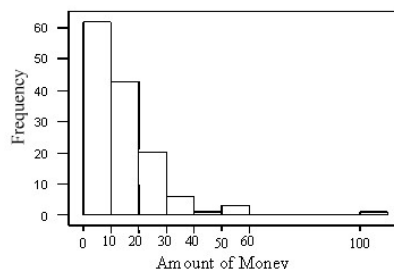


## AP Statistics – Unit 1 (Chapters 1-6) Warm-Ups: Part 1

2. A survey records many variables of interest to the researchers conducting the survey. Which of the following variables, from a survey conducted by the U.S. Postal Service, is categorical?
  - A) county of residence
  - B) number of people, both adults and children, living in the household
  - C) total household income, before taxes, in 1993
  - D) age of respondent
  
6. When drawing a histogram it is important to
  - A) have a separate class interval for each observation to get the most informative plot
  - B) make sure the heights of the bars exceed the widths of the class intervals, so the bars are true rectangles
  - C) label the vertical axis, so the reader can determine the counts or percent in each class interval
  - D) make certain the mean and median are contained in the same class interval, so the correct type of skewness can be identified

In a statistics class with 136 students, the professor records how much money each student has in his or her possession during the first class of the semester. The histogram below is of the data collected.



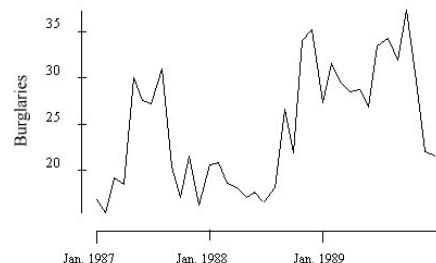
10. The percentage of students with under \$10 in their possession is closest to
  - A) 35%
  - B) 50%
  - C) 60%
  - D) 70%

During the early part of the 1994 baseball season, many sports fans and baseball players noticed that the number of home runs being hit seemed to be unusually large. Below are the team-by-team statistics on home runs hit through Friday, June 3, 1994 (from the *Columbus Dispatch* Sports Section, Sunday, June 5, 1994), in the form of separate stemplots for the number of home runs by American and National League teams.

<u>American League</u>	<u>National League</u>
2	2   9
3   5	3   1
4   0 3 9	4   2 6 7 8 8
5   1 4 7 8 8	5   3 5 5 5
6   4 8 8	6   3 3 7
7   5 7	7

18. The median for the number of home runs for the American League teams is
  - A) lower than that for the National League teams
  - B) 45
  - C) 50
  - D) 57.5
  
19. Which of the following is a correct statement?
  - A) The American League plot is reasonably symmetric
  - B) The National League plot is slightly skewed to the left
  - C) The median number of home runs hit by American League teams was higher than that of National League teams
  - D) All of the above

The timeplot at the right gives the number of burglaries committed each month for a city in Ohio. The plot is for the three-year period January 1987–December 1989.



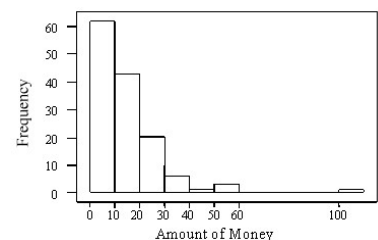
23. The number of burglaries in December 1989, the last date recorded in the timeplot, was about
  - A) 22
  - B) 27
  - C) 32
  - D) 37
  
24. Which of the following is a true statement?
  - A) The number of burglaries in each month of 1988 was lower than the number of burglaries in each month of 1989
  - B) The median number of burglaries for a month in 1988 was a little over 25
  - C) The total number of burglaries in 1989 was higher than in 1988
  - D) None of the above

26. A consumer group surveyed the prices for a certain item in five different stores and reported the average price as \$15. We visited four of the five stores and found the prices to be \$10, \$15, \$15, and \$25. Assuming that the consumer group is correct, what is the price of the item at the store that we did not visit?
- A) \$10      B) \$15      C) \$20      D) \$25
27. The average salary of all female workers is \$35,000. The average salary of all male workers is \$41,000. What must be true about the average salary of all workers?
- A) It must be \$38,000      B) It must be larger than the median salary  
C) It could be any number between \$35,000 and \$41,000      D) It must be larger than \$38,000
28. A sample was taken of the salaries of 20 employees of a large company. The following are the salaries (in thousands of dollars) for this year. For convenience, the data are ordered.
- |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|
| 28 | 31 | 34 | 35 | 37 | 41 | 42 | 42 | 42 | 47 |
| 49 | 51 | 52 | 52 | 60 | 61 | 67 | 72 | 75 | 77 |
- Suppose each employee in the company receives a \$3000 raise for next year (each employee's salary is increased by \$3000). The mean salary for the employees will
- A) be unchanged      B) increase by \$3000      C) be multiplied by \$3000      D) increase by  $\sqrt{\$3000}$
33. The mean age of five people in a room is 30 years. One of the people, whose age is 50 years, leaves the room. The mean age of the remaining four people in the room
- A) is 40      B) is 30      C) is 25      D) cannot be determined from the information given
38. The median age of five people in a room is 30 years. One of the people, whose age is 50 years, leaves the room. The median age of the remaining four people in the room
- A) is 40      B) is 30      C) is 25      D) cannot be determined from the information given
41. A reporter wishes to portray baseball players as overpaid. Which measure of center should he report as the average salary of major league players?
- A) the mean  
B) the median  
C) either the mean or median; they will be equal in this case  
D) neither the mean nor the median; both will be much lower than the actual average salary

A sample was taken of the salaries of 20 employees of a large company. The following are the salaries (in thousands of dollars) for this year. For convenience, the data are ordered.

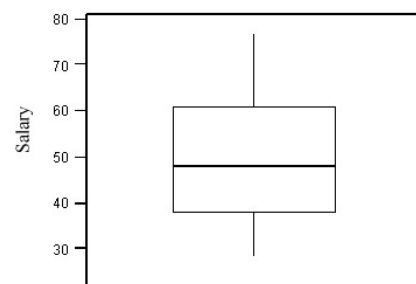
28	31	34	35	37	41	42	42	42	47
49	51	52	52	60	61	67	72	75	77

45. The interquartile range of the 20 salaries is
- A) \$19,000      B) \$19,500      C) \$21,500      D) \$49,000
48. In a statistics class with 136 students, the professor records how much money each student has in his or her possession during the first class of the semester. The histogram below is of the data collected. From the histogram, which of the following is true?
- A) The mean is much larger than the median  
B) The mean is much smaller than the median  
C) The mean and median are approximately equal  
D) It is impossible to compare the mean and median for these data



A sample was taken of the salaries of 20 employees of a large company. The following is a boxplot of the salaries (in thousands of dollars) for this year.

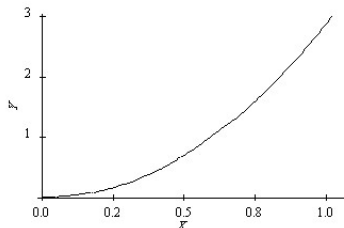
50. Based on this boxplot, which of the following statements is true?
- A) The maximum salary is between \$60,000 and \$70,000  
B) The minimum salary is \$20,000  
C) The interquartile range is about \$20,000  
D) The median salary is about \$40,000



51. Based on this boxplot, which of the following statements is true?
- A) The salary distribution is fairly symmetric
  - B) About 10 employees make more than \$50,000
  - C) Nobody makes more than \$80,000
  - D) All of the above

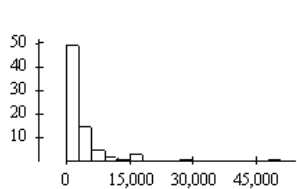
### AP Statistics – Unit 1 (Chapters 1-6) Warm-Ups: Part 2

7. For the density curve below, which of the following is true?

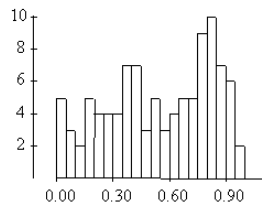


- A) The mean and median are equal
  - B) The mean is greater than the median
  - C) The mean is less than the median
  - D) The mean could be either greater than or less than the median
8. The time to complete a standardized exam is approximately normal with a mean of 70 minutes and a standard deviation of 10 minutes. Using the 68–95–99.7 rule, what percentage of students will complete the exam in under an hour?
- A) 68%      B) 32%      C) 16%      D) 5%
15. A company produces packets of soap powder labeled “Giant Size 32 Ounces.” The actual weight of soap powder in a box has a normal distribution with a mean of 33 ounces and a standard deviation of 0.7 ounces. What proportion of packets is underweight (i.e., weighs less than 32 ounces)?
- A) .0764      B) .2420      C) .7580      D) .9236
23. A soft-drink machine can be regulated so that it discharges an average of  $\mu$  ounces per cup. If the ounces of fill are normally distributed with a standard deviation of 0.4 ounces, what value should  $\mu$  be set at so that 6-ounce cups will overflow only 2% of the time?
- A) 6.82      B) 6.00      C) 5.18      D) 5.60
25. The weight of a randomly selected can of a new soft drink is known to have a normal distribution with a mean of 8.3 ounces and a standard deviation of 0.2 ounces. The weight that should be stamped on the can so that only 2% of cans are underweight is
- A) 7.89 ounces      B) 8.71 ounces      C) 8.26 ounces      D) 8.28 ounces

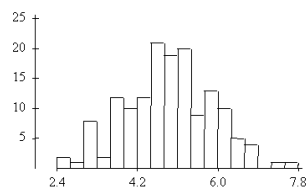
28. A stemplot of a set of data is roughly symmetric, but the data do not even approximately follow the 68–95–99.7 rule. We conclude that the data are
- A) normal, but they are not standard normal      B) standard normal      C) not normal      D) normal
29. Which of the following four histograms would best be approximated by a normal distribution?



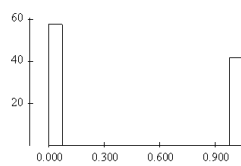
A)



B)



C)



D)

### **AP Statistics – Unit 1 (Chapters 1-6) Warm-Ups: Part 3**

32. A study of the salaries of full professors at Upper Wabash Tech shows that the median salary for female professors is considerably less than the median male salary. However, further investigation shows that the median salaries for male and female full professors are about the same in every department (English, physics, etc.) of the university. This apparent contradiction is an example of

- A) Extrapolation      B) Simpson's Paradox      C) causation      D) correlation

34. The two-way table below categorizes suicides committed in 1983 by the sex of the victim and the method used.

<u>Method</u>	<u>Male</u>	<u>Female</u>
Firearms	13,959	2,641
Poison	3,148	2,469
Hanging	3,222	709
Other	1,457	690

Which of the following statements is consistent with the table?

- A) There is absolutely no evidence of a relation between the sex of the victim and the method of suicide used  
 B) More women commit suicide than men  
 C) Men display a greater tendency to use firearms to commit suicide than do women  
 D) The correlation between method of suicide and sex of the victim is clearly positive

35. In a study of the link between high blood pressure and cardiovascular disease, a group of white males ages 35 to 64 was followed for five years. At the beginning of the study, each man had his blood pressure measured; the blood pressure was classified as either “low” systolic blood pressure (less than 140 mmHg) or “high” blood pressure (140 mmHg or higher). The following table gives the number of men in each blood pressure category and the number of deaths from cardiovascular disease during the five-year period.

<u>Blood Pressure</u>	<u>Deaths</u>	<u>Total</u>
Low	10	2000
High	50	3500

Based on the data given here, which of the following statements is correct?

- A) These data are consistent with the idea that there is a link between high blood pressure and death from cardiovascular disease  
 B) The mortality rate (proportion of deaths) for men with high blood pressure is five times that of men with low blood pressure  
 C) These data probably understate the link between high blood pressure and death from cardiovascular disease, since men will tend to understate their true blood pressure  
 D) All of the above

A review of voter registration records in a small town yielded the following table of the number of males and females registered as Democrat, Republican, or some other affiliation.

	<u>Male</u>	<u>Female</u>
Democrat	300	600
Republican	500	300
Other	200	100

41. The proportion of males that are registered as Democrats is  
A) 300      B) 0.33      C) 0.30      D) 0.15
42. The proportion of registered Democrats who are male is  
A) 300      B) 0.33      C) 0.30      D) 0.15
43. The proportion of all voters who are male and registered Democrats is  
A) 300      B) 0.33      C) 0.30      D) 0.15