

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

Identify the W's for the description of data.

- 1) As research for a science class, seventh graders at a middle school in Montana collected data on weather patterns each year. They recorded a number of daily readings including high and low temperatures, precipitation, humidity, and wind speed. 1) _____
- A) Who: Weather patterns; Cases: Each pattern is a separate case; What: Daily high and low temperatures, ; When: This year; Where: Montana; Why: Research for a science class; How: Watching the weather channel.
- B) Who: Teachers; Cases: Each pattern is a separate case; What: Daily high and low temperatures, daily precipitation, daily humidity, and daily wind speed; When: Not specified; Where: Middle school; Why: Research for a science class; How: Reading the newspaper weather predictions.
- C) Who: Weather patterns; Cases: Each student is a separate case; What: Daily high and low temperatures, daily precipitation, daily humidity, and daily wind speed; When: Not specified; Where: Montana; Why: Research for a science class; How: Watching the weather channel.
- D) Who: Seventh graders; Cases: Each student is a separate case; What: Daily high and low temperatures, daily precipitation, daily humidity, and daily wind speed; When: Not specified; Where: Montana; Why: Research for a science class; How: Daily recordings.
- E) Who: Weather patterns; Cases: Each pattern is a separate case; What: Daily high and low temperatures, daily precipitation, daily humidity, and daily wind speed; When: Not specified; Where: Montana; Why: Research for a science class; How: Daily recordings.
- 2) A consumer reporting magazine published an article evaluating infant car seats in the United States. It listed 10 models, giving the brand, cost, age limit, weight limit, and overall safety rating. 2) _____
- A) Who: Consumers; Cases: Each consumer is an individual case; What: Consumer reporting magazine; When: Not specified; Where: The United States; Why: To provide information to readers; How: Not specified.
- B) Who: 10 infant car seat models; Cases: Each article is an individual case; What: Overall safety rating; When: Not specified; Where: The United States; Why: To provide information to readers; How: Survey new parents.
- C) Who: Consumer reporting magazine; Cases: Each article; What: Infant car seat models; When: Not specified; Where: The United States; Why: To provide information to readers; How: Not specified.
- D) Who: Magazines; Cases: Each magazine is an individual case; What: Articles; When: Not specified; Where: The United States; Why: To provide information to readers; How: Not specified.
- E) Who: 10 infant car seat models; Cases: Each model is an individual case; What: Brand, cost, age limit, weight limit, and overall safety rating; When: Not specified; Where: The United States; Why: To provide information to readers; How: Not specified.

Name the variables in each description of data, then tell whether they are quantitative or categorical. For each quantitative variable name its unit of measure.

- 3) A California hospital concerned about the rising number of low birth weight babies collected data from 300 births over a five year time span. The recorded the mother's age, the mother's prepregnancy weight, the level of prenatal care (none, minimal, adequate), and whether the mother used drugs during pregnancy (cigarettes, alcohol, etc.). 3) _____
- A) Mother's age, quantitative, years; mother's prepregnancy weight, quantitative, pounds; level of prenatal care, categorical.
 - B) Mother's age, quantitative, years; mother's prepregnancy weight, quantitative, pounds.
 - C) Mother's age, quantitative, years; mother's prepregnancy weight, quantitative, pounds; level of prenatal care, categorical; mother's drug use, categorical.
 - D) Mother's age, quantitative, years; mother's prepregnancy weight, categorical; level of prenatal care, categorical; mother's drug use, categorical.
 - E) Mother's age, quantitative, years; mother's prepregnancy weight, quantitative, pounds; level of prenatal care, categorical; mother's drug use, quantitative, weeks.

- 4) A division I men's basketball coach is tracking player eligibility. He records each player's credits earned, the number of class absences each player has, and each player's GPA. 4) _____
- A) Credits earned, quantitative, decimals; number of class absences, quantitative, days; GPA, quantitative, decimals.
 - B) Credits earned, quantitative, decimals; number of class absences, quantitative, weeks; GPA, quantitative, GPA.
 - C) Credits earned, quantitative, credits; number of class absences, quantitative, days.
 - D) Credits earned, quantitative, credits; number of class absences, quantitative, days; GPA, quantitative, scale from 0 to 4.
 - E) Credits earned, quantitative, credits; number of class absences, quantitative, days; GPA, quantitative, scale from 0 to 4; player, categorical; coach, categorical.

Classify the variable as categorical or quantitative.

- 5) The number of people on a jury 5) _____
- A) Categorical
 - B) Quantitative
- 6) The verdict of a jury 6) _____
- A) Quantitative
 - B) Categorical
- 7) The color of your house 7) _____
- A) Categorical
 - B) Quantitative

Provide an appropriate response.

- 8) School administrators collect data on students attending the school. Which of the following variables is quantitative? 8) _____
- A) class (freshman, soph., junior, senior)
 - B) whether the student has taken the SAT
 - C) whether the student is in AP classes
 - D) grade point average
 - E) none of these

Solve the problem.

9) *The British Medical Journal* published an article on December 10, 2014, entitled "The Association between Exaggeration in Health Related Science News and Academic Press Releases: Retrospective Observational Study." Among other findings, they reported that 36% of the press releases contained exaggerated connections between animal research results and conclusions about similar effects in humans. What is the sample?

9) _____

- A) Animal studies
- B) 36% of press releases
- C) 462 press releases on biomedical and health science
- D) All press releases

Provide an appropriate response.

10) A magazine article reported on Springfield School District's magnet school programs. Of the 1470 qualified applicants, 798 were accepted, 252 were wait-listed, and 420 were turned away for lack of space. Find the relative frequency distribution of the decisions made, and write a sentence describing it.

10) _____

- A) 1470 students applied for admission to the magnet schools program. 54% were accepted, 32% were wait-listed, and 29% were turned away.
- B) 1470 students applied for admission to the magnet schools program. 71% were accepted, and 29% were turned away.
- C) 1470 students applied for admission to the magnet schools program. 54% were accepted, and 46% were turned away.
- D) 1470 students applied for admission to the magnet schools program. 54% were accepted, 32% were wait-listed, and 53% were turned away.
- E) 1470 students applied for admission to the magnet schools program. 54% were accepted, 17% were wait-listed, and 29% were turned away.

11) The Centers for Disease Control lists causes of death for individual states in 2002. The mortality data for one state is given.

11) _____

Cause of Death	Percent
Heart Disease	29.6
Cancer	22.3
Circulatory diseases and stroke	8.1
Respiratory diseases	6.3
Accidents	4.4

In this state, what percent of deaths were from causes not listed here?

- A) 70.7%
- B) 33.7%
- C) 29.3%
- D) 58.9%
- E) The percent cannot be determined from the given percentages because the categories overlap.

- 12) A newspaper surveyed its subscribers as to which section of the paper they read first. The results are listed below. 12) _____

Section	Percent
Front page	18.3
Sports	25.2
Business	13.9
Comics	22.1
Horoscope	13.8

Is it reasonable to conclude that 39.1% of the paper's subscribers read the business or sports sections first?

- A) Yes, because these categories do not overlap.
- B) No, because the percentages in relative frequencies tables can never be added.
- C) No, because these categories overlap.
- D) Yes, because the percentages can always be added in relative frequency tables.
- E) No, because the percentages do not add up to 100%.

Provide an appropriate response. Round to the nearest tenth of a percent if necessary.

- 13) Students in a political science course were asked to describe their politics as "Liberal", "Moderate", or "Conservative." Here are the results: 13) _____

Politics

	Liberal	Moderate	Conservative	Total
Sex Female	28	31	11	70
Male	53	41	20	114
Total	81	72	31	184

What percent of the class considers themselves to be "Liberal"?

- A) 44%
- B) 78.6%
- C) 15.2%
- D) 28.8%
- E) 40%

- 14) Students in a political science course were asked to describe their politics as "Liberal", "Moderate", or "Conservative." Here are the results: 14) _____

Politics

	Liberal	Moderate	Conservative	Total
Sex Female	43	36	6	85
Male	52	55	18	125
Total	95	91	24	210

What percent of the females in the class consider themselves to be "Liberal"?

- A) 45.2%
- B) 42.4%
- C) 45.3%
- D) 50.6%
- E) 41.6%

- 15) Students in a political science course were asked to describe their politics as "Liberal", "Moderate", or "Conservative." Here are the results: 15) _____

Politics

	Liberal	Moderate	Conservative	Total	
Sex	Female	37	27	14	78
	Male	44	39	23	106
	Total	81	66	37	184

What percent of all students in the class are males who consider themselves to be "Liberal"?

- A) 44% B) 54.3% C) 41.5% D) 23.9% E) 20.1%
- 16) Students in a political science course were asked to describe their politics as "Liberal", "Moderate", or "Conservative." Here are the results: 16) _____

Politics

	Liberal	Moderate	Conservative	Total	
Sex	Female	45	37	12	94
	Male	36	39	21	96
	Total	81	76	33	190

What percent of all "Moderates" in the class are male?

- A) 40.6% B) 40% C) 20.5% D) 48.7% E) 51.3%
- 17) Just how accurate are the weather forecasts we hear every day? The table below compares the daily forecast with a city's actual weather for a year. 17) _____

Actual Weather

	Rain	No rain
Forecast	Rain	59
	No rain	269

What percent of the time was the forecast correct?

- A) 73.7% B) 76.4% C) 7.4% D) 81.1% E) 18.9%

18) Most patients who undergo surgery make routine recoveries and are discharged as planned, but some patients experience complications and their discharge is delayed. Jamestown has a large hospital and a small hospital, each performing major and minor surgeries. Data is collected at each hospital to see how many surgical patients have their discharges delayed by postsurgical complications. The results are shown in the following table.

18) _____

Procedure	Large hospital	Small hospital
	Major surgery	120 of 800
Minor surgery	15 of 300	30 of 300

What were the discharge delay rates for each kind of surgery?

- A) Major surgery: 12.2%
Minor surgery: 12.2%
- B) Major surgery: 9%
Minor surgery: 3.1%
- C) Major surgery: 12.3%
Minor surgery: 11.8%
- D) Major surgery: 15.5%
Minor surgery: 7.5%
- E) Major surgery: 40%
Minor surgery: 15%

Provide an appropriate response. Round to the nearest percent if necessary.

19) A survey of autos parked in student and staff lots at a large university classified the brands by country of origin, as seen in the table.

19) _____

Origin	Student	Staff
	American	92
European	38	25
Asian	69	53

What is the conditional distribution of origin for students?

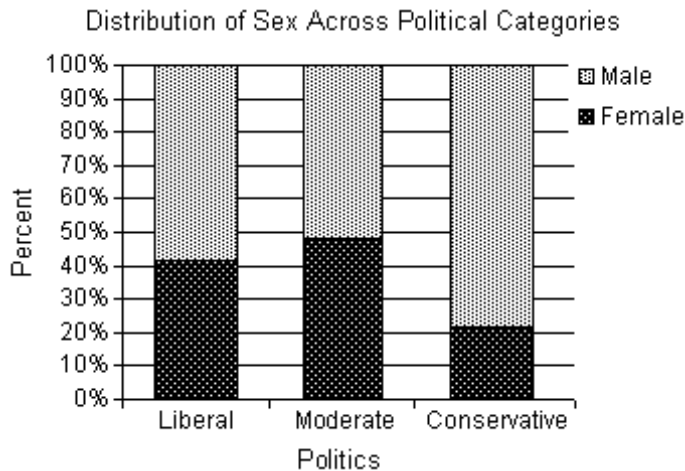
- A) 54% American, 15% European, 32% Asian
- B) 25% American, 7% European, 14% Asian
- C) 25% American, 10% European, 19% Asian
- D) 50% American, 17% European, 33% Asian
- E) 46% American, 19% European, 35% Asian

Provide an appropriate response.

20) Students in a political science course were asked to describe their politics as "Liberal", "Moderate", or "Conservative." The results are listed in the table below, and a graphical display of the conditional distributions of sex among the three categories of politics is given.

20) _____

Sex	Liberal	Moderate	Conservative	Total
	Female	45	49	8
Male	64	53	29	146
Total	109	102	37	248



The political science instructor states that sex and politics are independent. Is this an accurate statement? Explain.

- A) No. The percentage of males and females varies across political categories. The percentage of Liberals and Moderates who are female is approximately twice that of Conservatives who are female. This would suggest that sex and politics are not independent.
- B) Yes. The percentage of males and females varies across political categories; however, there are more males in the class than females. There is not enough evidence to make an association between sex and politics. Sex and politics are independent.
- C) No. The percentage of males and females varies across political categories. The percentage of Liberals and Moderates who are male is approximately twice that of Conservatives who are male. This would suggest that sex and politics are not independent.
- D) Yes. The percentage of males and females is similar across political categories. This would suggest that sex and politics are independent.
- E) No. The percentage of males and females is similar across political categories. This would suggest that sex and politics are not independent.

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

21) One day a store tracked the way shoppers paid for their purchases. Their data are summarized in the table.

21) _____

	Cash	Check	Charge	Total
Male	18	10	12	40
Female	18	12	30	60
Total	36	22	42	100

What is the conditional relative frequency distribution of payment method for women?