

1. Some variables that were recorded while studying diets of sharks are given below. Which of these variables is not quantitative?
 - A) Amount of food eaten in a day by the shark being observed
 - B) Age of the shark being observed
 - C) Type of shark being observed
 - D) Length of the shark being observed

2. A survey is conducted among students taking a statistics class. Several variables are measured in the survey. Which of the variables listed below is qualitative?
 - A) Number of credit hours taken during the quarter
 - B) Gender
 - C) Parents' annual income
 - D) High school GPA

3. Stream quality is based on the levels of many variables, including those listed below. Which of these variables is quantitative?
 - A) Amount of phosphorus
 - B) Number of distinct species present
 - C) Amount of dissolved oxygen
 - D) All of these answers are correct.

4. During winter, red foxes hunt small rodents by jumping into thick snow cover. Researchers report that a hunting trip lasts, on average, 19 minutes and involves, on average, 7 jumps. In a surprising finding, they report that 79% of successful jumps are made in the northeast direction. Which of the following statements about these results is TRUE?
 - A) The three variables reported are all quantitative.
 - B) The three variables reported are all categorical.
 - C) Two of variables reported are quantitative and one is categorical.
 - D) Two of variables reported are categorical and one is quantitative.

5. A survey records many variables of interest to the researchers conducting the survey. The following variables are some of the variables collected in a survey conducted by the USDA. Which of these variables is categorical?
 - A) Type of grain grown
 - B) Number of acres owned
 - C) Total farm income, before taxes, in 1993
 - D) Number of children younger than age 12 on the farm

6. The EPA sends out a survey to learn about people's water-usage habits. Some of the variables to be analyzed are responses to the following questions. Which of these questions leads to categorical responses?
- A) How many times a day do you take a shower?
 - B) Do you leave the water running when brushing your teeth?
 - C) How many times a week do you water your lawn?
 - D) None of these answers is correct.
7. Which of the following is a discrete variable?
- A) Number of different toxins present in a fish
 - B) Length of a fish
 - C) Weight of a fish
 - D) All of these answers are correct.
8. Some variables were recorded while surveying plants in a wildlife area. Which of the following variables is continuous?
- A) Count of petals per flower
 - B) Count of flowers per plant
 - C) Plant height in centimeters
 - D) Plant species
9. Some variables were recorded while surveying plants in a wildlife area. Which of the following variables is discrete?
- A) Count of petals per flower
 - B) Whether the plant grows under the shade of another plant
 - C) Plant height in centimeters
 - D) Plant species

10. Here are records of eye color for a random sample of 103 individuals:

Eye color	Number of individuals
Blue	21
Green	7
Hazel	23
Brown	47
Other	5

This data set is best represented graphically in a

- A) Histogram.
- B) Stemplot.
- C) Scatterplot.
- D) Boxplot.
- E) Pie chart.

11. During winter, red foxes hunt small rodents by jumping into thick snow cover. Researchers report that a hunting trip lasts, on average, 19 minutes and involves, on average, 7 jumps. In a surprising finding, they report that 79% of all successful jumps are made in the northeast direction. Three variables are mentioned in this report. What is the best description of the first variable mentioned?

- A) Quantitative and discrete
- B) Quantitative and continuous
- C) Categorical
- D) Ordinal

12. During winter, red foxes hunt small rodents by jumping into thick snow cover. Researchers report that a hunting trip lasts, on average, 19 minutes and involves, on average, 7 jumps. In a surprising finding, they report that 79% of all successful jumps are made in the northeast direction. Three variables are mentioned in this report. What is the best description of the second variable mentioned?

- A) Quantitative and discrete
- B) Quantitative and continuous
- C) Categorical
- D) Ordinal

13. During winter, red foxes hunt small rodents by jumping into thick snow cover. Researchers report that a hunting trip lasts, on average, 19 minutes and involves, on average, 7 jumps. In a surprising finding, they report that 79% of all successful jumps are made in the northeast direction. Three variables are mentioned in this report. What is the best description of the third variable mentioned?
- A) Quantitative and discrete
 - B) Quantitative and continuous
 - C) Categorical
 - D) Ordinal
14. What is important to do when drawing a histogram?
- A) Use no more than four class intervals, except for categorical variables.
 - B) Leave gaps between the bars so the reader can easily distinguish between the class intervals.
 - 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.
15. For a biology lab course containing 10 students, the maximum point total for the quarter was 200. The point totals for the 10 students are given in the following stemplot:

11		6	8
12		1	4 8
13		3	7
14		2	6
15			
16			
17		9	

To which type of graph is this stemplot most similar?

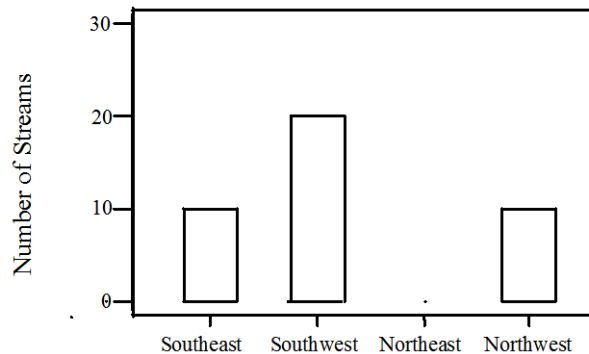
- A) A histogram with class intervals $110 \leq \text{score} < 120$, $120 \leq \text{score} < 130$, . . .
- B) a time plot of the data with the observations taken in increasing order
- C) A boxplot of the data
- D) Reporting the five-point summary for the data, with the mean

16. For a biology lab course containing 10 students, the maximum point total for the quarter was 200. The point totals for the 10 students are given in the following stemplot:

11	6 8
12	1 4 8
13	3 7
14	2 6
15	
16	
17	9

Suppose this stemplot was drawn as a histogram. What would be the best description of the shape of this histogram?

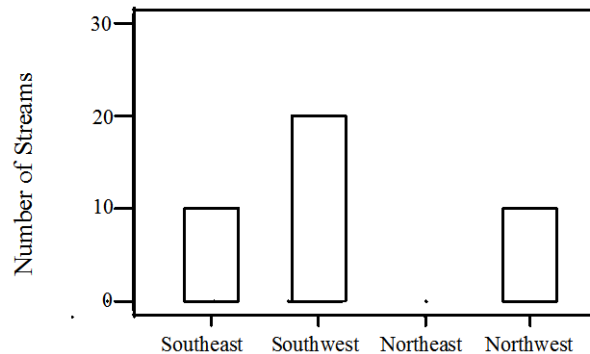
- A) Skewed right
 - B) Skewed left
 - C) Symmetric
 - D) Bimodal
17. A sample of 55 streams in severe distress was obtained during 2007. The following bar graph illustrates the number of streams that are from the Northeast, Northwest, Southeast, or Southwest. In the bar graph, the bar for the Northeast has been omitted.



What percent of streams are not from the Northeast?

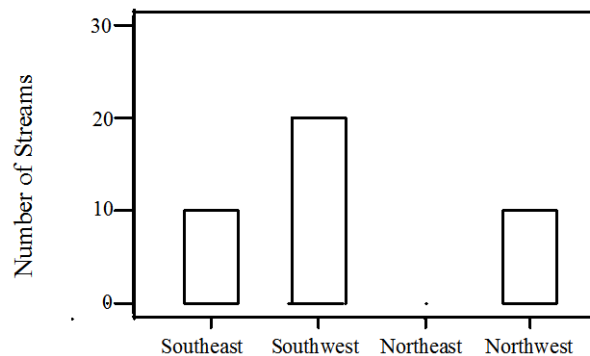
- A) 27%
- B) 40%
- C) 73%
- D) 75%

18. A sample of 55 streams in severe distress was obtained during 2007. The following bar graph illustrates the number of streams that are from the Northeast, Northwest, Southeast, or Southwest. In the bar graph, the bar for the Northeast has been omitted.



How many streams are from the Northeast?

- A) 15
 - B) 25
 - C) 35
 - D) 45
19. A sample of 55 streams in severe distress was obtained during 2007. The following bar graph illustrates the number of streams that are from the Northeast, Northwest, Southeast, or Southwest. In the bar graph, the bar for the Northeast has been omitted.



Which of the following statements is correct about these data?

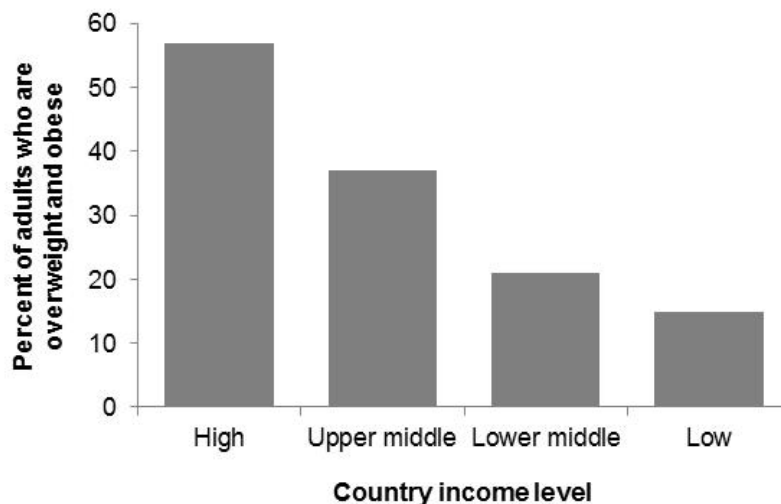
- A) A time plot of the 2007 distribution would be more informative.
- B) The bar graph is skewed to the right.
- C) The bar graph is skewed to the left.
- D) It would be correct to make a pie chart if you included the Northeast category.

20. The following table shows the percent of current smokers in 2006 among various groups, according to the Centers for Disease Control and Prevention.

Group	Percent who are smoking
Men 18–24 years	28.5%
Women 18–24 years	19.3%
Men 25–29 years	28.9%
Women 25–29 years	23.3%

Would it be correct to display these data in a single pie chart?

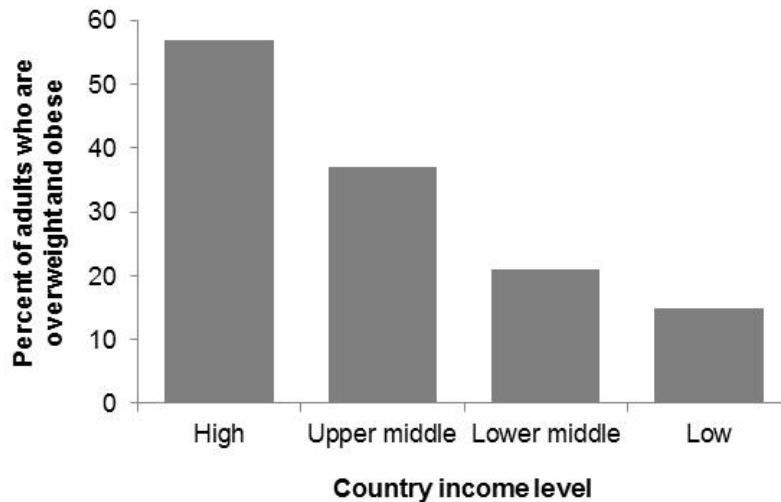
- A) Yes, because the data are categorical and all categorical data can be plotted in a pie chart
- B) Yes, because the data break down all smokers age 18 to 29 in the United States in 2006
- C) No, because the data represent smokers within four different groups
- D) No, because the data are quantitative
21. The following graph shows the percent of adults who are overweight or obese in countries with different income levels, based on 2010 data from the World Health Organization and the United Nations.



What is the correct description of this graph?

- A) Bar graph
- B) Histogram with a clear right skew
- C) Histogram with a clear left skew
- D) Boxplot

22. The following graph shows the percent of adults who are overweight or obese in countries with different income levels, based on 2010 data from the World Health Organization and the United Nations.



Which of the following statements about these data is correct?

- A) The majority of adults who are overweight or obese live in high-income countries.
 - B) The majority of adults who live in high-income countries are overweight or obese.
 - C) Both statements are correct.
 - D) Both statements are incorrect.
23. The estimated annual number of smoking-attributable deaths in the United States can be broken down by specific causes, as follows:

Lung cancer	128,900 deaths
Other cancers	35,300 deaths
Ischemic heart disease	126,000 deaths
Chronic obstructive pulmonary disease	92,900 deaths
Stroke	15,900 deaths
Other diagnoses	44,000 deaths

What percent of U.S. annual deaths attributable to smoking are lung cancer deaths?

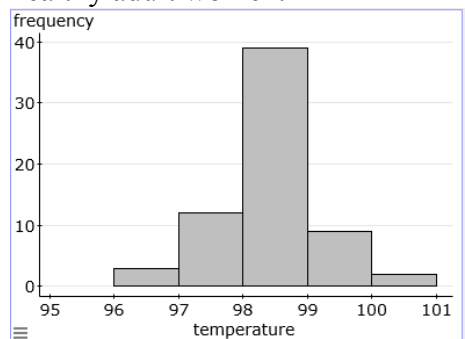
- A) 16.7%
- B) 29.1%
- C) 78.5%
- D) There is not enough information to answer.

24. The estimated annual number of smoking-attributable deaths in the United States can be broken down by specific causes, as follows:

Lung cancer	128,900 deaths
Other cancers	35,300 deaths
Ischemic heart disease	126,000 deaths
Chronic obstructive pulmonary disease	92,900 deaths
Stroke	15,900 deaths
Other diagnoses	44,000 deaths

Would it be correct to display these data in a pie chart?

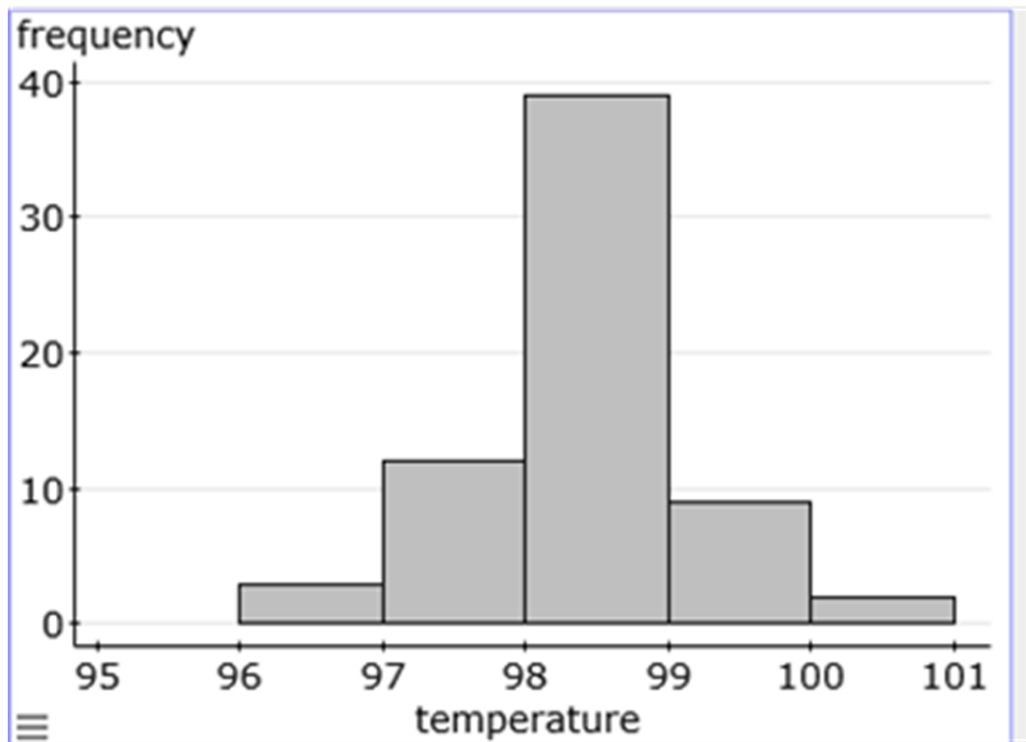
- A) Yes, because these counts make up all U.S. deaths attributable to smoking in a year
B) No, because we are missing the deaths that are attributable to causes other than smoking
C) No, because the data are quantitative
D) Yes, because the data are categorical and all categorical data can be plotted in a pie chart
25. The following histogram shows body temperatures (in degrees Fahrenheit) for 65 healthy adult women.



What is the best description of this distribution?

- A) Roughly symmetric
B) Bimodal
C) Clearly right-skewed
D) Clearly left-skewed

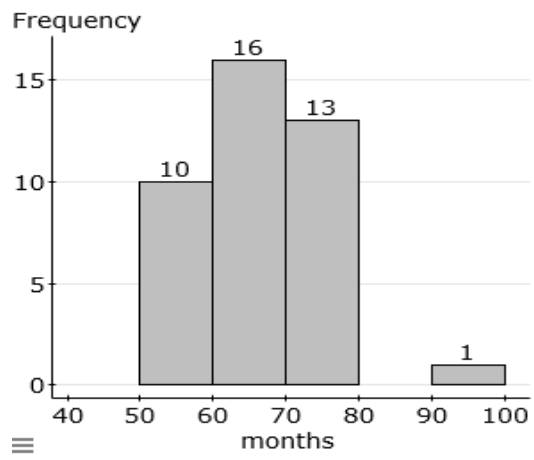
26. The following histogram shows body temperatures (in degrees Fahrenheit) for 65 healthy adult women.



Approximately how many women in the sample have a body temperature lower than 98 degrees Fahrenheit?

- A) 15
- B) 20
- C) 45
- D) 50

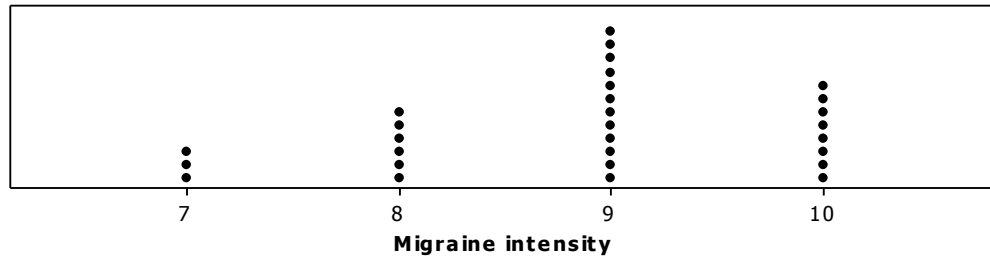
27. A sample of 40 endangered species was obtained, and the length of time (in months) since being placed on the list was recorded for each species. A histogram of these data is given here:



Approximately how many species in the sample have been on the list for less than 5 years?

- A) 10
- B) 12
- C) 14
- D) 18

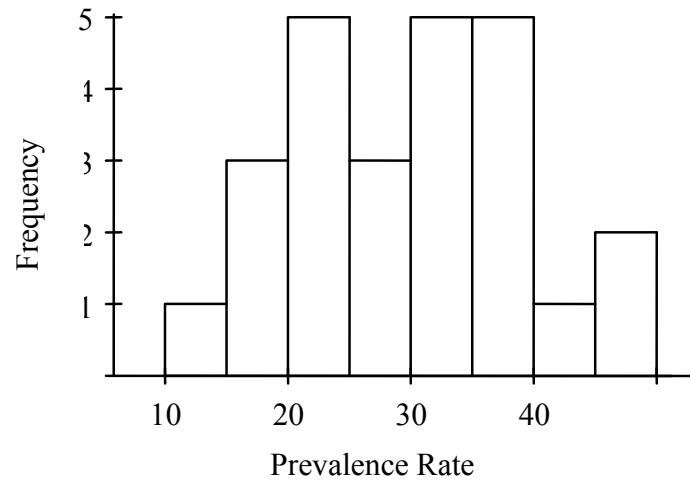
28. The following dotplot shows migraine intensity (on a scale of 1 to 10) for 29 adults suffering from recurring migraines.



What is the best description of this distribution?

- A) Symmetric with 3 outliers
- B) Moderately left-skewed
- C) Moderately right-skewed
- D) Multimodal

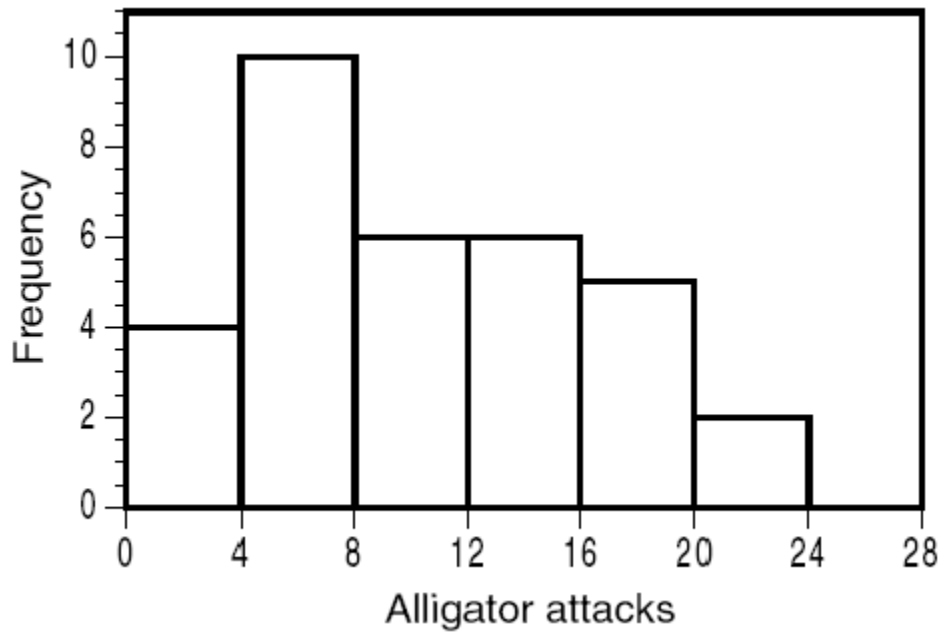
29. The following histogram depicts the prevalence rates of a particular genetic marker in samples among 25 impoverished communities in 2004. In each interval, the left endpoint is included but not the right endpoint, so the class intervals are $10 \leq \text{rate} < 15$, $15 \leq \text{rate} < 20$,



How many communities have a prevalence rate of 30% or higher?

- A) 5
- B) 12
- C) 10
- D) 13

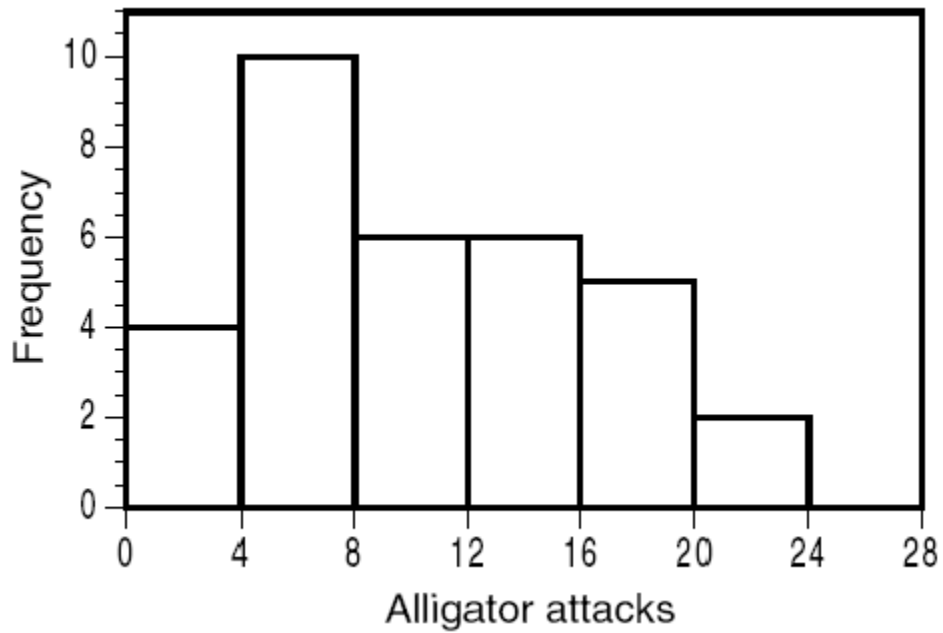
30. The following histogram shows the yearly number of unprovoked attacks by alligators on people in Florida over a 33-year period.



What is the overall shape of the distribution?

- A) Bimodal
- B) Slightly skewed to the right
- C) Strongly skewed to the left
- D) Roughly symmetric with an outlier

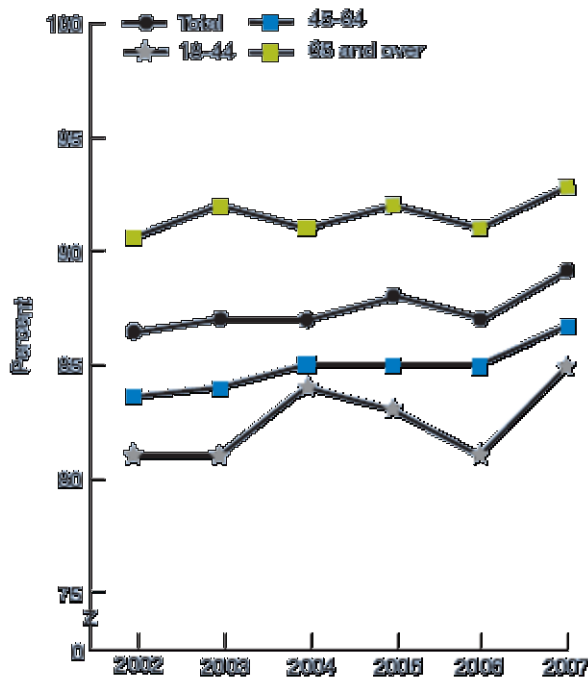
31. The following histogram shows the yearly number of unprovoked attacks by alligators on people in Florida over a 33-year period.



What is the midpoint of the yearly number of unprovoked alligator attacks?

- A) Class 4 to 8
- B) Class 8 to 12
- C) Class 12 to 16
- D) Class 16 to 18

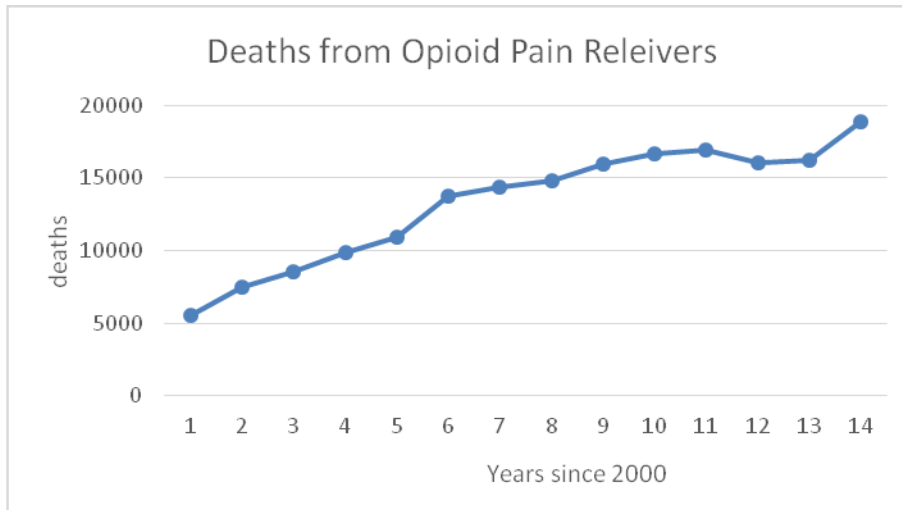
32. The following graph shows the percent of adult hemodialysis patients who received adequate dialysis (urea reduction ratio 65% or greater), by age, over the 2002–2007 period.



Which of the following statements about these data is NOT correct?

- A) From 2002 to 2007, the overall percent of adult hemodialysis patients receiving adequate dialysis improved from about 86% to about 89%.
- B) Comparing 2002 to 2007 data, improvements in the percent of adult hemodialysis patients receiving adequate dialysis were observed among all age groups.
- C) In all years, adults age 18–44 and 45–64 were less likely than adults age 65 and older to receive adequate dialysis.
- D) From 2002 to 2007, data for adults age 18 to 44 indicate a clear cyclical pattern.

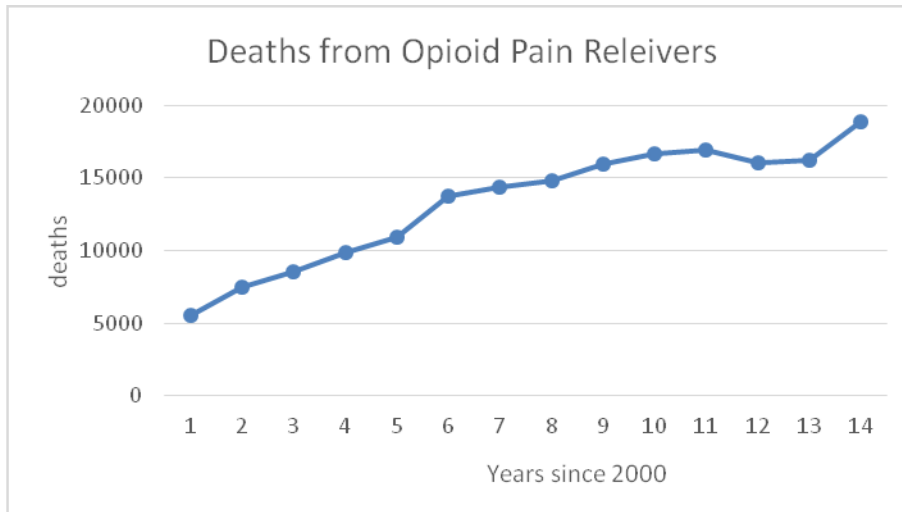
33. Opioid pain relievers are prescribed at a higher rate in the United States than in any other nation, yet abuse of these pain relievers can result in addiction and fatal overdoses. The CDC examined opioid pain reliever prescriptions in each U.S. state to determine how variable prescription rates are across the nation. The following time plot gives the number of deaths from opioid pain relievers from 2001 to 2014.



What was the number of deaths in 2007?

- A) Approximately 10,000
- B) Fewer than 15,000
- C) Approximately 16,000
- D) Approximately 15,000

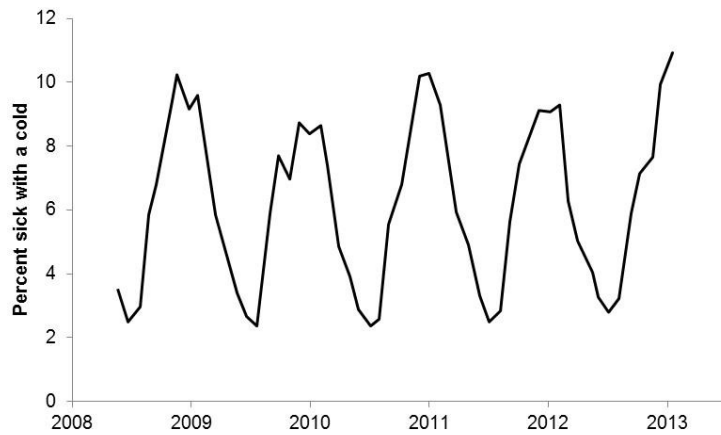
34. The following time plot gives the number of deaths from opioid pain relievers in the years 2001 to 2014.



Which of the following statements is TRUE about these data?

- A) There is a fairly steady upward trend in the number of deaths from opioid pain relievers over this entire time period.
- B) The number of deaths for 2012 is a clear outlier.
- C) The time period is too short to describe any pattern in the data.
- D) None of these choices is correct.

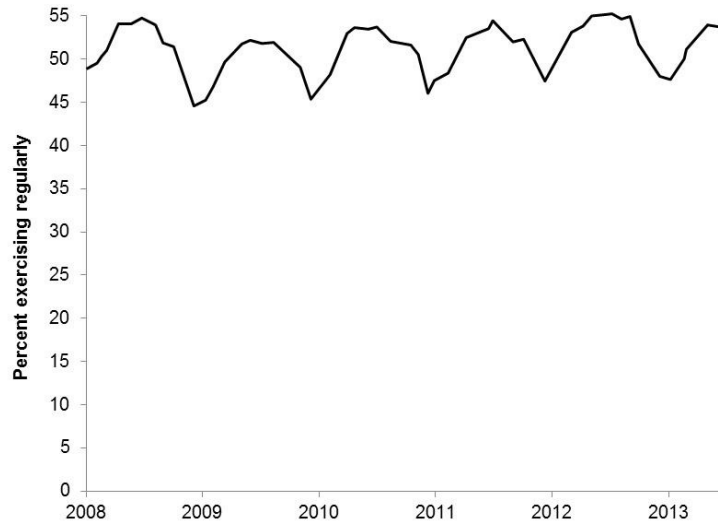
35. Every month, the Gallup polling organization tracks various health issues in the United States using large national surveys. The following graph shows the estimated percent of American adults sick with a cold between June 2008 and January 2013.



Which of the following statements about these data is TRUE?

- A) There is a clear upward trend but no cyclical pattern.
- B) There is a clear cyclical pattern but no trend.
- C) There is a clear upward trend as well as a clear cyclical pattern.
- D) There is neither a clear trend nor a cyclical pattern.

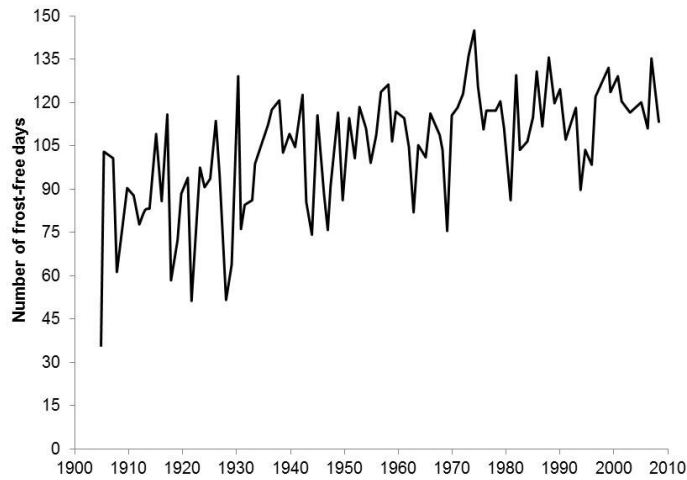
36. Every month, the Gallup polling organization tracks various health issues in the United States using large national surveys. The following graph shows the estimated percent of American adults who reported exercising regularly (at least 30 minutes on 3 or more days per week) between June 2008 and January 2013.



Which of the following statements about these data is TRUE?

- A) There is a clear upward trend but no cyclical pattern.
- B) There is a clear cyclical pattern but no trend.
- C) There is a clear upward trend as well as a clear cyclical pattern.
- D) There is neither a clear trend nor a cyclical pattern.

37. The U.S. Global Change Research Program examined data for evidence of global climate change. The following graph shows the yearly number of days without frost (air temperature below freezing) between 1904 and 2008 in Fairbanks, Alaska.



Which of the following statements about these data is TRUE?

- A) There is a clear upward trend but no cyclical pattern.
- B) There is a clear cyclical pattern but no trend.
- C) There is a clear upward trend as well as a clear cyclical pattern.
- D) There is neither a clear trend nor a cyclical pattern.

38. The U.S. Global Change Research Program examined data for evidence of global climate change. The following graph shows the average yearly ground temperature at a depth of 65.5 feet (the typical measure of permafrost, indicative of ground frozen solid) between 1978 and 2008 in Deadhorse, a town in northern Alaska.



Which of the following statements about these data is TRUE?

- A) There is a clear upward trend but no cyclical pattern.
- B) There is a clear cyclical pattern but no trend.
- C) There is a clear upward trend as well as a clear cyclical pattern.
- D) There is neither a clear trend nor a cyclical pattern.

Answer Key

1. C
2. B
3. D
4. C
5. A
6. B
7. A
8. C
9. A
10. E
11. B
12. A
13. C
14. C
15. A
16. A
17. C
18. A
19. D
20. C
21. A
22. B
23. B
24. A
25. A
26. A
27. A
28. B
29. D
30. B
31. B
32. D
33. B
34. A
35. B
36. B
37. A
38. A