Statistical Reasoning for Everyday Life 6th edition Bennett Test Bank

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Identify the following variable as either qualitative or quantitative and explain why.

1) The number of people on a jury
   A) Quantitative because it consists of a count
   B) Qualitative because it is not a measurement or a count

   Answer: A

2) The verdict of a jury
   A) Quantitative because it consists of a measurement
   B) Qualitative because it is not a measurement or a count

   Answer: B

3) The color of your house
   A) Qualitative because it is not a measurement or a count
   B) Quantitative because it consists of a measurement

   Answer: A

4) A monthly electric bill (in dollars)
   A) Quantitative because it consists of a count
   B) Qualitative because it is not a measurement or a count

   Answer: A

5) A person's height in feet
   A) Quantitative because it consists of a measurement
   B) Qualitative because it is not a measurement or a count

   Answer: A

6) A person's political affiliation
   A) Quantitative because it consists of a count
   B) Qualitative because it is not a measurement or a count

   Answer: B

7) The speed of a car in miles per hour
   A) Quantitative because it consists of a measurement
   B) Qualitative because it is not a measurement or a count

   Answer: A

8) A person's sex
   A) Qualitative because it is not a measurement or a count
   B) Quantitative because it consists of a measurement

   Answer: A

9) Outcome of tossing a coin
   A) Qualitative because it is not a measurement or a count
   B) Quantitative because it consists of a count

   Answer: A

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10) Waiting time at a bus stop (in minutes)
A) Quantitative because it consists of a measurement
B) Qualitative because it is not a measurement or a count

Answer: A

State whether the actual data are discrete or continuous and explain why.

11) The freshman class sizes at mid western colleges in a given year
A) Discrete because only counting numbers are used, and no values between the counting numbers are possible
B) Continuous because the numbers can have any value within some range of values

Answer: A

12) The heights of freshmen at mid western colleges in a given year
A) Continuous because the numbers can have any value within some range of values
B) Discrete because only counting numbers are used, and no values between the counting numbers are possible

Answer: A

13) The number of limbs on each oak tree in a given forest
A) Continuous because the numbers can have any value within some range of values
B) Discrete because only counting numbers are used, and no values between the counting numbers are possible

Answer: B

14) The height of each oak tree in a given forest
A) Continuous because the numbers can have any value within some range of values
B) Discrete because only counting numbers are used, and no values between the counting numbers are possible

Answer: A

15) The number of stories for all the skyscrapers in Manhattan
A) Continuous because the numbers can have any value within some range of values
B) Discrete because only counting numbers are used, and no values between the counting numbers are possible

Answer: B

16) The finishing times for athletes running a 100 meter race
A) Continuous because the numbers can have any value within some range of values
B) Discrete because only counting numbers are used, and no values between the counting numbers are possible

Answer: A

17) The count of cars passing a certain intersection for each day of the week
A) Discrete because only counting numbers are used, and no values between the counting numbers are possible
B) Continuous because the numbers can have any value within some range of values

Answer: A

18) The speeds of cars passing a certain intersection on a specified Monday
A) Continuous because the numbers can have any value within some range of values
B) Discrete because only counting numbers are used, and no values between the counting numbers are possible

Answer: A

19) The number of phone calls made each day by the sales representative of a company
A) Discrete because only counting numbers are used, and no values between the counting numbers are possible
B) Continuous because the numbers can have any value within some range of values

Answer: A

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20) The temperatures in Manhattan at noon for each New Year's Day
A) Discrete because only counting numbers are used, and no values between the counting numbers are possible
B) Continuous because the numbers can have any value within some range of values

Answer: B

Determine which of the four levels of measurement (nominal, ordinal, interval, ratio) is most appropriate.

21) The temperatures of eight different plastic spheres
A) Ordinal
B) Interval
C) Nominal
D) Ratio

Answer: B

22) The sample of spheres categorized from softest to hardest
A) Interval
B) Ratio
C) Ordinal
D) Nominal

Answer: C

23) Salaries of college professors
A) Nominal
B) Ratio
C) Interval
D) Ordinal

Answer: B

24) Survey responses of "good", "better", "best"
A) Ordinal
B) Ratio
C) Nominal
D) Interval

Answer: A

25) Temperatures of the ocean at various depths
A) Ordinal
B) Ratio
C) Interval
D) Nominal

Answer: C

26) Nationalities of survey respondents
A) Ordinal
B) Nominal
C) Interval
D) Ratio

Answer: B

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27) Ages of survey respondents
A) Ordinal
B) Interval
C) Nominal
D) Ratio

Answer: D

28) The subjects in which college students major
A) Ratio
B) Nominal
C) Interval
D) Ordinal

Answer: B

29) Students' grades, A, B, or C, on a test
A) Ratio
B) Interval
C) Ordinal
D) Nominal

Answer: C

30) Amount of fat (in grams) in cookies
A) Ordinal
B) Nominal
C) Ratio
D) Interval

Answer: C

Two statements are given. Identify the statement for which a ratio of the measurements is meaningful. State "Neither" or "Both" if appropriate.

31) 1 - Kasheta ran the race in 22.3 sec, and Louisa ran the same race in 26.4 sec.
2 - Juan gets out of school at 2:45 PM, and Aito gets out of school at 3:15 PM.
A) Juan gets out of school at 2:45 PM, and Aito gets out of school at 3:15 PM.
B) Kasheta ran the race in 22.3 sec, and Louisa ran the same race in 26.4 sec.
C) Neither
D) Both

Answer: B

32) 1 - I ate twice as many tacos as you did.
2 - I love tacos twice as much as you do.
A) I ate twice as many tacos as you did.
B) I love tacos twice as much as you do.
C) Neither
D) Both

Answer: A

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33) 1 - Kim pulled weeds at the rate of twenty weeds per minute, and Jorge pulled 18 weeds per minute.
2 - AnnaLisa held her breath for one minute 27 seconds, and Marissa held her breath for one minute 41 seconds.
A) Kim pulled weeds at the rate of twenty weeds per minute, and Jorge pulled 18 weeds per minute.
B) AnnaLisa held her breath for one minute 27 seconds, and Marissa held her breath for one minute 41 seconds.
C) Neither
D) Both

Answer: D

34) 1 - The fertilized grass grew 2.9 inches in a week, and the unfertilized grass grew 1.8 inches in the same week.
2 - The single- stage model rocket went up 287 ft, and the two- stage model rocket went up 412 ft.
A) The single- stage model rocket went up 287 ft, and the two- stage model rocket went up 412 ft.
B) The fertilized grass grew 2.9 inches in a week, and the unfertilized grass grew 1.8 inches in the same week.
C) Neither
D) Both

Answer: D

35) 1 - Kesha scored 720 on the verbal SAT, and Salam scored 680.
2 - The lowest temperature in Normal, IL last winter was 12 F, and the lowest temperature in Rockford, IL last winter was - 8 F.
A) Neither
B) Both
C) Kesha scored 720 on the verbal SAT, and Salam scored 680.
D) The lowest temperature in Normal, IL last winter was 12 F, and the lowest temperature in Rockford, IL last winter was - 8 F.

Answer: A

36) 1 - At The Gap, Buffy has a credit card balance of $556, and Rosa has a credit line of $111.
2 - Juan saved $435 last month, and Ian saved $321 last month.
A) Juan saved $435 last month, and Ian saved $321 last month.
B) At The Gap, Buffy has a credit card balance of $556, and Rosa has a credit line of $111.
C) Neither
D) Both

Answer: A

37) 1 - School lunches cost $1.10 at district grade schools, and they cost $1.75 at district high schools.
2 - Sue Ellen is on an 1100 calorie a day diet, and Samuel is on an 1800 calorie a day diet.
A) Sue Ellen is on an 1100 calorie a day diet, and Samuel is on an 1800 calorie a day diet.
B) School lunches cost $1.10 at district grade schools, and they cost $1.75 at district high schools.
C) Neither
D) Both

Answer: D

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38) 1 - The average score for the lowest- scoring third grade in the district was the 31st percentile, and the highest was the 78th percentile.
2 - Pieta's mother goes to work at 9:00 AM, and Emily's mother goes to work at 7:00 AM.
A) Pieta's mother goes to work at 9:00 AM, and Emily's mother goes to work at 7:00 AM.
B) The average score for the lowest- scoring third grade in the district was the 31st percentile, and the highest was the 78th percentile.
C) Neither
D) Both

Answer: C

39) 1 - The tallest girl on the team is 6'1", and the shortest is 5'2".
2 - The length of the rectangle is 17.2 cm, and the width is 8.2 cm.
A) The tallest girl on the team is 6'1", and the shortest is 5'2".
B) The length of the rectangle is 17.2 cm, and the width is 8.2 cm.
C) Neither
D) Both

Answer: D

40) 1 - The lowest IQ score in the class is 112, and the highest is 141.
2 - The oldest teacher at the university is 71 years old, and the youngest is 25.
A) The oldest teacher at the university is 71 years old, and the youngest is 25.
B) The lowest IQ score in the class is 112, and the highest is 141.
C) Neither
D) Both

Answer: A

Determine whether the data described are qualitative or quantitative and give their level of measurement. If the data are quantitative, state whether they are continuous or discrete.

41) The number of inches of rain in a month
A) Quantitative, interval, continuous
B) Qualitative, ratio, continuous
C) Quantitative, ratio, discrete
D) Quantitative, ratio, continuous

Answer: D

42) Average daily temperature on the Fahrenheit scale
A) Quantitative, ratio, discrete
B) Quantitative, ratio, continuous
C) Quantitative, interval, discrete
D) Quantitative, interval, continuous

Answer: D

43) Maximum daily temperature on the Kelvin scale
A) Quantitative, ratio, continuous
B) Quantitative, ratio, discrete
C) Quantitative, interval, discrete
D) Quantitative, interval, continuous

Answer: A

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44) Automobile battery ratings: "good", "better", "best"
A) Quantitative, ordinal, discrete
B) Qualitative, nominal
C) Qualitative, ordinal, discrete
D) Qualitative, ordinal

Answer: D

45) Soft drink sizes: small, medium, large
A) Quantitative, ordinal, discrete
B) Quantitative, ordinal
C) Qualitative, ordinal
D) Qualitative, nominal

Answer: C

46) Intramural team classification: Green, Gold, Silver, Red, Blue, Orange
A) Qualitative, nominal
B) Quantitative, ordinal, discrete
C) Qualitative, nominal, discrete
D) Quantitative, nominal, discrete

Answer: A

47) Preference ratings: as in "Rate the item of most importance to you a 5 and that of least importance a 1"
A) Qualitative, nominal
B) Qualitative, ordinal
C) Quantitative, ordinal, discrete
D) Quantitative, ordinal

Answer: B

48) Order of finish of the NFL teams in the NFC Central division
A) Qualitative, ordinal
B) Quantitative, ordinal
C) Quantitative, nominal
D) Qualitative, nominal

Answer: A

49) ZIP codes
A) Quantitative, ordinal, discrete
B) Quantitative, nominal
C) Qualitative, nominal
D) Qualitative, ordinal

Answer: C

50) Chapter numbers in a textbook
A) Quantitative, ordinal, discrete
B) Quantitative, ratio, discrete
C) Qualitative, ordinal, discrete
D) Quantitative, interval, discrete

Answer: A

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Provide an appropriate response.

51) A digital scale reads 0.01 g when it is empty. Identify the potential error in the measurements made on this scale as random or systematic.
A) Systematic
B) Random

Answer: A

52) A cook estimates thirds of a cup in a measuring cup marked in quarters. Identify the potential measurement error as random or systematic.
A) Systematic
B) Random

Answer: B

53) A person is always late for class. Identify the potential error as random or systematic.
A) Systematic
B) Random

Answer: A

54) A computer uses voice recognition software. Identify the potential error as random or systematic.
A) Random
B) Systematic

Answer: B

55) Totals are determined by rounding to tenths. Identify the potential error as random or systematic.
A) Systematic
B) Random

Answer: B

56) Identify the potential error in recording arrival times for interstate highway trips as random or systematic.
A) Random
B) Systematic

Answer: A

57) Identify the potential error in the copy work of a touch typist as random or systematic.
A) Systematic
B) Random

Answer: A

58) Identify the error made by a "hunt and peck" typist as random or systematic.
A) Random
B) Systematic

Answer: A

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59) Select the measurement most likely to be subject to random error.
1 - Measuring temperature with a digital thermometer
2 - Measuring temperature with a mercury thermometer
3 - Measuring a distance in yards by pacing
4 - Determining the number of pennies in bags by dividing the weights of the filled bags by the legally defined weight of a penny

A) Determining the number of pennies in bags by dividing the weights of the filled bags by the legally defined weight of a penny
B) Measuring temperature with a mercury thermometer
C) Measuring temperature with a digital thermometer
D) Measuring a distance in yards by pacing

Answer: B

60) Select the measurement most likely to be subject to random error.
1 - Measuring yards of rope by using ear to extended hand as one yard
2 - Measuring lengths of wood with a worn ruler
3 - Measuring half a cup of flour with a measuring cup marked in quarter cups
4 - Estimating speed by using the car odometer and counting seconds by "one mississippi, two mississippi, ..."

A) Measuring half a cup of flour with a measuring cup marked in quarter cups
B) Estimating speed by using the car odometer and counting seconds by "one mississippi, two mississippi, ..."
C) Measuring lengths of wood with a worn ruler
D) Measuring yards of rope by using ear to extended hand as one yard

Answer: A

Answer the question.

61) The results of a poll are stated as follows: "Based on a survey of 156 randomly selected students, 90% of the student body of 2870 students agree that no student should have to take final exams in two consecutive exam periods." If 2578 students actually agree, then what is the absolute error in the reported result?

A) 5 students
B) 2714 students
C) 10%
D) 0.17%

Answer: A

62) The speed of a new microprocessor is given as 800 MHz, but its speed is actually 820 MHz. What is the relative error?

A) 20 MHz
B) - 0.025%
C) 0.5 MHz
D) - 2.5%

Answer: D

63) The size of an e- mail file is stated as 210 kB, but the file size is actually 220.5 kB. What is the absolute error?

A) - 5%
B) 5 kB
C) 10%
D) - 10.5 kB

Answer: D

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64) The pickup time of an answering machine is set at 5 rings, but the machine picks up after 4 rings. What is the relative error?
A) - 1 ring
B) - 25%
C) 4 to 6 rings
D) - 20%

Answer: D

65) The Democratic Party estimated that 3960 delegates were at the convention Monday afternoon, but 3600 were actually there. What is the relative error?
A) 360 delegates
B) 10%
C) - 360 delegates
D) - 10%

Answer: B

66) Ivan counted the change in his pocket: $2.50. Later he found that he actually had $2.75. What was the relative error?
A) - 9.1%
B) 10 cents
C) - $0.25
D) 10%

Answer: A

67) Rather than use the two scoops of coffee recommended by the manufacturer, a coffee aficionado uses three scoops of coffee per pot. What is the absolute error?
A) 50%
B) - 1 scoop
C) - 50%
D) 1 scoop

Answer: D

68) Rather than use the two scoops of coffee recommended by the manufacturer, a coffee aficionado uses three scoops of coffee per pot. What is the relative error?
A) 1 scoop
B) - 1 scoop
C) 50%
D) - 50%

Answer: C

69) A pharmacist puts 32 pills into a prescription order that calls for 30 pills. What is the absolute error?
A) 2 pills
B) - 6.7%
C) 6.7%
D) - 2 pills

Answer: A

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70) A 5.0 lb weight is measured to be 4.5 lb. What is the relative error?
A) 0.5 lb
B) - 10%
C) - 0.5 lb
D) ±10%

Answer: B

Provide an appropriate response.

71) According to a specification, the nominal length of a particular manufactured part is 5.4523 cm. Quality control randomly selects four of the parts, and the lengths are measured by four different quality control technicians. The measurements are 5.3234 cm, 5.11259 cm, 5.351 cm, and 5.45 cm. Which measurement is the most precise?
A) 5.11259
B) 5.45
C) 5.3234
D) 5.351

Answer: A

72) According to a specification, the nominal length of a particular manufactured part is 5.4523 cm. Quality control randomly selects four of the parts, and the lengths are measured by four different quality control technicians. The measurements are 5.3234 cm, 5.11259 cm, 5.351 cm, and 5.45 cm. Which measurement is the most accurate?
A) 5.351
B) 5.11259
C) 5.45
D) 5.3234

Answer: C

73) The approximate value of π is 3.1415927. Which of the following experimentally determined values is the most precise?
A) 3.3245
B) 3.412114
C) 3.14
D) 3.247

Answer: B

74) The approximate value of π is 3.1415927. Which of the following experimentally determined values is the most accurate?
A) 3.14
B) 3.412114
C) 3.247
D) 3.3245

Answer: A

75) The value of e, the base of the natural logarithm, is approximately 2.718282. Which of the following representations of this value is the most precise?
A) 2.7
B) 2.71
C) 2.71828
D) 2.718

Answer: C

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76) The value of e, the base of the natural logarithm, is approximately 2.718282. Which of the following representations of this value is the most accurate?
A) 2.71828
B) 2.7
C) 2.71
D) 2.718

Answer: A

77) Compared with a metric ruler that has centimeter markings as the smallest division, a ruler with millimeter markings
A) will guarantee measurements that are more accurate, but not necessarily more precise.
B) will guarantee measurements that are more precise, but not necessarily more accurate.
C) will not guarantee measurements that are more accurate or more precise.
D) will guarantee measurements that are more precise and more accurate.

Answer: B

78) Compared with a digital scale that gives readings as - - . - - g, a scale that gives readings as - - . - - - g is
A) not necessarily more precise or more accurate.
B) more precise and more accurate.
C) more precise, but not necessarily more accurate.
D) more accurate, but not necessarily more precise.

Answer: C

79) Which of the following statements is correct?
A) An accurate measurement must be precise.
B) "Precise measurement" means the same thing as "accurate measurement".
C) A precise measurement is not necessarily accurate.
D) A precise measurement must be accurate.

Answer: C

80) Select the most believable statistical conclusion.
A) A total of 37,821 drivers in our city believe that traffic laws are enforced too strictly.
B) About 40% of the voters in Normal, Illinois are Democrat.
C) The poll shows that if the election were held today, the Republican candidate would get 24,675,300 votes.
D) There were 22,543 flying insects at the picnic.

Answer: B

81) A poll was taken of a random sample of 1189 college students. Of these students, 789 reported that they had a drinking binge (more than 10 drinks in an evening) in the past month. Select the most believable conclusion.
A) About 70% of college students indulge in binge drinking.
B) Of the 23,456,321 college students in the country, 15,565,212 indulged in binge drinking last month.
C) About 66.358% of college students indulged in binge drinking last month.
D) About 70% of college students indulged in binge drinking last month.

Answer: D

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82) Of the 2542 students enrolled at a midwestern college, 156 were polled. Forty- two reported that they would definitely buy books at the college bookstore. The bookstore should prepare for
A) 700 students.
B) 684 students.
C) about 600 students.
D) at least 700 students.

Answer: D

83) A newspaper reported "23,543,114 preteens have read one or more of the Harry Potter books." This figure is
A) imprecise.
B) suspect.
C) believable.
D) not believable.

Answer: D

84) A newspaper reported: "If the election were held today, the Democrats would win 50.0224% to 49.776%." This result is
A) questionable.
B) accurate.
C) reasonable.
D) imprecise.

Answer: A

85) A report of teacher- district negotiations stated: "Of the 2801 teachers, 1234 are in favor of the new contract and 1567 are opposed to accepting it in its present form." These results are
A) possible.
B) imprecise.
C) not possible.
D) suspect.

Answer: A

86) A botany student counted 11 blades of grass in one square centimeter of lawn and measured the lawn as a rectangle 61 m by 31 m. She reported that there were 208,010,000 blades of grass in the lawn. The precision of her conclusion
A) is less than her measurements warrant.
B) is excessive given her measurements.
C) correctly represents her measurements.
D) could be greater if she used a more precise calculator.

Answer: B

87) Although the official census reported the population of a small midwestern city as 81,000, the city manager protested, insisting that the actual population, based on a private census, is 87,456. The report of the city manager
A) is suspect because of its precision.
B) is more accurate than the census value.
C) justifies another census of the city by the federal government.
D) is suspect because of its accuracy.

Answer: A

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88) Analysis of income data based on a survey of 33 professors at a large midwestern university produced the report: "Average income (all sources) of professors is $64,245.21." An astute reader would conclude that
A) the precision and accuracy are acceptable.
B) the accuracy is unjustified.
C) professors are not honest when they report their salaries.
D) the precision is unjustified.

Answer: D

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

89) A reporter for a school newspaper is charged with determining the average amount of money that students spend on books. Discuss the potential sources of error and how they might be avoided.

Answer: Students tend to assert that textbook prices are too high. There could well be a tendency to overestimate costs. Researchers should check receipts rather than ask for verbal responses.

90) A student in a statistics class chooses to determine the number of hours the average student studies for a statistics test. Discuss the accuracy and precision that would be expected in the summary report.

Answer: The researcher might well expect a systematic overestimation of the time and thus reduction in the accuracy of the study. This should be an observational and not a self- estimation type of study. If observation is not possible, a self- reporting study could be used but also with a caution about overestimation. Reasonable precisions are to the nearest hour for the latter, perhaps the nearest half hour for the former.

91) Discuss ways that a researcher might minimize systematic error in a study to determine the number of hours that students study for statistics exams.

Answer: The best, and perhaps only, way is to conduct an observational study. However, the presence or knowledge of the observer could introduce systematic error.

92) Discuss why it is not possible to eliminate random errors.

Answer: Random means unpredictable. Unpredictable events cannot be controlled.

93) Why is it possible to correct for systematic error?

Answer: Systematic error is due to an influence that affects the measurement of interest in a consistent manner, producing data that are distorted all in the same direction. For example, a timer that runs too fast will provide measured times that are always too large. Once the effect is identified, it would generally be possible to quantify it, which, in turn, enables correction of the data.

94) Discuss possible factors that might prevent a correction of systematic error.

Answer: Answers will vary. Answers will likely center around the idea that it is not always possible to identify the error or to know which value of the measurement is correct.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

95) As measurements are combined mathematically,
A) precision increases.
B) precision decreases.
C) precision is unaffected.

Answer: B

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Perform the requested conversion.

96) Convert $\frac{7}{4}$ to decimal form.

A) 17.5
B) 3.5
C) 1.75
D) 0.175

Answer: C

97) Convert $\frac{5}{8}$ to a percent.

A) 6.25%
B) 0.625%
C) 3.125%
D) 62.5%

Answer: D

98) Convert 1.75 to a reduced fraction.

A) 17.5
B) $\frac{7}{2}$
C) $\frac{7}{40}$
D) $\frac{7}{4}$

Answer: D

99) Convert - 0.64 to a percent.

A) - 64%
B) 0.64%
C) - 6.4%
D) - 0.0064%

Answer: A

100) Convert 15% to decimal form.

A) 1.5
B) 0.015
C) 15
D) 0.15

Answer: D

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101) Convert 25% to a reduced fraction.

A) $\frac{5}{4}$

B) $\frac{5}{2}$

C) $\frac{1}{4}$

D) $\frac{1}{40}$

Answer: C

102) Convert 5.13 to a percent.

A) 513%
B) 5.13%
C) 51.3%
D) 0.513%

Answer: A

103) Convert 0.034 to a percent.

A) 0.00034%
B) 3.4%
C) 0.34%
D) 1.7%

Answer: B

104) Convert 1817% to decimal form.

A) 18.17
B) 181.7
C) 181,700
D) 1.817

Answer: A

105) Convert 0.137% to decimal form.

A) 13.7
B) 0.00137
C) 1.37
D) 0.0137

Answer: B

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Solve the problem.

106) A study was conducted to determine whether flipping a penny or spinning a penny has an effect on the proportion of heads. Among 50,773 trials, 25,671 involved flipping pennies, and 12,994 of those pennies turned up heads. The other 25,102 trials involved spinning pennies, and 12,800 of those pennies turned up heads.
(i) What percentage of the trials involved flipping pennies?
(ii) What percentage of the trials involved spinning pennies?
(iii) Among the pennies that were flipped, what is the percentage that turned up heads?
(iv) Among the pennies that were spun, what is the percentage that turned up heads?
Round your answers to the nearest percent.
A) (i) 51%; (ii) 49%; (iii) 147%; (iv) 151%
B) (i) 49%; (ii) 51%; (iii) 51%; (iv) 51%
C) (i) 51%; (ii) 49%; (iii) 51%; (iv) 51%
D) (i) 51%; (ii) 49%; (iii) 50%; (iv) 52%

Answer: C

107) A study was conducted of pleas made by 1086 criminals. Among those criminals, 948 pled guilty and 402 of them were sentenced to prison. Among 88 criminals who pled not guilty, 63 of them were sent to prison.
(i) What percentage of the criminals pled guilty?
(ii) What percentage of the criminals were sent to prison?
(iii) Among those who pled guilty, what is the percentage who were sent to prison?
(iv) Among those who pled not guilty, what is the percentage who were sent to prison?
Round your answers to the nearest percent.
A) (i) 87%; (ii) 37%; (iii) 7%; (iv) 457%
B) (i) 87%; (ii) 43%; (iii) 16%; (iv) 7%
C) (i) 87%; (ii) 43%; (iii) 42%; (iv) 72%
D) (i) 87%; (ii) 37%; (iii) 42%; (iv) 72%

Answer: C

108) In a survey of 7413 office workers, 8.3% said that they do not use the internet for personal reasons. Find the actual number of respondents corresponding to the given percentage.
A) 6152 respondents
B) 61 respondents
C) 616 respondents
D) 615 respondents

Answer: D

109) In a survey of 2003 adults, 83% reported owning more than one vehicle. Find the actual number of respondents corresponding to the given percentage.
A) 166 respondents
B) 1662 respondents
C) 1663 respondents
D) 1662.5 respondents

Answer: B

110) In a survey of 1411 consumers over the age of 16, 74% reported having at least one personal computer in their household. Find the actual number of respondents corresponding to the given percentage.
A) 22 respondents
B) 104 respondents
C) 225 respondents
D) 1044 respondents

Answer: D

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111) The enrollment of the district was 1071 last year and is 1447 this year. Calculate the relative percentage change to the nearest percent.

A) 135%
B) 74%
C) 26%
D) 35%

Answer: D

112) Humanities majors spend an average of $125 per course on books. Mathematics majors spend an average of $65 per course on books. To the nearest percent, the book cost for humanities majors is what percent of the book cost for mathematics majors?

A) 48%
B) 192%
C) 52%
D) 92%

Answer: B

113) Humanities majors spend an average of $115 per course on books. Mathematics majors spend an average of $75 per course on books. What is the percent difference between the two amounts relative to the amount for mathematics majors (round to the nearest percent)?

A) 35%
B) - 53%
C) - 35%
D) 53%

Answer: D

114) Research shows that 15% of 6th graders in K- 6 schools have tried cigarettes and 63% of 7th graders in 8- 9 or 7- 9 middle schools have tried cigarettes. What is the absolute increase, to the nearest percentage point?

A) 76%
B) 320%
C) - 48%
D) 48%

Answer: D

115) Research shows that 10% of 6th graders in K- 6 schools have tried cigarettes and 65% of 7th graders in 8- 9 or 7- 9 middle schools have tried cigarettes. The percent increase, to the nearest percent, is

A) - 55%
B) 550%
C) 85%
D) 55%

Answer: B

116) A professor's checking account balance a year ago was $1300. Currently, it is $1020. Calculate the relative percentage change to the nearest percent.

A) - 27%
B) - 22%
C) 22%
D) 27%

Answer: B

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117) An investment in a utility stock is valued at $7400. An investment in a dot- com stock is valued at $12,700. The value of the dot- com stock, to the nearest percent, is what percent of the utility stock?
A) 58%
B) 42%
C) 72%
D) 172%

Answer: D

118) Boys spend an average of $8500 on back- to- school clothes. Girls spend an average of $23,300. How much less is the boy's average expenditure, relatively, than the girl's expenditure (round to the nearest percent)?
A) - 64%
B) - 174%
C) 64%
D) 174%

Answer: C

119) Research shows that 14.7% of persons 20- 25 years old vote and 59.9% of persons 60- 65 years old vote. What is the absolute increase from the younger group to the older group, to the nearest percentage point.
A) 307 percentage points
B) - 45 percentage points
C) 45 percentage points
D) 75 percentage points

Answer: C

120) Research shows that 9.9% of persons 20- 25 years old vote and 56.1% of persons 60- 65 years old vote. What is the relative increase from the younger group to the older group, to the nearest percent?
A) 82%
B) 46%
C) 467%
D) - 46%

Answer: C

Fill in the blank. Explain your reasoning.

121) If a motorcycle weighs 35% less than a car, then the motorcycle's weight is ___% of the car's weight.
A) 35%; The motorcycle weighs 35% of the car's weight.
B) 65%; The motorcycle weighs 100% of the car's weight minus 35% of the car's weight.
C) - 35%; The motorcycle weighs - 35% of the car's weight.
D) 135%; The motorcycle weighs 100% of the car's weight plus another 35%.

Answer: B

122) If an elephant weighs 20% more than a rhino, then the elephant's weight is ___% of the rhino's weight.
A) 20%; The elephant weighs 20% of the rhino's weight.
B) 120%; The elephant weighs 100% of the rhino's weight plus another 20%.
C) 80%; The elephant weighs 100% of the rhino's weight minus 20% of the rhino's weight.
D) - 20%; The elephant weighs - 20% of the rhino's weight.

Answer: B

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123) If the area of Country X is 94% more than the area of Country Y, then Country X's area is ___% of Country Y's area.
A) 94%; Country X has 94% of the area of Country Y.
B) - 94%; Country X has - 94% of the area of Country Y.
C) 194%; Country X has 100% of the area of Country Y plus another 94%.
D) 6%; Country X has 100% of the area of Country Y minus 94% of the area of Country Y.
Answer: C

124) If the area of State A is 6% less than the area of State B, then State A's area is ___% of State B's area.
A) 106%; State A has 100% of the area of State B plus another 6%.
B) 94%; State A has 100% of the area of State B minus 6% of the area of State B.
C) - 6%; State A has - 6% of the area of State B.
D) 6%; State A has 6% of the area of State B.
Answer: B

125) If the population of Country X is 64% more than the population of Country Y, then Country X's population is ___% of Country Y's population.
A) 64%; Country X's population is 64% of Country Y's population.
B) - 64%; Country X's population is - 64% of Country Y's population.
C) 164%; Country X's population is 100% of Country Y's population plus another 64%.
D) 36%; Country X's population is 100% of Country Y's population minus 64% of Country Y's population.
Answer: C

126) If the population of Country X is 35% less than the population of Country Y, then Country X's population is ___% of Country Y's population.
A) 35%; Country X's population is 35% of Country Y's population.
B) 65%; Country X's population is 100% of Country Y's population minus 35% of Country Y's population.
C) - 35%; Country X's population is - 35% of Country Y's population.
D) 135%; Country X's population is 100% of Country Y's population plus another 35%.
Answer: B

127) Professor Seinfeld's salary is currently 51% less than Professor Griffin's salary, so Professor Seinfeld's salary is ___% of Professor Griffin's salary.
A) 49%; Professor Seinfeld's salary is 100% of Professor Griffin's salary minus 51% of Professor Griffin's salary.
B) - 51%; Professor Seinfeld's salary is - 51% of Professor Griffin's salary.
C) 51%; Professor Seinfeld's salary is 51% of Professor Griffin's salary.
D) 151%; Professor Seinfeld's salary is 100% of Professor Griffin's salary plus another 51%.
Answer: A

128) Doctor Murphy's salary is currently 5% more than Doctor Carell's salary, so Professor Murphy's salary is ___% of Professor Carell's salary.
A) - 5%; Doctor Murphy's salary is - 5% of Professor Carell's salary.
B) 105%; Doctor Murphy's salary is 100% of Professor Carell's salary plus another 5%.
C) 95%; Doctor Murphy's salary is 100% of Professor Carell's salary minus 5% of Professor Carell's salary.
D) 5%; Doctor Murphy's salary is 5% of Professor Carell's salary.
Answer: B

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Solve the problem.

129) Suppose that the cost of a statistics text was $85 in 1985 and is $125 in 2000. What is the "Statistics Text Index" number, rounded to the nearest tenth, for the 2000 edition with the 1985 price as the reference value?

A) 1.5
B) 14.7
C) 68.0
D) 147.1

Answer: D

130) Suppose that the cost of a statistics text was $40 in 1985 and is $95 in 2000. What is the "Statistics Text Index" number, rounded to the nearest tenth, for the 1985 edition with the 2000 price as the reference value?

A) 2.4
B) 237.5
C) 42.1
D) 0.4

Answer: C

131) Suppose that the cost of a statistics text was $55 in 1985 and is $105 in 2000. What is the "Statistics Text Index" number, rounded to the nearest tenth, for the 1985 edition with the 1985 price as the reference value?

A) 55
B) 52.4
C) 100.0
D) 190.9

Answer: C

132) A part of the Consumer Price Index (CPI) is given below:

Year	1975	1980	1985	1990	1995
CPI	53.8	82.4	107.6	130.7	152.4

Suppose a week's groceries in 1975 cost $55. What would these groceries cost, to the nearest dollar, 20 years later?

A) $21
B) $154
C) $207
D) $156

Answer: D

133) A part of the Consumer Price Index (CPI) is given below:

Year	1975	1980	1985	1990	1995
CPI	53.8	82.4	107.6	130.7	152.4

Suppose an actuary's salary was $40,000 in 1980. What would the salary have to be in 1990 to keep up with inflation (round to the nearest $1000)?

A) $68,000
B) $108,000
C) $25,000
D) $63,000

Answer: D

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134) A part of the Consumer Price Index (CPI) is given below:

Year	1975	1980	1985	1990	1995
CPI	53.8	82.4	107.6	130.7	152.4

What is the percent increase of a market basket of goods from 1975 to 1985? Round the percent to the nearest integer.

A) 54%
B) 200%
C) 50%
D) 100%

Answer: D

135) A part of the Consumer Price Index (CPI) is given below:

Year	1975	1980	1985	1990	1995
CPI	53.8	82.4	107.6	130.7	152.4

Suppose that an item cost $50 in 1975. If the cost of that item just "kept up with inflation," what would it cost, to the nearest dollar, in 1995?

A) $202
B) $142
C) $18
D) $104

Answer: B

136) Part of the Housing Price Index for 1999 is given below:

City	Palo Alto, CA	Sioux City, IA	Boston, MA	Spokane, WA
Index	365	47	182	78

An academic computer expert is leaving Boston to work in the high tech area of Palo Alto. What should she expect to pay, to the nearest dollar, for a house comparable to her $120,000 Boston home?

A) $240,659
B) $302,000
C) $59,836
D) $485,000

Answer: A

137) Part of the Housing Price Index for 1999 is given below:

City	Palo Alto, CA	Sioux City, IA	Boston, MA	Spokane, WA
Index	365	47	182	78

Suppose that wages are directly related to housing values. If the hourly wage for a job is $21.06 per hour in Spokane, what would the job pay in Sioux City?

A) $34.95
B) $12.69
C) $8.37
D) $13.89

Answer: B

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138) Identify the four price index numbers in the table that would result from using the price from 1995 as the reference value. Round each value to the nearest tenth.

Average Gasoline Prices (per gallon)

Year	Price	Price as a Percentage of 1975 Price	Price Index (1975 = 100)	Price Index (1995 = 100)
1955	29.1¢	51.3%	51.3	
1975	56.7¢	100.0%	100.0	
1995	120.5¢	212.5%	212.5	
2005	231.0¢	407.4%	407.4	

A) 1955: 191.7, 1975: 100, 1995: 47.1 ,2005: 24.1
B) 1955: 191.5, 1975: 100, 1995: 47.3, 2005: 24.1
C) 1955: 24.1, 1975: 47.3, 1995: 100, 2005: 191.5
D) 1955: 24.1, 1975: 47.1, 1995: 100, 2005: 191.7

Answer: D

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1) A
2) B
3) A
4) A
5) A
6) B
7) A
8) A
9) A
10) A
11) A
12) A
13) B
14) A
15) B
16) A
17) A
18) A
19) A
20) B
21) B
22) C
23) B
24) A
25) C
26) B
27) D
28) B
29) C
30) C
31) B
32) A
33) D
34) D
35) A
36) A
37) D
38) C
39) D
40) A
41) D
42) D
43) A
44) D
45) C
46) A
47) B
48) A
49) C
50) A

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51) A
52) B
53) A
54) B
55) B
56) A
57) A
58) A
59) B
60) A
61) A
62) D
63) D
64) D
65) B
66) A
67) D
68) C
69) A
70) B
71) A
72) C
73) B
74) A
75) C
76) A
77) B
78) C
79) C
80) B
81) D
82) D
83) D
84) A
85) A
86) B
87) A
88) D
89) Students tend to assert that textbook prices are too high. There could well be a tendency to overestimate costs. Researchers should check receipts rather than ask for verbal responses.
90) The researcher might well expect a systematic overestimation of the time and thus reduction in the accuracy of the study. This should be an observational and not a self- estimation type of study. If observation is not possible, a self- reporting study could be used but also with a caution about overestimation. Reasonable precisions are to the nearest hour for the latter, perhaps the nearest half hour for the former.
91) The best, and perhaps only, way is to conduct an observational study. However, the presence or knowledge of the observer could introduce systematic error.
92) Random means unpredictable. Unpredictable events cannot be controlled.

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93) Systematic error is due to an influence that affects the measurement of interest in a consistent manner, producing data that are distorted all in the same direction. For example, a timer that runs too fast will provide measured times that are always too large. Once the effect is identified, it would generally be possible to quantify it, which, in turn, enables correction of the data.
94) Answers will vary. Answers will likely center around the idea that it is not always possible to identify the error or to know which value of the measurement is correct.
95) B
96) C
97) D
98) D
99) A
100) D
101) C
102) A
103) B
104) A
105) B
106) C
107) C
108) D
109) B
110) D
111) D
112) B
113) D
114) D
115) B
116) B
117) D
118) C
119) C
120) C
121) B
122) B
123) C
124) B
125) C
126) B
127) A
128) B
129) D
130) C
131) C
132) D
133) D
134) D
135) B
136) A
137) B
138) D

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