number of presidents of each political party. What is wrong with the way information is presented in this graph?



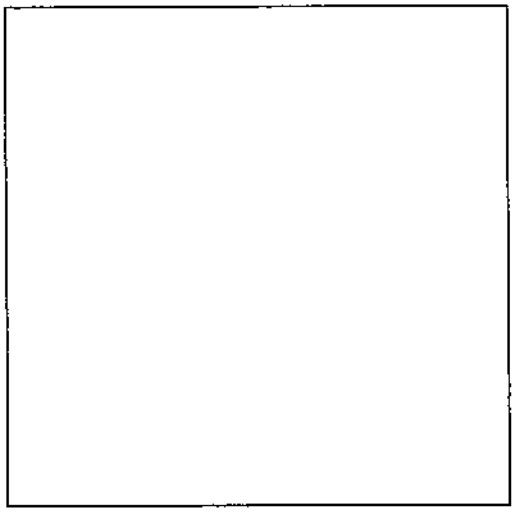
You suspect that there is a relationship between teenagers' preference in movies and their preference in pizza. You ask 110 students at your school to choose between three movies and three pizza types. Here are your results.

		Pizza Preference		
		Pepperoni	Meatball	Mushroom
Movie Preference	Men in Black	20	15	10
	The Big Lebowski	8	16	11
	Monsters, Inc.	15	2	13

5. Calculate the marginal distribution of movie preference in percents.

6. Find the conditional distribution of pizza preference for each movie preference, in percents.

7. Sketch a segmented bar graph for the three conditional distributions in **6.**



8. Write a brief description of what the conditional distributions in **6.** and **7.** tell you about the relationship between these variables.

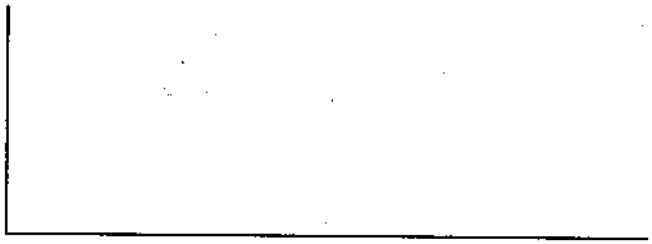
Quiz 1.1C AP Statistics Name:

Popular magazines often rank cities in terms of how desirable it is to live and work there.

1. Identify two categorical variables and two quantitative variables that could be used to measure a city's characteristics. Give a reason for each of your choices.

Each year, the DuPont Corporation publishes the results of a poll of car-color preferences for North American drivers. Here is the distribution of color preference for 2009:

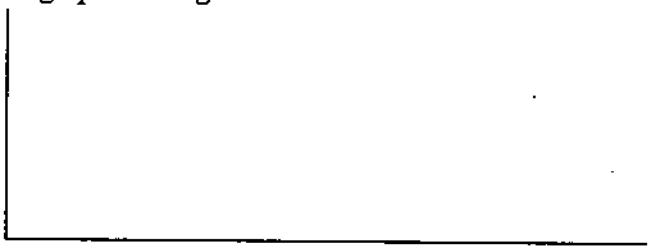
2. Make a bar graph of these data.



Color	Percentage
White/Pearl	17.8
Black	17
Silver	16.7
Gray	13
Blue	12.4
Red	12
Brown	5.7
Other	5.4

In 2009, DuPont conducted a similar poll worldwide. Here is the distribution for global car color preferences.

3. Make a bar graph of the global data.



Color	Percentage
White/Pearl	16
Black	23
Silver	25
Gray	13
Blue	9
Red	8
Brown	4
Other	2

4. Comment on the most important differences between these two distributions.

5. A research study asked children which of four different emotions they associated with the color red. The response and gender of each child are given in the following table.

	Joy	Happiness	Love	Anger
Male	28	20	40	18
Female	61	25	80	60

Use the data in this table to discuss the relationship between the emotions children associate with the color red and gender. Use the techniques and language you have learned in this section to support your conclusions.

Quiz 1.2A AP Statistics Name:

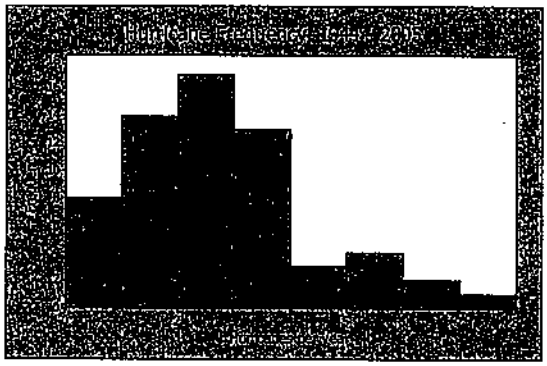
Literary scholars sometimes use the distribution of word lengths in a work as a test of authenticity. Here are the words lengths for the first 25 words on a randomly-selected page from Toni Morrison's *Song of Solomon*.

2	3	4	10	2	11	2	8	4	3	7	2	7
5	3	6	4	4	2	5	8	2	3	4	4	

1. Make a dotplot of these data.

2. Describe the overall pattern of the distribution and any possible outliers.

3. The histogram below shows the number of major hurricanes that reached the East Coast of the United States from 1944 to 2005. Describe the shape, center, and spread of the distribution.



On August 7, 2007 Barry Bonds hit his 756th home run, breaking the all-time career home run record, formerly held by Hank Aaron. Does that make Bonds a better home run hitter than Aaron? Let's compare their annual home run production over their entire careers. Below is a side-by-side stemplot. (Bonds played between 1986 and 2007. Aaron played between 1954 and 1978.)

Number of Home Runs per Year

Bonds		Aaron
5	0	
96	1	023
86554	2	04679
774433	3	0244899
9665520	4	00444457
	5	
	6	
3	7	

Key: 1|4 = 14 home runs

4. Use the plot to write a few sentences comparing Bonds and Aaron as home run hitters.

Quiz 1.2B AP Statistics Name:

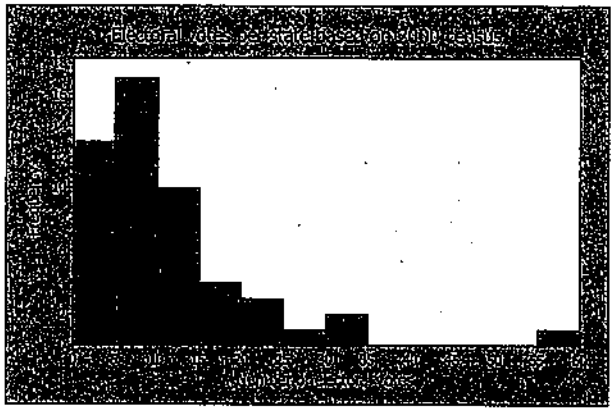
How much disk space does your music use? Here are the files sizes (in megabytes) for 18 randomly selected files on Tim's mp3 player:

1.1	1.3	1.3	1.6	1.9	1.9	2.1	2.2	2.4
2.5	2.7	3.0	4.4	4.7	5.0	5.6	6.2	7.5

1. Make a dotplot of these data.

2. Describe the overall pattern of the distribution and any departures from that pattern.

3. The histogram below shows the distribution of electoral votes for the 50 United States and the District of Columbia. Describe the shape, center, and spread of the distribution.



Of the 50 species of oaks in the United States, 28 grow on the Atlantic coast and 11 grow in California. We are interested in the distribution of acorn volumes among oak species. Here are back-to-back stemplots on the volumes of acorns (in cubic centimeters) for these 39 oak species:

Volume of Acorns (cubic centimeters)

Atlantic coast		California
998643	0	4
88864211111	1	06
50	2	06
6640	3	
8	4	1
	5	59
8	6	0
	7	1
1	8	
1	9	
5	10	
	11	
	12	
	13	
	14	
	15	
	16	
	17	1

Key: 2|6 = 2.6 cm^3

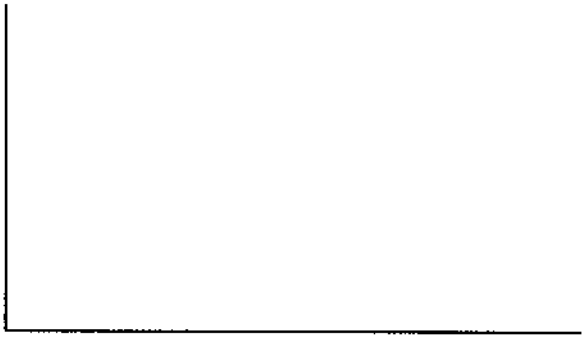
4. Use the stemplots to compare the distribution of acorn sizes between Atlantic Coast and California oak species.

Quiz 1.2C AP Statistics Name:

Hallux abducto valgus (call it HAV) is a deformation of the big toe that is not common among young people and often requires surgery. Doctors used X-rays to measure the angle (in degrees) of deformity in 38 consecutive patients under the age of 21 who came to a medical center for surgery to correct HAV. The higher the angle measure the more severe the deformity. Here are the data.

```
13 14 16 16 17 18 18 20 20 20 21 21 21 21 22 23 25 25 25
25 26 26 26 26 28 28 28 30 30 30 31 32 32 32 34 38 38 50
```

1. Make a histogram of these data. Choose an appropriate bin width and scale, and label each axis.



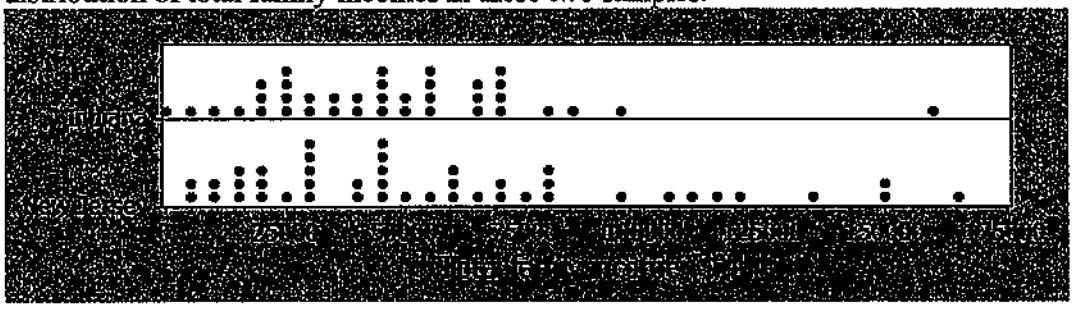
2. Write a brief discussion of the distribution of the angle of deformity among young patients needing surgery for this condition.

Below are the resting heart rates of 26 ninth-grade biology students.

61	78	77	81	48	75	70	77	70	76	86	55	65
60	63	79	62	71	72	74	74	64	66	71	66	68

3. Make a stemplot of these data with split stems.

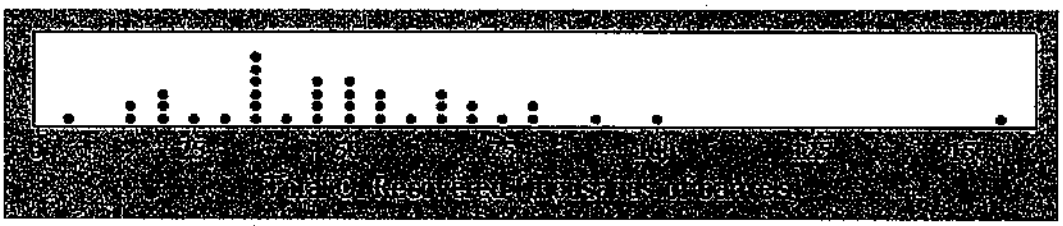
4. The dotplots below show the total family income of randomly-chosen individuals from Indiana (38 individuals) and New Jersey (44 individuals). Write a few sentences comparing the distribution of total family incomes in these two samples.



Quiz 1.3A AP Statistics Name:

How much oil wells in a given field will ultimately produce is key information in deciding whether to drill more wells. Here are the estimated total amounts of oil recovered from 38 wells in the Devonian Richmond Dolomite area of the Michigan basin, in thousands of barrels. The data is provided in ascending order, along with a dotplot.

3	22	35	43	49	57	70	92
13	25	35	43	50	59	70	98
15	31	37	45	50	63	74	157
19	33	37	46	53	65	80	
21	35	38	48	56	66	82	



1. What measures would you use to describe the center and spread of these data? Justify your answer.

2. Find the five-number summary for these data.

3. Are there any outliers? Justify your answer.

4. Draw a boxplot of this distribution.

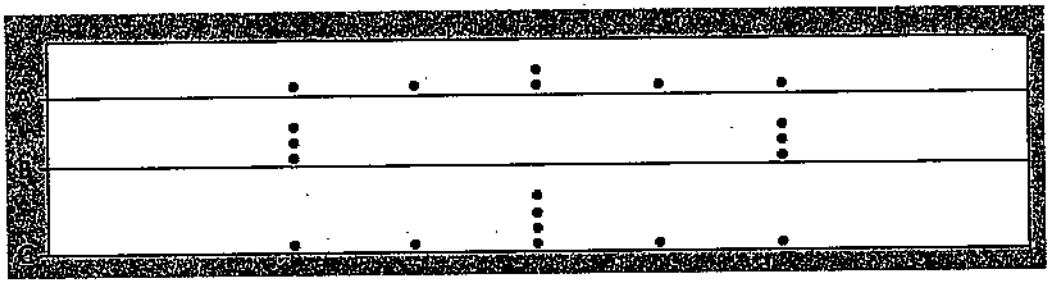
5. For the oil well data on the previous page, how can you tell *without doing any calculations*, that the mean of these data is larger than the median?

6. Five students reported the amount of time (in minutes) they spent studying for an AP Statistics test the night before the test. Here are the results:

45 50 60 65 80

Calculate the mean and standard deviation of study time *using the formula* for each. Show your work!

7. Below are dotplots for three small datasets: A, B, and C. Without performing any calculations, rank the standard deviations of the datasets from lowest to highest. Justify your answer.



Quiz 1.3B AP Statistics Name:

One of the important factors in determining population growth rates is the birth rate per 1000 individuals in a population. Below are the birth rates per 1000 individuals for 54 African Nations from a 2009 Population Reference Bureau report. The data is provided in ascending order, along with a dotplot.

14	23	25	31	34	36	38	39	41	43	46
17	23	26	31	35	37	38	39	41	43	46
18	24	28	32	35	38	39	39	41	44	47
21	25	29	33	36	38	39	40	43	45	53
23	25	30	33	36	38	39	40	43	45	

1. What measures would you use to describe the center and spread of these data? Justify your answer.

2. Find the five-number summary for these data.

3. Are there any outliers? Justify your answer.

4. Draw a boxplot of this distribution.

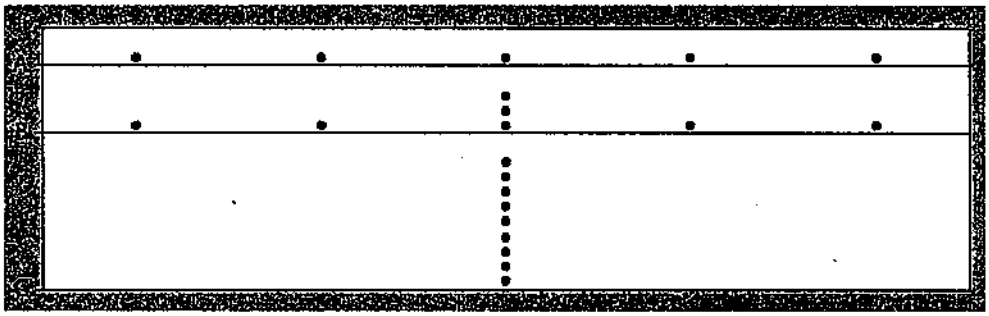
5. For the birth rate data on the previous page, how can you tell *without doing any calculations*, that the median of these data is larger than the mean?

6. Mary measures the weights of five newly hatched pythons in grams. Here are her results:

29 30 32 34 35

Calculate the mean and standard deviation of python weights *using the formula* for each. Show your work!

7. Below are dotplots for three small datasets: A, B, and C. Without performing any calculations, rank the standard deviations of the datasets from lowest to highest. Justify your answer.



Quiz 1.3C AP Statistics Name:

A student studying the sleeping habits of seniors at his school asked 34 randomly-selected seniors how many hours of sleep they got the previous night. The data, rounded to the nearest half-hour, is given in the table below.

8	7.5	9	7.5	9	6	5	9	7.5	7	8	7
6.5	8.5	8	6.5	8.5	6	7	7.5	7	6	8.5	
7	8	7	7.5	7	6	7	8	7.5	6	7	

1. Use your calculator to find the mean and standard deviation of these data.

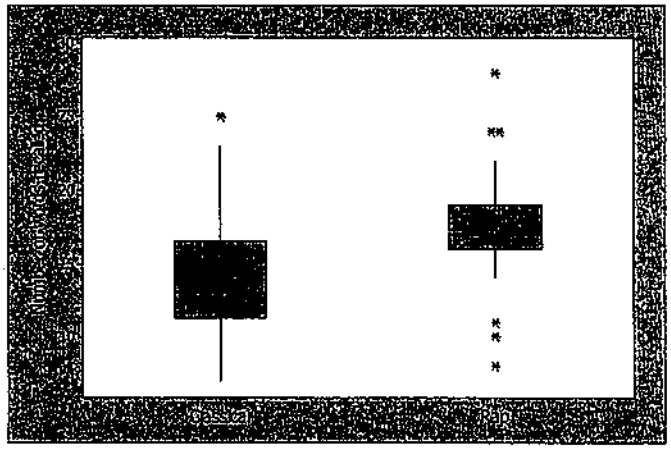
2. Find the five number summary for these data.

3. Determine if there are any outliers in these data. Show your work.

4. Suppose 4 more values were added to the data, each exactly equal to the mean. Would this have any impact on the standard deviation? Explain, without using any calculations.

5. Create a set of five positive numbers (repeats allowed) that have median 10 and mean 7. Describe the reasoning process you used to arrive at your answer.

Tempe and Alex wanted to know if the number of words students could recall from a list they studied was influenced by the kind of music they were listening to. They asked students to study a list of words for a fixed amount of time while listening to either classical music or rap. Then they counted how many words each student could recall from the list. Forty different students listened to each type of music. The results are shown in the boxplots below.



6. Approximate the interquartile range for each set of data. Why is this the appropriate measure of spread to use for these two data sets?

7. Write two or three sentences comparing the word-recall performances of students listening to each type of music.