

## c1

*Student:* \_\_\_\_\_

1. Statistics is the science of collecting, organizing, analyzing, interpreting, and presenting data.

True False

2. Inferential statistics refers to generalizing from a sample to a population, estimating unknown parameters, drawing conclusions, and making decisions.

True False

3. Inferential statistics refers to summarizing data from the observations.

True False

4. Descriptive statistics refers to summarizing data rather than generalizing about the population.

True False

5. Estimating parameters and testing hypotheses are important aspects of descriptive statistics.

True False

6. Inconsistent treatment of data by a researcher is a symptom of poor survey or research design.

True False

7. *Empirical data* are collected through observations and/or experiments.

True False

8. *Business intelligence* refers to collecting, storing, accessing, and analyzing data on the company's operations in order to make better business decisions.

True False

9. When a statistician omits data contrary to her findings in a study, she is relying on a small sample generalization to strengthen her conclusions.

True False

10. When we have to buy something unknown, we often rely on the information from reviews for a specific product from the internet. This pitfall is called a conclusion from non-random Samples.

True False

11. A strong correlation between  $A$  and  $B$  would suggest that  $B$  must be caused by  $A$ .

True False

12. When his old mp3 player goes out of order, Rick strikes the player on the side and it works again. Rick tells his friend that hitting the MP3 player fixed it. This is an example of *post hoc* fallacy.

True False

13. A statistical test may be significant yet have no practical importance.

True False

14. Valid statistical inferences cannot be made when sample sizes are small.

True False

15. Statistics is an essential part of critical thinking, because it allows us to transform the empirical evidence from a sample so it will agree with our preferred conclusions.

True False

16. Statistical challenges include imperfect data, practical constraints, and ethical dilemmas.

True False

17. Effective technical report-writing requires attention to style, grammar, organization, and proper use of tables and graphs.

True False

18. The science of statistics tells us whether the sample evidence is convincing.

True False

19. Pitfalls to consider in a statistical test include non-random samples, small sample size, and lack of causal links.

True False

20. In preparing an oral statistical presentation the 3 P's refer to persistence, prolixity, and pizzazz.

True False

21. An executive summary should contain a detailed discussion of all tables, figures, and appendices, so the reader will have all the information.

True False

22. An oral report should contain all the information in the written report so the audience won't miss of the details.

True False

23. Speaking too slowly is a common error in making an oral presentation.

True False

24. Thanks to computer spell-checking, errors in spelling are no longer a problem in business.

True False

25. Predicting a presidential candidate's percent of the statewide vote from a sample of 800 voters would be an example of *inferential* statistics.

True False

26. The *post hoc* fallacy is the logical error of concluding that if *B* follows *A*, then *B* was caused by *A*.

True False

27. An example of *descriptive* statistics would be reporting the percent of students in your accounting class that attended the review session for the last exam.  
True   False
28. "Bob must be rich. He's a lawyer, and lawyers make lots of money." This statement *best* illustrates which fallacy?
- A. Using poor survey methods.
  - B. Confusing significance with importance.
  - C. Unconscious bias.
  - D. Generalizing from an average to an individual.
29. Which is *not* an ethical obligation of a statistician? Explain.
- A. To know and follow accepted procedures.
  - B. To ensure data integrity and accurate calculations.
  - C. To support client wishes in drawing conclusions from the data.
  - D. To acknowledge sources of financial support.
30. Which of the following statements is *not* true?
- A. A statistic is a single measure (usually numerical) that is calculated from a sample.
  - B. Statistics is the science of collecting, organizing, analyzing, interpreting, and presenting data.
  - C. For day-to-day data business analysis, most firms rely on a large staff of expert statisticians.
  - D. A statistical test may be significant yet have no practical importance.
31. Which of the following is *not* characteristic of an executive summary?
- A. Uses precise scientific terminology and statistical jargon.
  - B. Is short, often just a single page.
  - C. Summarizes the major findings so they cannot be missed.
  - D. Describes the tasks, goals, and methods.
32. Which of the following is *not* the statistical challenges?
- A. Imperfect data.
  - B. Ethical problem.
  - C. Hard to find the consultant.
  - D. Time constraint.

33. If 35% of the students in my statistics class use the Google mail (or gmail), I conclude from this that 35% of all students at the University have gmail accounts. The most important logical weakness of this conclusion would be

- A. relying on any sample instead of surveying every student.
- B. using a sample that may not be representative of all students.
- C. failing to correct for unconscious interviewer bias.
- D. assuming cause and effect where none exists.

34. Which of the following is *not* a characteristic of an ideal statistician?

- A. Technically current (e.g. software).
- B. Communicates well (both written and oral).
- C. Advocates client's objectives.
- D. Can deal with imperfect information.

35. Which of the following statements is *not* true?

- A. Progress consists of continual refinement of theories by thorough hypothesis testing.
- B. Statistics is the science of collecting, organizing, analyzing, interpreting, and presenting data.
- C. Estimating parameters is an important aspect of descriptive statistics.
- D. Statistical challenges include imperfect data, practical constraints, and ethical dilemmas.

36. Which is *not* a practical constraint facing the business researcher or data analyst?

- A. Time and money are always limited.
- B. The world is no laboratory, so some experiments are impractical.
- C. Research on human subjects is fraught with danger and ethical issues.
- D. Survey respondents usually will tell the truth only if well compensated.

37. Which is *not* a key characteristic of a good business data analyst?

- A. Effective writer.
- B. Stays current on techniques.
- C. Has a Ph.D. or master's degree in statistics.
- D. Can deal with imperfect information.

38. An ethical statistical consultant would *not* always

- A. follow accepted statistical procedures.
- B. support management's desired conclusions.
- C. acknowledge sources of financial support.
- D. report limitations of the data.

39. The NASA experiences with Challenger and Columbia suggest that

- A. statistics is not applicable to space endeavors.
- B. limited data may still contain important clues.
- C. good engineers can eliminate risks in space flight.
- D. space flight is only slightly more risky than commercial air travel.

40. One of the most common perceived weaknesses of new college graduates is

- A. need for more accounting background.
- B. poor writing and communication skills.
- C. lack of understanding of economics.
- D. insufficient training in finance.

41. Which is essential for effective oral presentations?

- A. Use of specialized technical jargon (e.g., financial).
- B. Generous use of color and special effects in presentations.
- C. A lengthy and thorough executive summary.
- D. Preparation and rehearsal of timing.

42. "Smoking is not harmful. My Aunt Harriet smoked, but lived to age 90." This *best* illustrates which fallacy?

- A. Unconscious bias.
- B. Significance versus practical importance.
- C. *Post hoc* reasoning.
- D. Small sample generalization.

43. Which *best* illustrates the distinction between statistical significance and practical importance?

- A. "In 2006, 240 out of 400 statistics students at Oxnard Technical College sold their textbooks at the end of the semester, compared with 220 out of 330 students in 2005, a significant decrease."
- B. "Our new manufacturing technique has increased the life of the 80 GB USB AsimoDrive external hard disk significantly, from 240,000 hours to 250,000 hours."
- C. "In 50,000 births, the new vaccine reduced the incidence of infant mortality in Morrovia significantly from 14.2 deaths per 1000 births to 10.3 deaths per 1000 births."
- D. "The new Sky Penetrator IV business jet's cruising range has increased significantly from 3,975 miles to 4,000 miles."

44. "Circulation fell in the month after the new editor took over the newspaper *Oxnard News Herald*. The editor new should be fired." Which is *not* a serious fallacy in this conclusion?
- A. Generalizing from a small sample.
  - B. Applying *post hoc* reasoning.
  - C. Failing to identify causes.
  - D. Using a biased sample.
45. An ethical data analyst would be *least likely* to
- A. check data for accuracy.
  - B. cite data sources and their limitations.
  - C. acknowledge sources of financial support.
  - D. rely only on Excel for calculations.
46. "Tom's SUV rolled over. SUVs are dangerous." This *best* illustrates which fallacy?
- A. Unconscious bias.
  - B. Significance versus practical importance.
  - C. *Post hoc* reasoning.
  - D. Small sample generalization.
47. "Bob didn't wear his lucky T-shirt to class, so he failed his chemistry exam." This best illustrates which fallacy?
- A. Small sample generalization.
  - B. Poor survey methods.
  - C. *Post hoc* reasoning.
  - D. More than one of the above.
48. Which is *not* a reason for an average student to study statistics?
- A. Improve technical writing skills.
  - B. Gain information management skills.
  - C. Enhance technical literacy.
  - D. Learn stock market strategies.
49. Which is *not* a likely area of application of statistics in business?
- A. Auditing supplier invoices for correct payment.
  - B. Questioning the executives' strategic decisions.
  - C. Looking for patterns in a large marketing database.
  - D. Making forecasts of several key product lines.

50. Which is *not* a likely task of descriptive statistics?

- A. Summarizing a sample.
- B. Describing data numerically.
- C. Estimating unknown parameters.
- D. Making visual displays of data.

51. We would associate the term *inferential statistics* with which task?

- A. Making visual displays of data.
- B. Estimating unknown parameters.
- C. Describing a sample of data.
- D. Tabulating a survey.

52. How might statistics be useful in determining the correct width of doorways in a convalescent care facility so that 99 percent of the "typical" wheelchairs can pass through the doorway without coming closer than 6 inches on either side?

53. Established risk factors such as cholesterol, obesity can predict who will get heart disease about 80 percent of the time. Adding a new test called CRP can raise this percentage to 81 percent—a statistically significant difference. But would this improvement be of practical importance to a physician? To a patient? Discuss.

54. Bob said, "Since statistics cannot tell for certain whether one thing caused another, there is no point in even reporting probabilities." Argue both for and against Bob's statement.



55. Bob said, "Why study math and statistics? I'm majoring in human resources because it's people that are important in business, not numbers." Argue both for and against Bob's statement.

# c1 Key

1. Statistics is the science of collecting, organizing, analyzing, interpreting, and presenting data.

**TRUE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #1*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

2. Inferential statistics refers to generalizing from a sample to a population, estimating unknown parameters, drawing conclusions, and making decisions.

**TRUE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #2*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

3. Inferential statistics refers to summarizing data from the observations.

**FALSE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #3*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

4. Descriptive statistics refers to summarizing data rather than generalizing about the population.

**TRUE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #4*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

5. Estimating parameters and testing hypotheses are important aspects of descriptive statistics.

**FALSE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #5*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

6. Inconsistent treatment of data by a researcher is a symptom of poor survey or research design.

**FALSE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #6*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical basics and uses in business*

7. *Empirical data* are collected through observations and/or experiments.

**TRUE**

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #7*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: written and oral communication in statistics*

8. *Business intelligence* refers to collecting, storing, accessing, and analyzing data on the company's operations in order to make better business decisions.

**TRUE**

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #8*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

9. When a statistician omits data contrary to her findings in a study, she is relying on a small sample generalization to strengthen her conclusions.

**FALSE**

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #9*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

10. When we have to buy something unknown, we often rely on the information from reviews for a specific product from the internet. This pitfall is called a conclusion from non-random Samples.

**FALSE**

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #10*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

11. A strong correlation between  $A$  and  $B$  would suggest that  $B$  must be caused by  $A$ .

**FALSE**

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #11*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

12. When his old mp3 player goes out of order, Rick strikes the player on the side and it works again. Rick tells his friend that hitting the MP3 player fixed it. This is an example of *post hoc* fallacy.

**TRUE**

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #12*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

13. A statistical test may be significant yet have no practical importance.

**TRUE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #13*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

14. Valid statistical inferences cannot be made when sample sizes are small.

**FALSE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #14*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical challenges and logical pitfalls*

15. Statistics is an essential part of critical thinking, because it allows us to transform the empirical evidence from a sample so it will agree with our preferred conclusions.

**FALSE**

*AACSB Knowledge: Ethical understanding and reasoning*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #15*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

16. Statistical challenges include imperfect data, practical constraints, and ethical dilemmas.

**TRUE**

*AACSB Knowledge: Ethical understanding and reasoning*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #16*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical challenges and logical pitfalls*

17. Effective technical report-writing requires attention to style, grammar, organization, and proper use of tables and graphs.

**TRUE**

*AACSB Knowledge: Communication abilities*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #17*

*Learning Objective: Explain why written communication is important.*

*Topic: written and oral communication in statistics*

18. The science of statistics tells us whether the sample evidence is convincing.

**TRUE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #18*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

19. Pitfalls to consider in a statistical test include non-random samples, small sample size, and lack of causal links.

**TRUE**

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #19*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

20. In preparing an oral statistical presentation the 3 P's refer to persistence, prolixity, and pizzazz.

**FALSE**

*AACSB Knowledge: Communication abilities*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #20*

*Learning Objective: Know the basic rules for effective writing and oral presentations.*

*Topic: written and oral communication in statistics*

21. An executive summary should contain a detailed discussion of all tables, figures, and appendices, so the reader will have all the information.

**FALSE**

*AACSB Knowledge: Communication abilities*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #21*

*Learning Objective: Tell what an executive summary is and why its important.*

*Topic: written and oral communication in statistics*

22. An oral report should contain all the information in the written report so the audience won't miss of the details.

**FALSE**

*AACSB Knowledge: Communication abilities*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #22*

*Learning Objective: Know the basic rules for effective writing and oral presentations.*

*Topic: written and oral communication in statistics*

23. Speaking too slowly is a common error in making an oral presentation.

**FALSE**

*AACSB Knowledge: Communication abilities*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #23*

*Learning Objective: Know the basic rules for effective writing and oral presentations.*

*Topic: written and oral communication in statistics*

24. Thanks to computer spell-checking, errors in spelling are no longer a problem in business.

**FALSE**

*AACSB Knowledge: Communication abilities*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #24*

*Learning Objective: Explain why written communication is important.*

*Topic: written and oral communication in statistics*

25. Predicting a presidential candidate's percent of the statewide vote from a sample of 800 voters would be an example of *inferential* statistics.

**TRUE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Analysis*

*Blooms Taxonomy: Application*

*Difficulty: Medium*

*Doane - Chapter 001 #25*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

26. The *post hoc* fallacy is the logical error of concluding that if *B* follows *A*, then *B* was caused by *A*.

**TRUE**

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #26*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

27. An example of *descriptive* statistics would be reporting the percent of students in your accounting class that attended the review session for the last exam.

**TRUE**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Analysis*

*Blooms Taxonomy: Application*

*Difficulty: Medium*

*Doane - Chapter 001 #27*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

28. "Bob must be rich. He's a lawyer, and lawyers make lots of money." This statement *best* illustrates which fallacy?

A. Using poor survey methods.

B. Confusing significance with importance.

C. Unconscious bias.

**D.** Generalizing from an average to an individual.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #28*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*



29. Which is *not* an ethical obligation of a statistician? Explain.

- A. To know and follow accepted procedures.
- B. To ensure data integrity and accurate calculations.
- C.** To support client wishes in drawing conclusions from the data.
- D. To acknowledge sources of financial support.

*AACSB Knowledge: Ethical understanding and reasoning*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #29*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical challenges and logical pitfalls*

30. Which of the following statements is *not* true?

- A. A statistic is a single measure (usually numerical) that is calculated from a sample.
- B. Statistics is the science of collecting, organizing, analyzing, interpreting, and presenting data.
- C.** For day-to-day data business analysis, most firms rely on a large staff of expert statisticians.
- D. A statistical test may be significant yet have no practical importance.

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #30*

*Learning Objective: List reasons for a business student to study statistics.*

*Topic: statistical basics and uses in business*

31. Which of the following is *not* characteristic of an executive summary?

- A.** Uses precise scientific terminology and statistical jargon.
- B. Is short, often just a single page.
- C. Summarizes the major findings so they cannot be missed.
- D. Describes the tasks, goals, and methods.

*AACSB Knowledge: Communication abilities*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #31*

*Learning Objective: Tell what an executive summary is and why its important.*

*Topic: written and oral communication in statistics*

32. Which of the following is *not* the statistical challenges?

- A. Imperfect data.
- B. Ethical problem.
- C. Hard to find the consultant.**
- D. Time constraint.

*AACSB Knowledge: Communication abilities*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #32*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical challenges and logical pitfalls*

33. If 35% of the students in my statistics class use the Google mail (or gmail), I conclude from this that 35% of all students at the University have gmail accounts. The most important logical weakness of this conclusion would be

- A. relying on any sample instead of surveying every student.
- B. using a sample that may not be representative of all students.**
- C. failing to correct for unconscious interviewer bias.
- D. assuming cause and effect where none exists.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #33*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

34. Which of the following is *not* a characteristic of an ideal statistician?

- A. Technically current (e.g. software).
- B. Communicates well (both written and oral).
- C. Advocates client's objectives.**
- D. Can deal with imperfect information.

*AACSB Knowledge: Ethical understanding and reasoning*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #34*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical challenges and logical pitfalls*

35. Which of the following statements is *not* true?

- A. Progress consists of continual refinement of theories by thorough hypothesis testing.
- B. Statistics is the science of collecting, organizing, analyzing, interpreting, and presenting data.
- C.** Estimating parameters is an important aspect of descriptive statistics.
- D. Statistical challenges include imperfect data, practical constraints, and ethical dilemmas.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #35*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

36. Which is *not* a practical constraint facing the business researcher or data analyst?

- A. Time and money are always limited.
- B. The world is no laboratory, so some experiments are impractical.
- C. Research on human subjects is fraught with danger and ethical issues.
- D.** Survey respondents usually will tell the truth only if well compensated.

*AACSB Knowledge: Ethical understanding and reasoning*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #36*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical challenges and logical pitfalls*

37. Which is *not* a key characteristic of a good business data analyst?

- A. Effective writer.
- B. Stays current on techniques.
- C.** Has a Ph.D. or master's degree in statistics.
- D. Can deal with imperfect information.

*AACSB Knowledge: Ethical understanding and reasoning*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #37*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical challenges and logical pitfalls*

38. An ethical statistical consultant would *not* always

- A. follow accepted statistical procedures.
- B. support management's desired conclusions.**
- C. acknowledge sources of financial support.
- D. report limitations of the data.

*AACSB Knowledge: Ethical understanding and reasoning*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #38*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical challenges and logical pitfalls*

39. The NASA experiences with Challenger and Columbia suggest that

- A. statistics is not applicable to space endeavors.
- B. limited data may still contain important clues.**
- C. good engineers can eliminate risks in space flight.
- D. space flight is only slightly more risky than commercial air travel.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Analysis*

*Blooms Taxonomy: Application*

*Difficulty: Easy*

*Doane - Chapter 001 #39*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical basics and uses in business*

40. One of the most common perceived weaknesses of new college graduates is

- A. need for more accounting background.
- B. poor writing and communication skills.**
- C. lack of understanding of economics.
- D. insufficient training in finance.

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #40*

*Learning Objective: Explain why written communication is important.*

*Topic: written and oral communication in statistics*

41. Which is essential for effective oral presentations?
- A. Use of specialized technical jargon (e.g., financial).
  - B. Generous use of color and special effects in presentations.
  - C. A lengthy and thorough executive summary.
  - D.** Preparation and rehearsal of timing.

*AACSB Knowledge: Communication abilities*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #41*

*Learning Objective: Tell what an executive summary is and why its important.*

*Topic: written and oral communication in statistics*

42. "Smoking is not harmful. My Aunt Harriet smoked, but lived to age 90." This *best* illustrates which fallacy?
- A. Unconscious bias.
  - B. Significance versus practical importance.
  - C. *Post hoc* reasoning.
  - D.** Small sample generalization.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #42*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

43. Which *best* illustrates the distinction between statistical significance and practical importance?
- A. "In 2006, 240 out of 400 statistics students at Oxnard Technical College sold their textbooks at the end of the semester, compared with 220 out of 330 students in 2005, a significant decrease."
  - B. "Our new manufacturing technique has increased the life of the 80 GB USB AsimoDrive external hard disk significantly, from 240,000 hours to 250,000 hours."
  - C.** "In 50,000 births, the new vaccine reduced the incidence of infant mortality in Morrovia significantly from 14.2 deaths per 1000 births to 10.3 deaths per 1000 births."
  - D. "The new Sky Penetrator IV business jet's cruising range has increased significantly from 3,975 miles to 4,000 miles."

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #43*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

44. "Circulation fell in the month after the new editor took over the newspaper *Oxnard News Herald*. The editor new should be fired." Which is *not* a serious fallacy in this conclusion?

- A. Generalizing from a small sample.
- B. Applying *post hoc* reasoning.
- C. Failing to identify causes.
- D.** Using a biased sample.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #44*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

45. An ethical data analyst would be *least likely* to

- A. check data for accuracy.
- B. cite data sources and their limitations.
- C. acknowledge sources of financial support.
- D.** rely only on Excel for calculations.

*AACSB Knowledge: Ethical understanding and reasoning*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #45*

*Learning Objective: State the common challenges facing data analysts.*

*Topic: statistical challenges and logical pitfalls*

46. "Tom's SUV rolled over. SUVs are dangerous." This *best* illustrates which fallacy?

- A. Unconscious bias.
- B. Significance versus practical importance.
- C. *Post hoc* reasoning.
- D.** Small sample generalization.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #46*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

47. "Bob didn't wear his lucky T-shirt to class, so he failed his chemistry exam." This best illustrates which fallacy?

- A. Small sample generalization.
- B. Poor survey methods.
- C. *Post hoc* reasoning.**
- D. More than one of the above.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #47*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical challenges and logical pitfalls*

48. Which is *not* a reason for an average student to study statistics?

- A. Improve technical writing skills.
- B. Gain information management skills.
- C. Enhance technical literacy.
- D. Learn stock market strategies.**

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Easy*

*Doane - Chapter 001 #48*

*Learning Objective: List reasons for a business student to study statistics.*

*Topic: statistical basics and uses in business*

49. Which is *not* a likely area of application of statistics in business?

- A. Auditing supplier invoices for correct payment.
- B. Questioning the executives' strategic decisions.**
- C. Looking for patterns in a large marketing database.
- D. Making forecasts of several key product lines.

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Analysis*

*Blooms Taxonomy: Application*

*Difficulty: Easy*

*Doane - Chapter 001 #49*

*Learning Objective: List reasons for a business student to study statistics.*

*Topic: statistical basics and uses in business*

50. Which is *not* a likely task of descriptive statistics?

- A. Summarizing a sample.
- B. Describing data numerically.
- C. Estimating unknown parameters.**
- D. Making visual displays of data.

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #50*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

51. We would associate the term *inferential statistics* with which task?

- A. Making visual displays of data.
- B. Estimating unknown parameters.**
- C. Describing a sample of data.
- D. Tabulating a survey.

*AACSB Knowledge: Analytical skills*

*Blooms Taxonomy: Knowledge*

*Blooms Taxonomy: Understanding*

*Difficulty: Medium*

*Doane - Chapter 001 #51*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*

52. How might statistics be useful in determining the correct width of doorways in a convalescent care facility so that 99 percent of the "typical" wheelchairs can pass through the doorway without coming closer than 6 inches on either side?

Large samples could be taken of wheelchair widths and the space needed on either side, and averages could be computed. Statistics can then be applied to find the 99th percentiles.

One way is to measure the widths of major brands of wheelchairs currently being sold, being sure that people are sitting in them and using their hands to move the wheels to measure the necessary clearance. Then take a similar survey of older wheelchairs that still are used. Estimate the proportion of each type of wheelchair in use, to determine what width is required for 99% to meet the requirement. You might also find that some wheelchair users carry a cane in their laps, which may protrude. How would this be handled? Good students may raise other issues. To learn how to estimate percentiles, you need a basic class in statistics.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #52*

*Learning Objective: Define statistics and explain some of its uses in business.*

*Topic: statistical basics and uses in business*



53. Established risk factors such as cholesterol, obesity can predict who will get heart disease about 80 percent of the time. Adding a new test called CRP can raise this percentage to 81 percent—a statistically significant difference. But would this improvement be of practical importance to a physician? To a patient? Discuss.

A single physician might feel that such a small improvement in medical diagnostics might not help very much in predicting a particular patient's chances of getting heart disease. However, in tests involving millions of patients, even a slightly improved test might benefit many individuals. It is a question of perspective (micro versus macro). Also, as medical tests improve, the potential incremental gains become smaller.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Medium*

*Doane - Chapter 001 #53*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical basics and uses in business*

54. Bob said, "Since statistics cannot tell for certain whether one thing caused another, there is no point in even reporting probabilities." Argue both for and against Bob's statement.

Bob is correct in saying that we usually cannot prove cause-and-effect using statistics alone. But probabilities and correlations between events can point researchers in a certain direction. And many people do accept that statistics is a guide to action, if there is some logical reason to suppose that cause-and-effect may exist, even if the science hasn't yet proven the case fully. Think how many people purchase health food and vitamin supplements, or seek holistic treatments for various diseases.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #54*

*Learning Objective: List and explain common statistical pitfalls.*

*Topic: statistical basics and uses in business*

55. Bob said, "Why study math and statistics? I'm majoring in human resources because it's people that are important in business, not numbers." Argue both for and against Bob's statement.

Bob is correct in that organizations consist of people, and their interactions and decisions determine the company's financial well-being and future. However, he is missing something essential. All organizations rely on statistics and data to keep track of their operations and financial progress. Without statistics and math, no company can exist. And human resources professionals use data just as much as any other business specialty. In fact, many statistical techniques were developed by psychologists in order to help understand humans and their interactions.

*AACSB Knowledge: Reflective thinking*

*Blooms Taxonomy: Evaluation*

*Blooms Taxonomy: Synthesis*

*Difficulty: Easy*

*Doane - Chapter 001 #55*

*Learning Objective: List reasons for a business student to study statistics.*

*Topic: statistical basics and uses in business*



## c1 Summary

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