Test Bank for Quantitative Literacy 3rd Edition by Crauder
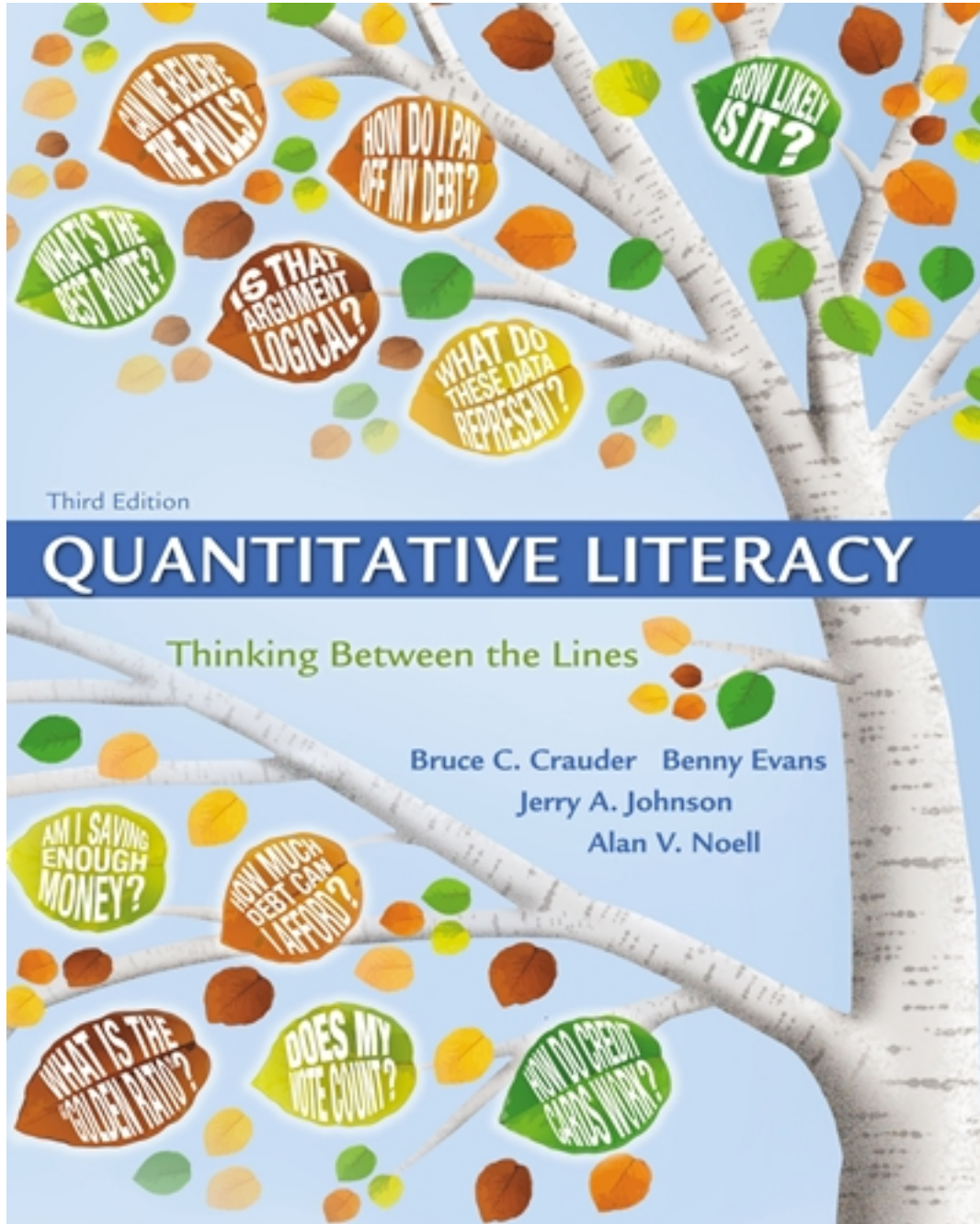
Test Bank

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Chapter 2

1. When one quantity, or variable, depends on another, the latter is referred to as the dependent variable.
   a. True
   b. False

ANSWER: b

2. A _____ describes how the dependent variable depends on the independent variable.
   a. model
   b. relation
   c. function
   d. percentage

ANSWER: c

3. If you investigate the change of the U.S. population over years, then the dependent variable is the population.
   a. True
   b. False

ANSWER: a

4. Percentage _____ in a function is the percentage increase in the function from one value of the independent variable to another.
   a. rise
   b. decline
   c. relation
   d. change

ANSWER: d

5. The average growth rate of a function over an interval is the change in the function divided by the change in the:
   a. dependent variable.
   b. independent variable.
   c. percentage increase.
   d. percentage decrease.

ANSWER: b

6. _____ is the process of estimating unknown values between known data points using the average growth rate.
   a. Relation change
   b. Interpolation
   c. Extrapolation
   d. Absolute change

ANSWER: b

7. _____ is the process of estimating unknown values beyond known data points using the average growth rate.
   a. Relation change

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    b. Interpolation

    c. Extrapolation

    d. Absolute change

ANSWER: c

8. The following table shows the world population in billions:

Date	1950	1960	1970	1980	1990	2000
Population	2.56	3.04	3.71	4.45	5.26	6.08

What is the dependent variable?

    a. date

    b. population

    c. percentage change

    d. average growth rate

ANSWER: b

9. The following table shows the world population in billions:

Date	1950	1960	1970	1980	1990	2000
Population	2.56	3.04	3.71	4.45	5.26	6.08

What is the percentage change from 1960 to 1970?

    a. 6.7%

    b. 19%

    c. 22%

    d. 25%

ANSWER: c

10. The following table shows the world population in billions:

Date	1950	1960	1970	1980	1990	2000
Population	2.56	3.04	3.71	4.45	5.26	6.08

Calculate the average annual growth rate in millions from 1990 to 2000.

    a. 820 million

    b. 82 million

    c. 8.2 million

    d. 0.82 million

ANSWER: b

11. The following table shows the world population in billions:

Date	1950	1960	1970	1980	1990	2000
Population	2.56	3.04	3.71	4.45	5.26	6.08

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Use interpolation to estimate the world population in 1987.
    a. 5.18 billion
    b. 4.94 billion
    c. 5.10 billion
    d. 5.02 billion
ANSWER: d

12. The following table shows the world population in billions:

Date	1950	1960	1970	1980	1990	2000
Population	2.56	3.04	3.71	4.45	5.26	6.08

Use extrapolation to estimate the world population in 2003.
    a. 6.24 billion
    b. 6.33 billion
    c. 6.41 billion
    d. 6.50 billion
ANSWER: b

13. The following table shows the number of customer complaints against a U.S. car rental company during the given year:

Date	2002	2004	2010
Number of complaints	1123	1304	1651

What is the percentage change from 2002 to 2004?
    a. 12%
    b. 14%
    c. 16%
    d. 18%
ANSWER: c

14. The following table shows the number of customer complaints against a U.S. car rental company during the given year:

Date	2002	2004	2010
Number of complaints	1123	1304	1651

If the change from 2002 to 2006 is 32.4%, find the number of customer complaints during the year 2006.
    a. 1374
    b. 1420
    c. 1487
    d. 1525
ANSWER: c

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15. The following table shows the number of customer complaints against a U.S. car rental company during the given year:

Date	2002	2004	2010
Number of complaints	1123	1304	1651

Use interpolation to estimate the number of customer complaints during 2006.

    a. 1374

    b. 1420

    c. 1487

    d. 1525

ANSWER: b

16. The following table shows the number of customer complaints against a U.S. car rental company during the given year:

Date	2002	2004	2010
Number of complaints	1123	1304	1651

Use extrapolation to estimate the number of complaints during the year 2014.

    a. 1751

    b. 1773

    c. 1805

    d. 1882

ANSWER: d

17. The following table from the World Health Organization shows the cumulative number of severe acute respiratory syndrome (SARS) cases reported on certain dates in 2003:

Date	March 26	March 31	April 5	April 10	April 15
Number of cases	1323	1622	2416	2781	3235

What was the percentage change from April 5 to April 10?

    a. 13%

    b. 14%

    c. 15%

    d. 16%

ANSWER: c

18. The following table from the World Health Organization shows the cumulative number of severe acute respiratory syndrome (SARS) cases reported on certain dates in 2003:

Date	March 26	March 31	April 5	April 10	April 15
Number of cases	1323	1622	2416	2781	3235

Calculate the average daily growth rate of cases from March 31 to April 5.

    a. 794

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    b. 159

    c. 132

    d. 198

ANSWER: b

19. The following table from the World Health Organization shows the cumulative number of severe acute respiratory syndrome (SARS) cases reported on certain dates in 2003:

Date	March 26	March 31	April 5	April 10	April 15
Number of cases	1323	1622	2416	2781	3235

Use interpolation to estimate the number of cases reported on April 2.

    a. 2218

    b. 1887

    c. 1940

    d. 2095

ANSWER: c

20. The following table from the World Health Organization shows the cumulative number of severe acute respiratory syndrome (SARS) cases reported on certain dates in 2003:

Date	March 26	March 31	April 5	April 10	April 15
Number of cases	1323	1622	2416	2781	3235

Use extrapolation to estimate the number of cases reported on April 18.

    a. 3462

    b. 3507

    c. 3598

    d. 3538

ANSWER: b

21. The following table shows the percentage of children in the United States between the ages of 3 and 5 who are enrolled in nursery school and kindergarten programs:

Date	1970	1975	1980	1985	1990	1995	2000
Percentage	37.5	48.6	52.5	54.6	59.4	61.8	64.0

Which of the following periods shows the smallest percentage change?

    a. 1975 to 1980

    b. 1980 to 1985

    c. 1990 to 1995

    d. 1995 to 2000

ANSWER: b

22. The following table shows the percentage of children in the United States between the ages of 3 and 5 who are enrolled in nursery school and kindergarten programs:

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Date	1970	1975	1980	1985	1990	1995	2000
Percentage	37.5%	48.6%	52.5%	54.6%	59.4%	61.8%	64.0%

Use extrapolation to estimate the enrollment rate in 2003.
   a. 64.5%
   b. 64.9%
   c. 65.3%
   d. 65.7%
ANSWER: c

23. The following table shows the number of customer complaints against a U.S. car rental company during the given year:

Date	2002	2004	2006	2008	2010
Number of complaints	1123	1304	1487	1398	1651

Use interpolation to determine the number of complains in 2009.
   a. 1061
   b. 1651
   c. 1482
   d. 1525
ANSWER: d

24. This bar graph shows the percentage of college freshmen at ABC College needing to take a developmental math class as of the fall of the given year:
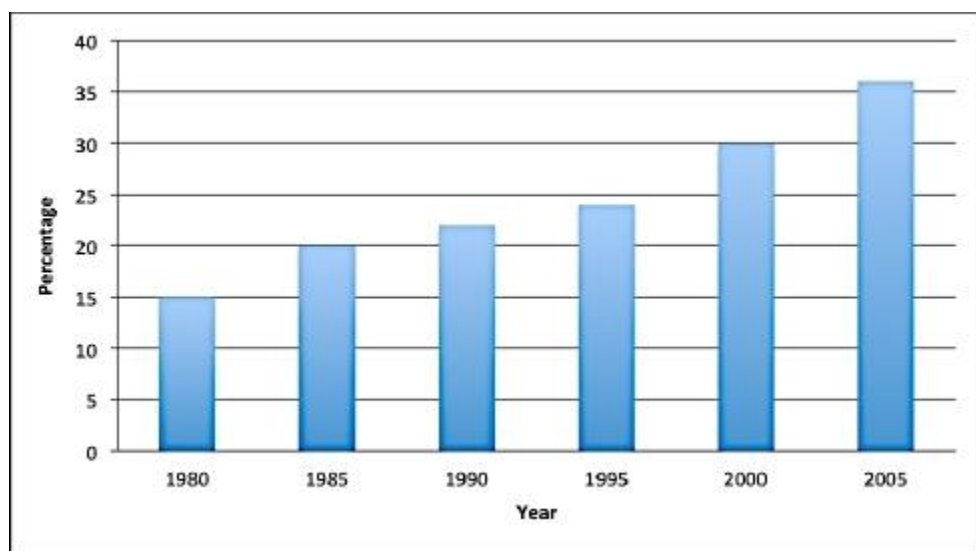
Find the average yearly growth rate from 1995 to 2000.
   a. 6.0%
   b. 1.6%

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c. 1.2%

d. 1.5%

ANSWER: c

25. This bar graph shows the percentage of college freshmen at ABC College needing to take a developmental math class as of the fall of the given year:
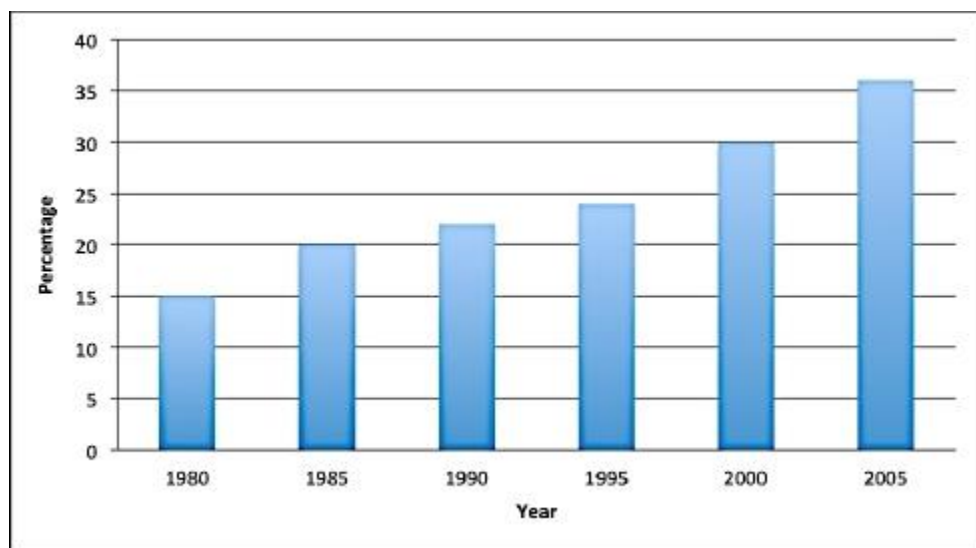
If the average yearly growth rate from 2000 to 2005 is 1.2%, estimate the percentage of college freshmen at ABC College needing to take a developmental math class in 2008.

a. 36.7%

b. 40.8%

c. 38.4%

d. 39.6%

ANSWER: d

26. Suppose the inflation rate of a country in 2009 was 20%. If a dress costs $150 at the beginning of the year, how much would it cost at the end of the year?

a. $130

b. $170

c. $180

d. $200

ANSWER: c

27. In 1949, the inflation rate in the United States was –2%. If a car cost $1500 at the beginning of the year, what did it cost at the end of the year?

a. $1200

b. $1470

c. $1497

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    d. $1350

ANSWER: b

28. The amount of tax you owe is a function of your taxable income, with taxable income being the:

    a. dependent variable.

    b. independent variable.

    c. percentage change.

    d. interpolation.

ANSWER: b

29. Annual growth rate is calculated as the change in the function divided by the change in the:

    a. percentage.

    b. dependent variable.

    c. extrapolation.

    d. independent variable.

ANSWER: d

30. An epidemic is spreading by an average of 15 new cases per day. If a total of 750 cases have occurred as of today, what cumulative number of cases do we expect four days from now?

    a. 60

    b. 690

    c. 775

    d. 810

ANSWER: d

31. A study at ABC College found that 54.8% of its students owned a laptop computer in 2005. Another study found that 65.3% of its students owned a laptop computer in 2008. Use these figures to estimate the percentage in 2007.

    a. 65.3%

    b. 61.8%

    c. 60.1%

    d. 68.8%

ANSWER: b

32. The following table shows the average age of first-time mothers in a certain state:

Year	1970	1980	1990	2000	2010
Average age (yrs)	19.6	20.2	20.7	21.1	21.8

Predict the average age of first-time mothers in the state in the year 3010 and explain why the resulting figure is not to be trusted.

ANSWER: The average age would be 91.8 years old. This result cannot be trusted because it is highly
           (extremely) unlikely and because it uses extrapolation, which tends not to be reliable over long

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      periods.

33. The following table shows the percentage of children in the United States between the ages of 3 and 5 who are enrolled in nursery school and kindergarten:

Date	1970	1975	1980	1985	1990	1995	2000
Percentage	37.5	48.6	52.5	54.6	59.4	61.8	64.0

Use interpolation to estimate the enrollment rate in 1987.
ANSWER: 56.5%

34. The population of the United States in 1890 was 62.98 million. If the population rose to 76.21 million by 1900, calculate the average growth rate and explain what it means.
ANSWER: The average growth rate was 1.32 million people per year, meaning that from 1890 to 1900 the U.S.
             population grew, on average, by 1.32 million people per year.

35. A _____ is a graph consisting of isolated points, with each dot corresponding to a data point.
    a. bar graph
    b. line graph
    c. scatterplot
    d. pie chart
ANSWER: c

36. A rising line graph indicates a _____ growth rate.
    a. stable
    b. positive
    c. negative
    d. neutral
ANSWER: b

37. A smoothed line graph is made from a _____ by joining data points smoothly with curves instead of showing line segments.
    a. line graph
    b. bar graph
    c. scatterplot
    d. pie chart
ANSWER: c

38. The following table shows the balance of a credit card at the end of each month.

Month	1	2	3	4
Balance	$387.6	$375.6	$363.9	$352.7

The balance as a function of time is _____ growth with _____ rate.
    a. positive; increasing

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    b. positive; decreasing

    c. negative; increasing

    d. negative; decreasing

ANSWER: d

39. The following table shows the balance of a loan repayment at the end of each month.

Month	1	2	3	4
Balance	$810	$618.1	$424.3	$228.5

The balance as a function of time is _____ growth with _____ rate.

    a. positive; increasing

    b. positive; decreasing

    c. negative; increasing

    d. negative; decreasing

ANSWER: c

40. The following table shows the average starting salary of a certain job for the given year.

Year	2007	2009	2011	2013
Salary	$38,000	$40,000	$41,500	$42,000

The starting salary as a function of time is _____ with _____ rate.

    a. positive; increasing

    b. positive; decreasing

    c. negative; increasing

    d. negative; decreasing

ANSWER: b

41. The following table shows the balance of an account at the end of each month after the initial deposit.

Month	1	2	3	4
Balance	$105	$110.25	$115.8	$121.6

The balance as a function of time is _____ growth with _____ rate.

    a. positive; increasing

    b. positive; decreasing

    c. negative; increasing

    d. negative; decreasing

ANSWER: a

42. This figure is an example of a:

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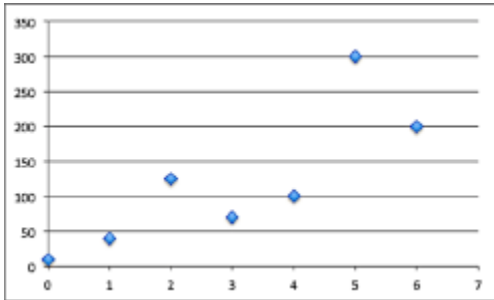
    a. line graph.

    b. scatterplot.

    c. smoothed line graph.

    d. bar graph.

ANSWER: b

43. This figure is an example of a:
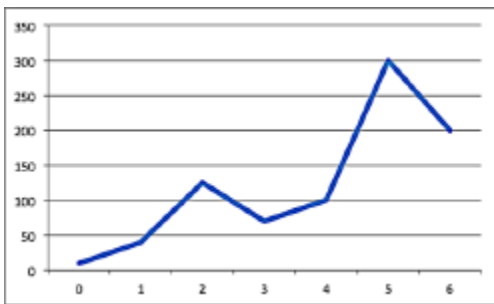
    a. line graph.

    b. scatterplot.

    c. smoothed line graph.

    d. bar graph.

ANSWER: a

44. This figure is an example of a:
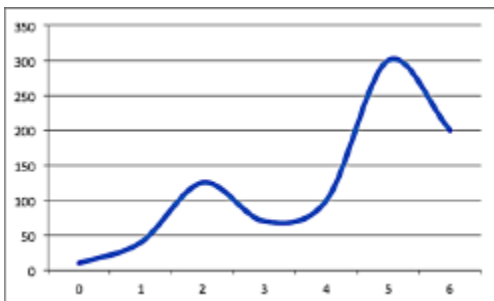
    a. line graph.

    b. scatterplot.

    c. smoothed line graph.

    d. bar graph.

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ANSWER: c

45. In cleaning toxic waste sites, typically the amount of waste eliminated per period decreases over time. That is, the amount of toxic waste remaining is decreasing at a decreasing rate. A graph of this function would be _____, becoming _____ over time.
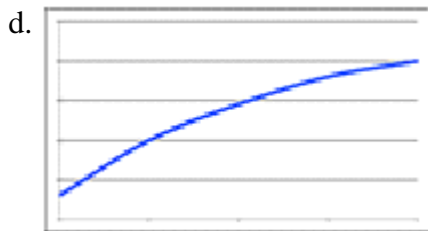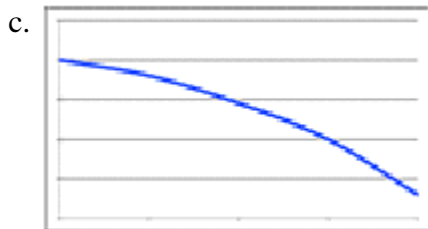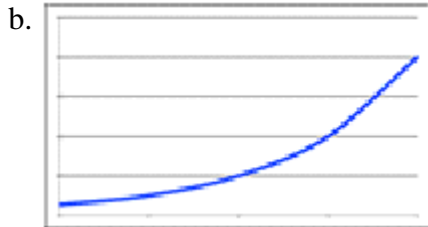
    a. decreasing; steeper

    b. increasing; steeper

    c. increasing; less steep

    d. decreasing; less steep

ANSWER: d

46. As we grow up, we get taller. At a certain age, we reach our full height. Suppose we wanted to look at height as a function of age from birth to 20 years of age. A graph of this function would be _____, becoming _____ over time.

    a. decreasing; steeper

    b. increasing; steeper

    c. increasing; less steep

    d. decreasing; less steep

ANSWER: c

47. Suppose we have some money in a savings account earning a fixed interest rate, and we do not withdraw any amount from this account over time. If we wanted to look at the dollars in the account as a function of time, a graph of this function would be _____, becoming _____ over time.

    a. decreasing; steeper

    b. increasing; steeper

    c. increasing; less steep

    d. decreasing; less steep

ANSWER: b

48. A company's number of sales each year is half of what it was the year before. Suppose we wanted to look at the number of sales as a function of time. A graph of this function would be _____, becoming _____ over time.
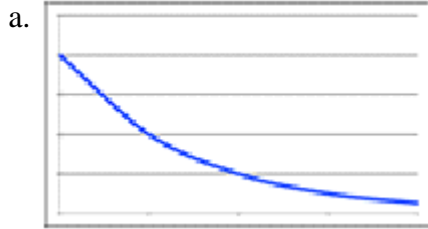
    a. decreasing; steeper

    b. increasing; steeper

    c. increasing; less steep

    d. decreasing; less steep

ANSWER: d

49. As an automobile ages, gas mileage typically decreases, and it decreases at an increasing rate. Which graph best represents this?
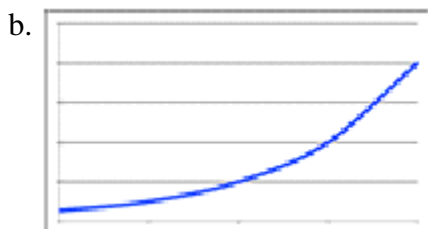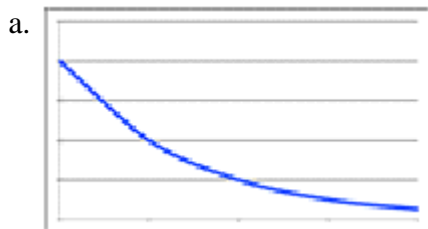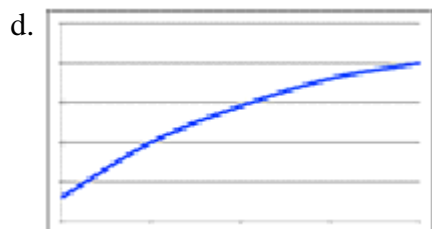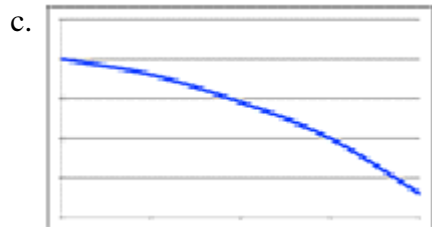
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a.

b.

c.

d.

ANSWER: c

50. The population in a certain city has been increasing at a decreasing rate. Which graph best represents this?

a.

b.

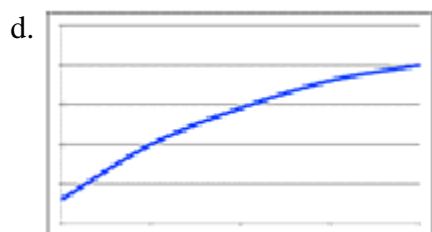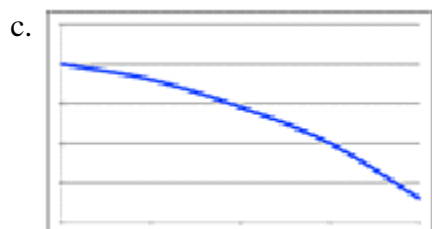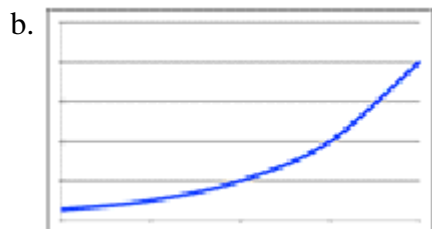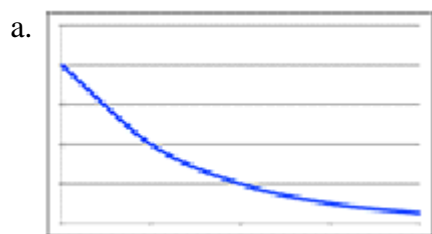Name:_____ Class:_____ Date:_____

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c.

d.

ANSWER: d

51. Once you purchase a new computer, its value decreases at a decreasing rate. Which graph best represents this?
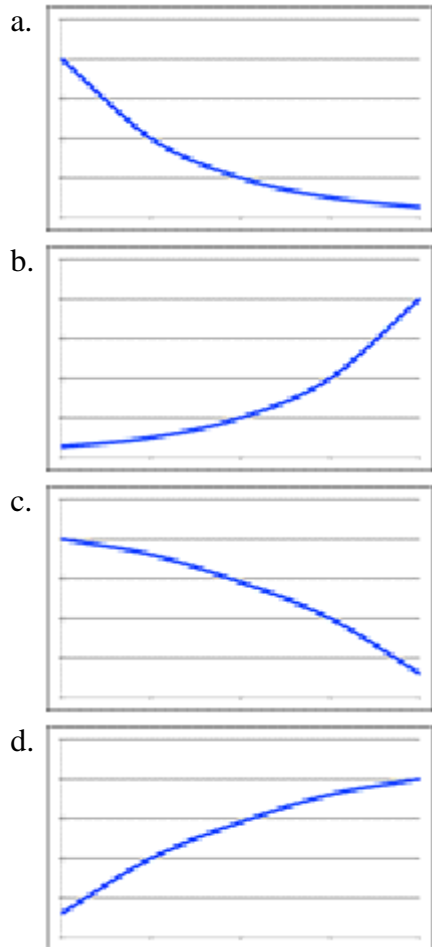
a.

b.

c.

d.

ANSWER: a

52. The population of the United States is increasing at an increasing rate. Which graph best represents this?
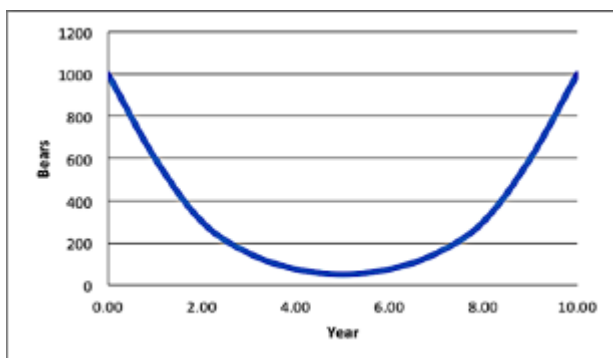
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a.

b.

c.

d.

ANSWER: b

53. A population of bears is introduced into a game preserve. Over the first five years, the population shows a negative growth rate. The growth rate is positive over the following five years. Sketch a possible graph of the bear population as a function of time.

ANSWER: One possibility would be:

54. The following table shows the average weight of newborn boys from birth to six months:
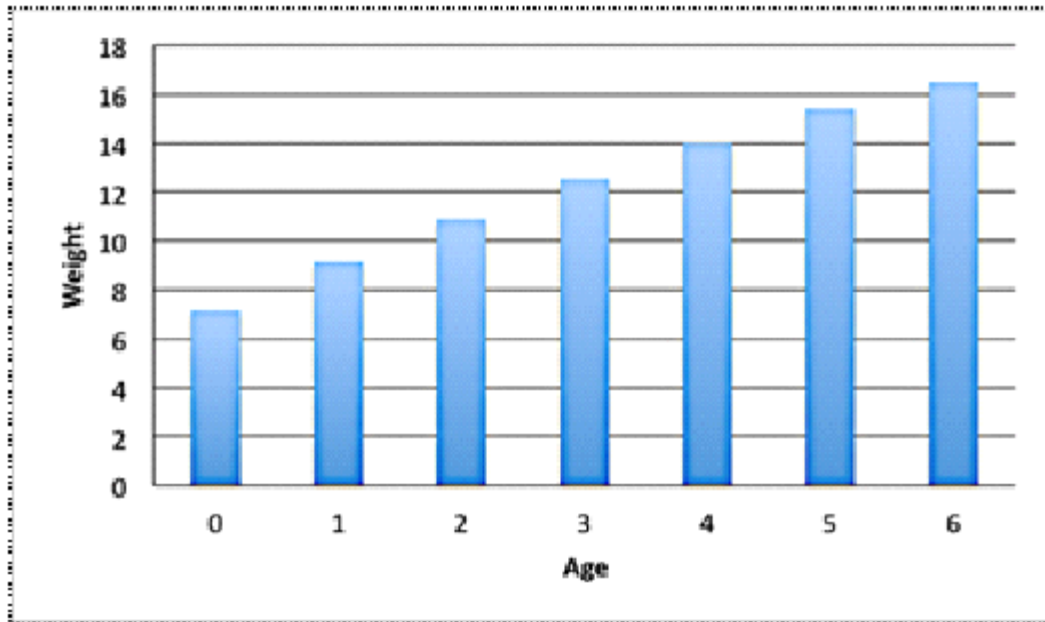
Age (in months)	0	1	2	3	4	5	6
Weight	7.16	9.15	10.91	12.56	14.00	15.43	16.53

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Represent these data with a bar graph.

ANSWER:

55. This table shows the number of traffic tickets given out in a certain city:

Month	Jan	Feb	Mar	Apr	May	Jun
Number of tickets	75	50	86	43	96	62

Represent these data in scatterplot.

ANSWER:
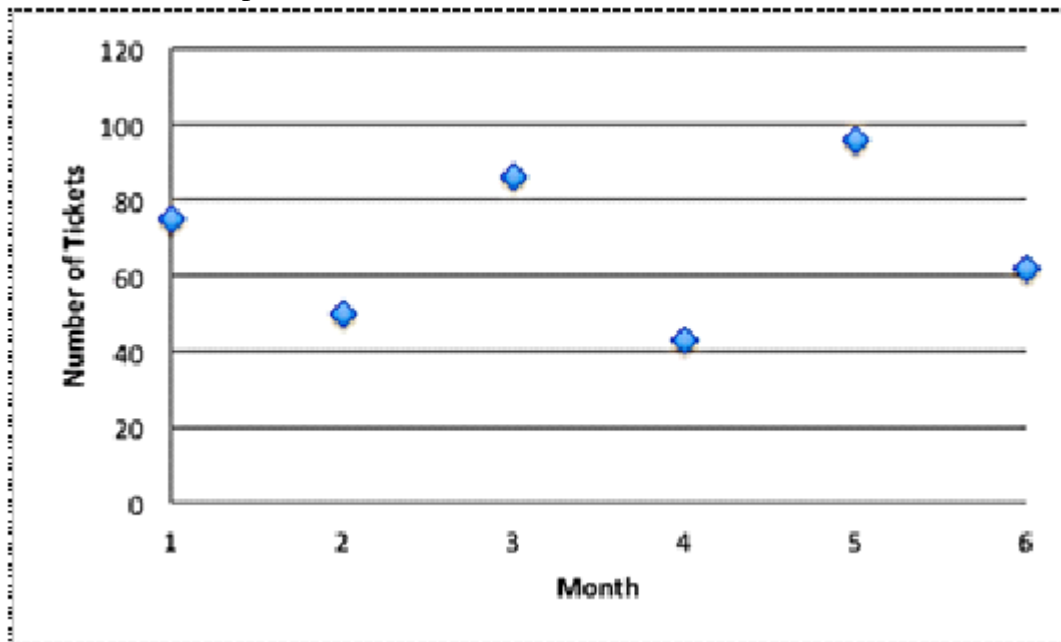
56. It is not important to know whether graphs involving currency are adjusted for inflation.
    a. True
    b. False

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ANSWER: b

57. If inflation from year 1 to year 2 is *r* as a decimal, then one year-1 dollar has the same purchasing power as _____ year-2 dollars.
    a. 1 – *r*
    b. *r* – 1
    c. 1 + *r*
    d. 2*r*
ANSWER: c

58. If inflation from year 1 to year 2 is *r* as a decimal, we express year-1 dollars in constant year-2 dollars using:
    a. *D* "year-2 dollars" = *D*(1 + *r*)"year-1 dollars"
    b. *D* "year-1 dollars" = *D*(1 – *r*)"year-2 dollars"
    c. *D* "year-2 dollars" = *D*(1 – *r*)"year-1 dollars"
    d. *D* "year-1 dollars" = *D*(1 + *r*)"year-2 dollars"
ANSWER: d

59. Which of the following descriptions of a pie chart is NOT correct?
    a. It displays how constituent parts make up a whole.
    b. It is a circle divided into slices.
    c. The pie and slices represent the whole and parts of the whole, respectively.
    d. As the number of slices increases, we can get better understanding of the data.
ANSWER: d

60. Data that depend upon the value of currency have to be adjusted for:
    a. recession.
    b. inflation.
    c. taxes.
    d. tariffs.
ANSWER: b

61. Any graph can be misleading if _____ data are plotted.
    a. sufficient
    b. insufficient
    c. too many
    d. similar
ANSWER: b

62. When in doubt, where should we go to determine the accuracy of a pictorial representation?
    a. another pictorial representation
    b. a related article

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    c. the original data source

    d. a dictionary

ANSWER: c

63. According to a report, the percentage of female students attending a nearby university rose from 58% in 1996 to 70% in 2004. This remained the percentage through 2010. If you wanted to make a line graph EMPHASIZING the increase, you would use a _____ range on the _____ axis.

    a. narrow; vertical

    b. narrow; horizontal

    c. wide; vertical

    d. wide; horizontal

ANSWER: a

64. According to a report, the percentage of male students graduating from a nearby university rose from 46% in 1996 to just 54% in 2004 and steadily declined to 51% by 2010. If you wanted to make a line graph DE-EMPHASIZING the change in the graduation rate of male students, you would use a _____ range on the _____ axis.

    a. narrow; horizontal

    b. wide; vertical

    c. wide; horizontal

    d. narrow; vertical

ANSWER: c

65. If you wanted to DE-EMPHASIZE a small change in a data set, one way would be to use a narrow range on the vertical axis.

    a. True

    b. False

ANSWER: b

66. When we adjust a graph for inflation, we report all currency amounts in _____ dollars.

    a. past

    b. present

    c. future

    d. constant

ANSWER: d

67. The inflation rate from 1980 to 2010 was 154%. If a car cost $12,000 in 1980, what would the cost be in 2010?

    a. $18,480

    b. $26,480

    c. $30,480

    d. $42,480

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ANSWER: c

68. From 1970 to 2010, the inflation rate was 451%. If a concert ticket sold for $12 in 1970, what would the cost be in 2010?

    a. $54.12
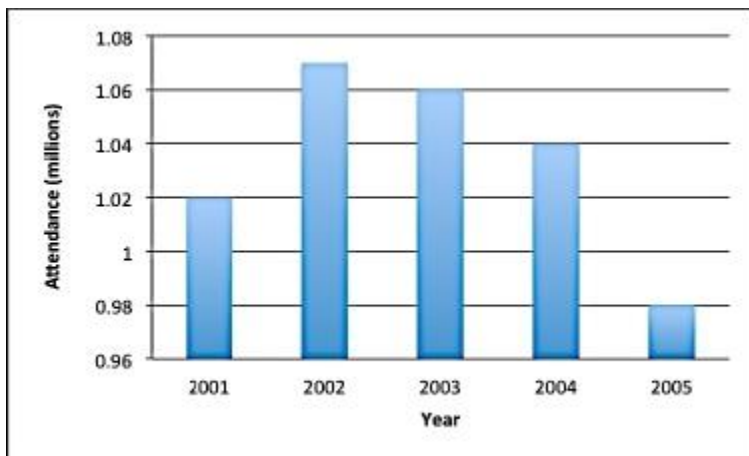
    b. $66.12

    c. $72.12

    d. $78.12

ANSWER: b

69. The inflation rate from 2001 to 2007 was 17%. If a postage stamp cost $0.34 in 2001, what would the cost be in 2007?

    a. $0.36

    b. $0.38

    c. $0.40

    d. $0.44

ANSWER: c

70. The following bar graph shows the annual attendance at a state fair:

The chart seems to show a sharp increase in attendance from 2001 to 2002. Calculate the percentage change from 2001 to 2002.
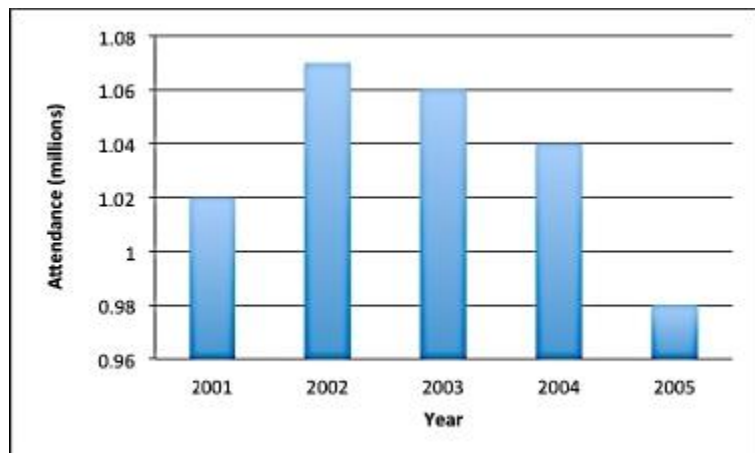
    a. 25%

    b. 15%

    c. 10%

    d. 5%

ANSWER: d

71. The following bar graph shows the annual attendance at a state fair:

Name:_____ Class:_____ Date:_____

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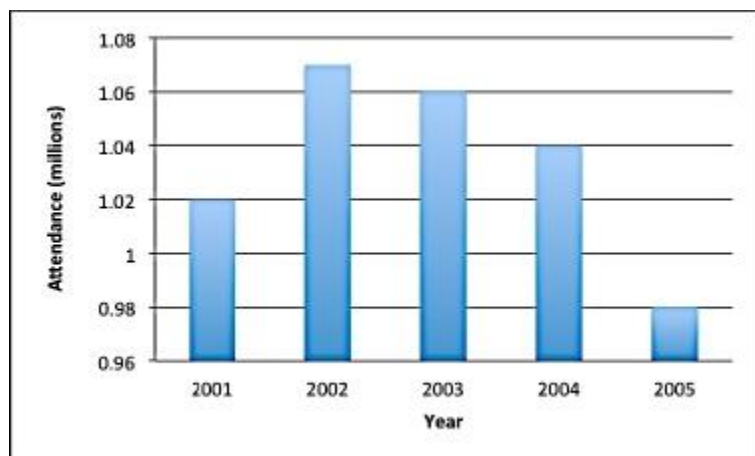The chart seems to show a sharp decrease in attendance from 2004 to 2005. Calculate the percentage change from 2004 to 2005.

    a. 30%

    b. 20%

    c. 6%

    d. 3%

ANSWER: c

72. The following bar graph shows the annual attendance at a state fair:

You are asked to redesign the bar chart to DE-EMPHASIZE the change in attendance. You would use a _____ range on the _____ axis.

    a. narrower; vertical

    b. wider; vertical

    c. narrower; horizontal

    d. wider; horizontal

ANSWER: b

73. The following table shows the average price per barrel of crude oil in the given year:

Name:_____   Class:_____   Date:_____

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Year	1970	1980	1990	2000	2010
Price per barrel	$3.39	$37.42	$23.19	$27.39	$71.21

In what year was crude oil most expensive (adjusted for inflation)? Use the following inflation table.

Time span	1970-2010	1980-2010	1990-2010	2000-2010
Inflation (%)	451	154	64	26

   a. 1970
   b. 1980
   c. 2000
   d. 2010
ANSWER: b

74. The following table shows average prices per barrel of crude oil:

Year	1970	1980	1990	2000	2010
Price per barrel	$3.39	$37.42	$23.19	$27.39	$71.21

Excluding 1970, in what year was crude oil least expensive (adjusted for inflation)? Use the following inflation table.

Time span	1970-2010	1980-2010	1990-2010	2000-2010
Inflation (%)	451	154	64	26

   a. 1980
   b. 1990
   c. 2000
   d. 2010
ANSWER: c

75. The following table shows the average price of item X in the given year:

Year	2001	2003	2005	2007
Price ($)	41	42	46	48

In what year was item X most expensive (adjusted for inflation)? Use the following inflation table.

Time span	2001-2007	2003-2007	2005-2007
Inflation (%)	17	13	5

   a. 2001
   b. 2003
   c. 2005
   d. 2007
ANSWER: c

Name:_____   Class:_____   Date:_____

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76. The following table shows the average price of item X in the given year:

Year	2001	2003	2005	2007
Price ($)	41	42	46	48

In what year was item X least expensive (adjusted for inflation)? Use the following inflation table.

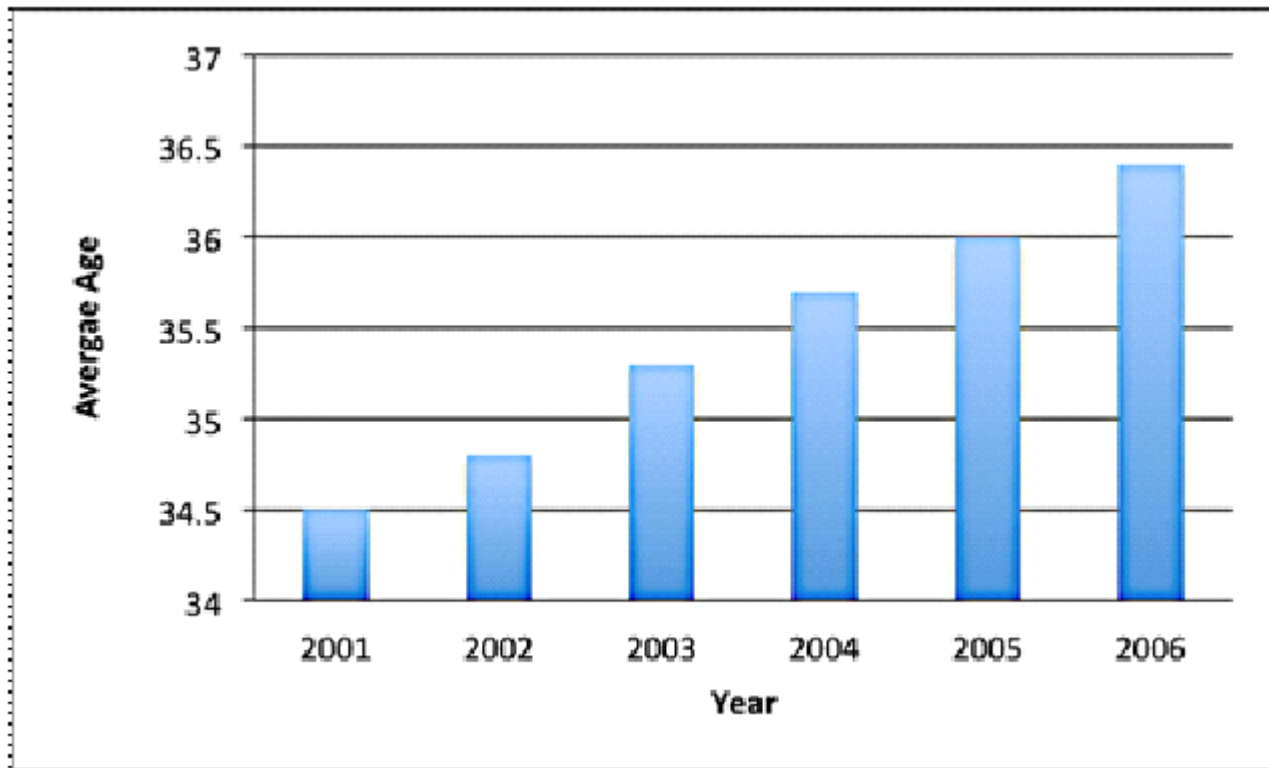| Time span	2001-2007	2003-2007	2005-2007
Inflation (%)	17	13	5

   a. 2001
   b. 2003
   c. 2005
   d. 2007

ANSWER: b

77. The following table shows the average age of employees at a large corporation at various times:

Year	2001	2002	2003	2004	2005	2006
Average age	34.5	34.8	35.3	35.7	36.0	36.4

Make a bar graph that EMPHASIZES the increase in average age.
ANSWER:

78. The following table shows the average starting salary for accountants in a certain state:

Year	2001	2003	2005	2007
Salary	$47,800	$54,600	$62,400	$70,500

Name: _____ Class: _____ Date: _____

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If inflation from 2001 to 2007 was 17%, 2003 to 2007 was 13%, and 2005 to 2007 was 5%, construct a table showing starting salaries in constant 2007 dollars.
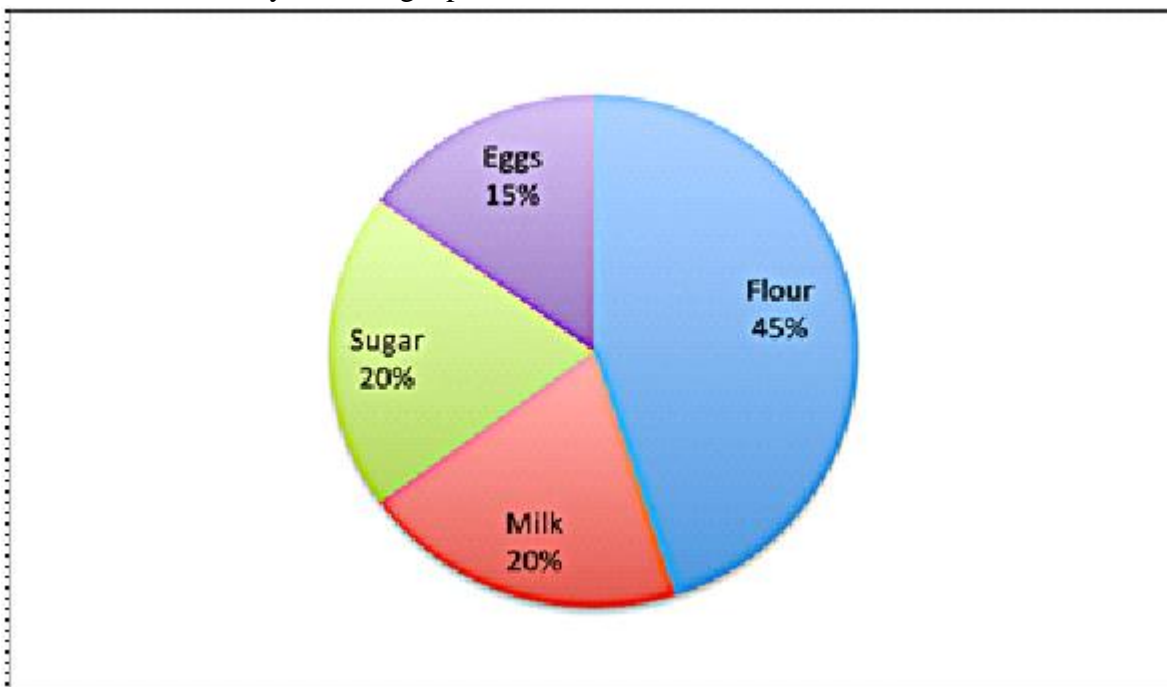
ANSWER:

Year	2001	2003	2005	2007
Salary	$47,800	$54,600	$62,400	$70,500
2007 dollars	$55,926	$61,698	$65,520	$70,500

79. This table shows ingredients used in a secret cake recipe:

Ingredient	Flour	Milk	Sugar	Eggs
Percent by weight	45	20	20	15

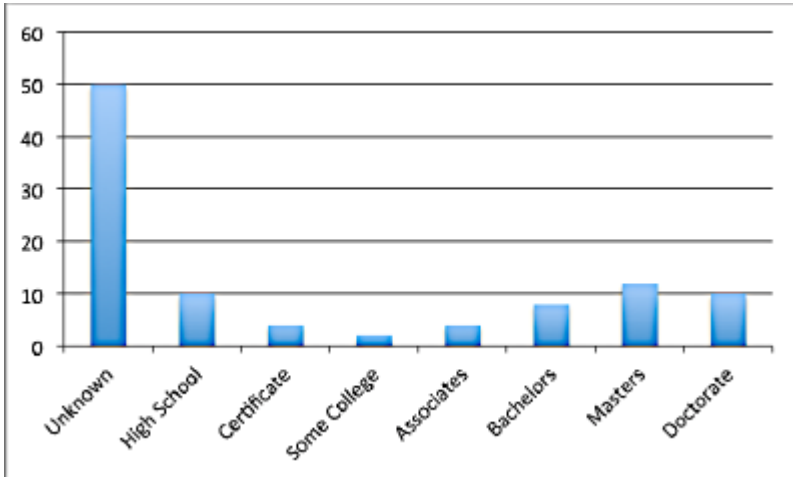Represent the data in this table by sketching a pie chart.

ANSWER:

80. This bar graph shows the distribution of education level among the staff positions at a certain college:

Name: _____ Class: _____ Date: _____

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Discuss the usefulness of this graph.

ANSWER: 50% of the employees have an unknown level of education, making it difficult to draw any conclusion about the actual education level of staff positions.