Quantitative Analysis for Management 14th edition Render Test Bank

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Quantitative Analysis for Management, 14e **(Render)**
Chapter 1 Introduction to Quantitative Analysis

1.1 True/False

1) Interviews, statistical sampling, and company reports provide input data for quantitative analysis models.
Answer: TRUE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

2) In the early 1900s, Frederick Winslow Taylor pioneered the principles of the scientific approach to management.
Answer: TRUE
Diff: Moderate
Topic: WHAT IS QUANTITATIVE ANALYSIS?
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

3) Managers do not need to be familiar with the limitations, assumptions, and/or specific applicability of the quantitative analysis technique to use it for accurate decision making.
Answer: FALSE
Diff: Moderate
Topic: INTRODUCTION
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

4) During World War II, many new scientific and quantitative techniques were developed to assist the military, and these developments were so successful that many companies started using similar techniques in managerial decision making and planning after the war.
Answer: TRUE
Diff: Moderate
Topic: WHAT IS QUANTITATIVE ANALYSIS?
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

5) The study of Business Analytics involves the use of large datasets known as big data.
Answer: TRUE
Diff: Moderate
Topic: BUSINESS ANALYTICS
LO: 1.2: Describe the three categories of business analytics.
AACSB: Analytical thinking
Classification: Concept

6) Predictive Analytics is aimed at forecasting future outcomes based on patterns in the past data.
Answer: TRUE
Diff: Moderate
Topic: BUSINESS ANALYTICS
LO: 1.2: Describe the three categories of business analytics.
AACSB: Analytical thinking
Classification: Concept

7) When a problem is difficult to quantify, it may be necessary to develop unspecific objectives.
Answer: FALSE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

8) The Quantitative Analysis Approach consists of six steps.
Answer: FALSE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

9) A schematic model is a picture, drawing, or chart of reality.
Answer: TRUE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

10) Decision variables may also be called parameters.
Answer: FALSE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

11) Model variables can be controllable or uncontrollable.
Answer: TRUE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

12) A series of steps or procedures that are repeated is known as an algorithm.
Answer: TRUE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

13) A model is a representation of a situation.
Answer: TRUE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

14) A parameter is a measurable quantity that may vary or is subject to change.
Answer: FALSE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

15) Trying various approaches and picking the one resulting in the best decision is called incomplete enumeration.
Answer: FALSE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

16) All problems can be solved by considering only the quantitative issues.
Answer: FALSE
Diff: Easy
Topic: WHAT IS QUANTITATIVE ANALYSIS?
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

17) A profit equation is an example of a schematic model.
Answer: FALSE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

18) Testing the data and model should be done before the results have been analyzed.
Answer: TRUE
Diff: Easy
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

19) Sensitivity analysis helps us estimate the effect of known and unknown errors in our model.
Answer: TRUE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

20) Models can help us analyze a problem and sell a decision to those who must implement it.
Answer: TRUE
Diff: Easy
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Concept

21) A sensitivity analysis allows a manager to answer the "what if" questions.
Answer: TRUE
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

22) One problem in using a quantitative model is that the necessary data may be unavailable.
Answer: TRUE
Diff: Easy
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

23) Management support and user involvement are not essential in the successful implementation of quantitative analysis projects.
Answer: FALSE
Diff: Easy
Topic: IMPLEMENTATION—NOT JUST THE FINAL STEP
LO: 1.7: Recognize implementation concerns of quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

24) Revenue is calculated by subtracting expenses from profit.
Answer: FALSE
Diff: Easy
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

25) In order for a break-even quantity to exist in the presence of positive fixed costs, sales price must exceed variable cost per unit.
Answer: TRUE
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

26) The Goal Seek feature in Microsoft Excel can be commonly applied for break-even analysis.
Answer: TRUE
Diff: Easy
Topic: THE ROLE OF COMPUTERS AND SPREADSHEET MODELS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.5: Use computers and spreadsheet models to perform quantitative analysis.
AACSB: Analytical thinking
Classification: Application

27) From an implementation standpoint, a "good" solution to the right problem is much better than an "optimal" solution to a correct problem.
Answer: FALSE
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Application

28) One simplifying assumption in inventory modeling is that demand is usually assumed to be zero.
Answer: FALSE
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Application

29) When specifying a formulation for an inventory model where demand is uncertain, is to make use of probability distributions to model the demand variable.
Answer: TRUE
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Application

30) Sensitivity analysis helps determine the impact of minor changes in input data on the solution.
Answer: TRUE
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Application

31) At its core, the most important skill for problem solving is communication skills.
Answer: FALSE
Diff: Moderate
Topic: DEVELOPING SKILLS FOR YOUR CAREER
LO: 1.8: Recognize the employable skill sets that are covered in this text.
AACSB: Analytical thinking
Classification: Application

1.2 Multiple Choice

1) Which of the following terms is interchangeable with quantitative analysis?
A) management science
B) economics
C) financial analysis
D) statistics
Answer: A
Diff: Easy
Topic: WHAT IS QUANTITATIVE ANALYSIS?
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

2) Operations Research is known as
A) the science of numerical analysis.
B) the science of sensitivity analysis.
C) the science of better.
D) the science of modeling.
Answer: C
Diff: Moderate
Topic: INTRODUCTION
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

3) Who is credited with pioneering the principles of the scientific approach to management?
A) Adam Smith
B) Henri Fayol
C) John R. Locke
D) Frederick W. Taylor
Answer: D
Diff: Moderate
Topic: WHAT IS QUANTITATIVE ANALYSIS?
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

4) Which of the following techniques involves the study and consolidation of historical data for a business and an industry?
A) descriptive analytics
B) prescriptive analytics
C) predictive analytics
D) management science
Answer: A
Diff: Moderate
Topic: BUSINESS ANALYTICS
LO: 1.2: Describe the three categories of business analytics.
AACSB: Analytical thinking
Classification: Concept

5) The study of business analytics involves the use of large datasets known as
A) predictive data.
B) trivial data.
C) big data.
D) prescriptive data.
Answer: C
Diff: Moderate
Topic: BUSINESS ANALYTICS
LO: 1.2: Describe the three categories of business analytics.
AACSB: Analytical thinking
Classification: Concept

6) Which of the following techniques involves the study and consolidation of historical data for a business and an industry and helps a company measure how is has performed in the past and how it is performing now?
A) descriptive analytics
B) prescriptive analytics
C) predictive analytics
D) quantitative analysis
Answer: A
Diff: Moderate
Topic: BUSINESS ANALYTICS
LO: 1.2: Describe the three categories of business analytics.
AACSB: Analytical thinking
Classification: Concept

7) A(n) ________ is a representation of reality or a real-life situation.
A) objective
B) model
C) analysis
D) algorithm
Answer: B
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

8) A measurable quantity that may vary, or is subject to change, and can be controlled is known as a(n)
A) decision variable.
B) algorithm.
C) parameter.
D) solution.
Answer: A
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

9) A set of logical and mathematical operations performed in a specific sequence is called a(n)
A) complete enumeration.
B) diagnostic analysis.
C) algorithm.
D) objective.
Answer: C
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

10) The ability to examine the variability of a solution due to changes in the formulation of a problem is an important part of the analysis of the results. This type of analysis is called ________ analysis.
A) sensitivity
B) implicit
C) normal
D) scale
Answer: A
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

11) Which of the following is <u>the first step</u> in the quantitative analysis approach?
A) Developing a Model
B) Developing a Solution
C) Defining the Problem
D) Acquiring Input Data
Answer: C
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

12) The condition of improper data yielding misleading results is referred to as
A) garbage in, garbage out.
B) break-even point.
C) uncontrollable variable.
D) postoptimality.
Answer: A
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

13) Expressing profits through the relationship among unit price, fixed costs, and variable costs is an example of
A) a sensitivity analysis model.
B) a quantitative analysis model.
C) a postoptimality relationship.
D) a parameter specification model.
Answer: B
Diff: Easy
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Concept

14) The widespread applicability of operations research methods to business followed which war?
A) the U.S. Civil War
B) World War I
C) World War II
D) the Korean War
Answer: C
Diff: Moderate
Topic: WHAT IS QUANTITATIVE ANALYSIS?
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

15) A measurable quantity that is inherent in the problem is called a(n)
A) decision variable.
B) uncontrollable variable.
C) algorithm.
D) parameter.
Answer: D
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

16) Trying various approaches and picking the one that results in the best decision is called
A) the trial-and-error method.
B) incomplete enumeration.
C) complete enumeration.
D) algorithmic approximation.
Answer: A
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

17) Models that involve risk or chance are
A) probabilistic models.
B) postoptimality models.
C) deterministic models.
D) MIS models.
Answer: A
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Concept

18) If input data are accurate to three significant digits, then the solution results can be accurate to how many significant digits?
A) one
B) two
C) three
D) four
Answer: C
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

19) Postoptimality analysis is most closely associated with
A) collecting input data.
B) developing a model.
C) sensitivity analysis.
D) writing a computer program.
Answer: C
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

20) The break-even point is an example of a
A) postoptimality model.
B) quantitative analysis model.
C) schematic model.
D) sensitivity analysis model.
Answer: B
Diff: Easy
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Concept

21) A controllable variable is also called a
A) parameter.
B) decision variable.
C) mathematical model.
D) measurable quantity.
Answer: B
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

22) Evaluating all possible values of a variable in a model is called
A) trial and error.
B) complete enumeration.
C) an algorithm.
D) variablization.
Answer: B
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

23) What is the formula for the break-even point of a simple profit model?
A) Fixed Cost / Variable Cost Per Unit
B) (Selling Price Per Unit - Variable Cost Per Unit) / Fixed Cost
C) Fixed Cost / (Selling Price Per Unit - Variable Cost Per Unit)
D) Fixed Cost / (Variable Cost Per Unit - Selling Price Per Unit)
Answer: C
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Concept

24) The value of the fixed cost when computing the break-even point for a simple profit model represents a(n)
A) decision variable.
B) uncontrollable variable.
C) parameter.
D) constant.
Answer: C
Diff: Difficult
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Concept

25) Which Excel feature is an optimization technique that can maximize or minimize a quantity given a set of limitations or constraints?
A) Optimizer
B) Goal Seek
C) Analysis Tool-Pak
D) Solver
Answer: D
Diff: Difficult
Topic: THE ROLE OF COMPUTERS AND SPREADSHEET MODELS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.5: Use computers and spreadsheet models to perform quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

26) Which Excel feature allows the user to specify a target or goal and the variable that is desired to change in order to achieve that goal?
A) Solver
B) Goal Search
C) Target Search
D) Goal Seek
Answer: D
Diff: Difficult
Topic: THE ROLE OF COMPUTERS AND SPREADSHEET MODELS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.5: Use computers and spreadsheet models to perform quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

27) All of the following are real computer applications that perform quantitative analysis except
A) Solver in Excel.
B) Goal Seek in Excel.
C) Excel QM.
D) QA for Windows.
Answer: D
Diff: Moderate
Topic: THE ROLE OF COMPUTERS AND SPREADSHEET MODELS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.5: Use computers and spreadsheet models to perform quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

28) As one attempts to develop a model, which of the following problems might she encounter?
A) The assumptions made in order to apply the model will not be violated.
B) The model will provide an array of possible answers to the question the analyst poses.
C) Everyone will understand the problem in the same way.
D) Accurate data will not be available for the model.
Answer: D
Diff: Easy
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

29) Which of the following is a picture, drawing, or chart of reality?
A) scale model
B) physical model
C) mathematical model
D) schematic model
Answer: D
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

30) Which of the following is <u>not</u> considered a possible problem in the quantitative analysis approach?
A) validity of the data
B) lack of commitment
C) resistance to change
D) subjective solutions
Answer: D
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

31) The quantitative analysis approach begins with
A) data.
B) analysis.
C) models.
D) statistics.
Answer: A
Diff: Easy
Topic: WHAT IS QUANTITATIVE ANALYSIS?
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

32) The popularity of the quantitative analysis approach is largely attributed to
A) big data.
B) computers.
C) the deep web.
D) the worldwide web.
Answer: B
Diff: Moderate
Topic: WHAT IS QUANTITATIVE ANALYSIS?
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

33) What element contributes to automation of the decision-making process?
A) predictive analytics being greater than prescriptive analytics
B) prescriptive analytics being greater than predictive analytics
C) lack of qualitative factors
D) presence of both production and operations management
Answer: C
Diff: Moderate
Topic: WHAT IS QUANTITATIVE ANALYSIS?
LO: 1.1: Describe the quantitative analysis approach and understand how to apply it to a real situation.
AACSB: Analytical thinking
Classification: Concept

34) Which of the following techniques involves forecasting models such as statistical and mathematical models?
A) descriptive analytics
B) prescriptive analytics
C) predictive analytics
D) quantitative analysis
Answer: C
Diff: Moderate
Topic: BUSINESS ANALYTICS
LO: 1.2: Describe the three categories of business analytics.
AACSB: Analytical thinking
Classification: Concept

35) Which of these techniques would be considered descriptive analytics?
A) statistical quality control
B) economic order quantity models
C) linear programming
D) simulation
Answer: A
Diff: Difficult
Topic: BUSINESS ANALYTICS
LO: 1.2: Describe the three categories of business analytics.
AACSB: Analytical thinking
Classification: Concept

36) Which of these pairs of terms is in the order of greater scope to smaller scope?
A) business analytics – predictive analytics
B) predictive analytics – prescriptive analytics
C) prescriptive analytics – descriptive analytics
D) descriptive analytics – business analytics
Answer: A
Diff: Difficult
Topic: BUSINESS ANALYTICS
LO: 1.2: Describe the three categories of business analytics.
AACSB: Analytical thinking
Classification: Concept

37) Mickey built his lemonade stand out of $15,000 worth of plywood and paint. He sells a glass of lemonade for $5 and uses $1.25 of lemons, sugar and water to make his product. How many glasses of lemonade does he need to sell to break even?
A) 6000
B) 4000
C) 1500
D) 5750
Answer: B
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

38) Mickey built his lemonade stand out of $75,000 worth of plywood and paint. He sells a glass of lemonade for $30 and uses $1.25 of lemons, sugar and water to make his product. How many glasses of lemonade does he need to sell to break even?
A) 2608
B) 2544
C) 2396
D) 2434
Answer: A
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

39) Emily built their lemonade stand out of $500 worth of plywood and paint. She uses $2 of lemons, sugar and water to make the product. What does the selling price of the lemonade need to be to break even at 150 glasses?
A) $5.33
B) $6.25
C) $4.27
D) $10.25
Answer: A
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

40) KJ built his taco truck out of $75,000,000 worth of titanium and duct tape. He uses $5.25 of ground beef, $2.25 of cheese, and $1.50 of lettuce in each taco. If he sells tacos at $10 each, what is his break-even quantity?
A) 1,250,000
B) 15,000,000
C) 75,000,000
D) 750,000,000
Answer: C
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

41) KJ built his taco truck out of $75,000,000 worth of titanium and duct tape. He uses $2.25 of ground beef, $0.75 of cheese, and $0.25 of lettuce in each taco. If he sells tacos at $10 each, what is his break-even quantity?
A) 11,111,111
B) 22,222,222
C) 40,000,000
D) 400,000
Answer: A
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

42) Kim bought a food truck for $60,000. She uses $2.50 of vegetables and beans, $1.50 of best quality organic cheese, and $1 of tofu in each burrito. If she sells burrito at $10 each, what is their break-even quantity?
A) 10,000
B) 15,000
C) 12,000
D) 8,000
Answer: C
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

43) Kim bought a food truck for $75,000. She uses $3 of vegetables and beans, $1.50 of best quality organic cheese, and $0.75 of tofu in each burrito. At what price will she need to sell each burrito to break-even at a volume of 10,000 burritos?
A) $12.75
B) $10.50
C) $9.25
D) $15
Answer: A
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

44) Which feature in Microsoft Excel can be commonly applied for break-even analysis?
A) Pivot Tables
B) Goal Seek
C) STDEV function
D) Tukey method
Answer: B
Diff: Moderate
Topic: THE ROLE OF COMPUTERS AND SPREADSHEET MODELS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.5: Use computers and spreadsheet models to perform quantitative analysis.
AACSB: Analytical thinking
Classification: Application

45) Shirley's time sitting at her desk was interrupted when two managers burst into her office with a particularly vicious problem – customer service ratings had been falling over the last quarter. The human resources manager explained that rewarding high performing workers with bonuses would improve customer service. The operations manager countered, noting that there was no way to identify high performing workers because different customer problems required radically different approaches by the workers. What roadblock is Shirley confronted with while trying to identify the true problem?
A) conflicting viewpoints
B) impact on other departments
C) beginning assumptions
D) solution outdated
Answer: A
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

46) Shirley's time sitting at her desk was interrupted when the human resources manager burst into her office with a particularly nasty problem – customer service ratings had been falling over the last quarter. The human resources manager explained that rewarding high performing workers with bonuses would improve customer service. Shirley agreed and implemented a bonus scale that initially seemed effective, however the increased payout for bonuses meant there was less money available for offsite storage used by the IT division. Sadly, their system backup tapes would have to be held at the same location as their main system. What roadblock is Shirley confronted with while trying to identify the true problem?
A) conflicting viewpoints
B) impact on other departments
C) beginning assumptions
D) solution outdated
Answer: B
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

47) Shirley's time sitting at her desk was interrupted when the human resources manager burst into her office with a particularly pernicious problem – customer service ratings had been falling over the last quarter. The human resources manager explained that salaries were too low. Shirley reasoned that if salaries were too low, she could simply institute an across the board 50% increase for all employees. "That was easy," Shirley thought to herself as she returned to her office to begin shopping for a new car. What roadblock is Shirley confronted with while trying to identify the true problem?
A) conflicting viewpoints
B) impact on other departments
C) beginning assumptions
D) solution outdated
Answer: C
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

48) Shirley's time sitting at her desk was interrupted when the human resources manager burst into her office with a particularly vexing problem – customer service ratings had been falling over the last quarter. The human resources manager explained that they were behind on training programs for their workers. Shirley assembled a task force consisting of the brightest minds in the organization and gave them a charge – to look at the previous quarter's issues and to develop training courses over the next 48 months to solve those issues. What roadblock is Shirley confronted with while trying to identify the true problem?
A) conflicting viewpoints
B) impact on other departments
C) beginning assumptions
D) solution outdated
Answer: D
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

49) As a general rule, complex problems require
A) complex models.
B) mathematical models.
C) ending assumptions.
D) accounting data.
Answer: A
Diff: Easy
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

50) Most data generated in a firm come from
A) customer comment/feedback cards.
B) accounting reports.
C) information technology.
D) the worldwide web.
Answer: B
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

51) The analyst waited anxiously at his computer and finally the answer appeared – he would need 57 chickens to fund his retirement plan. Still, he had some nagging doubts about some assumptions he had made and he wondered how much faith he should put into the answer of 57. In order to test how reliable the figure 57 is, the analyst should conduct
A) simulation.
B) shock tests.
C) sensitivity analysis.
D) focus groups.
Answer: C
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

52) The analyst waited anxiously at his computer and finally the answer appeared – he would need 57 chickens to fund his retirement plan. Still, he had some nagging doubts about some assumptions he had made and he wondered how much faith he should put into the answer of 57. In order to test how reliable the figure 57 is, the analyst varied a number of parameters in the model and ran multiple tests for each set of input data. Each time, the model suggested he acquire 57 chickens – sometimes one more or one less, but never more than one chicken either side of 57. We could describe the solution as
A) correct.
B) static.
C) parametric.
D) robust.
Answer: D
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

53) The authors cite resistance to quantitative analysis as a major reason for lack of adoption. According to a Swedish study, what percentage of projects proposed by quantitative analysts was actually implemented?
A) 40%
B) 15%
C) 65%
D) 80%
Answer: A
Diff: Moderate
Topic: IMPLEMENTATION—NOT JUST THE FINAL STEP
LO: 1.7: Recognize implementation concerns of quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

54) The authors cite resistance to quantitative analysis as a major reason for lack of adoption. According to a Swedish study, what percentage of projects proposed by top management was actually implemented?
A) 58%
B) 98%
C) 78%
D) 38%
Answer: B
Diff: Moderate
Topic: IMPLEMENTATION—NOT JUST THE FINAL STEP
LO: 1.7: Recognize implementation concerns of quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

55) Successful implementation of a solution developed via quantitative analysis requires that the analyst
A) tell the users exactly what to do.
B) train the users in the theoretical underpinnings of the models considered.
C) work with users and take their feelings into account.
D) train the users in the theoretical underpinnings of the best model.
Answer: C
Diff: Moderate
Topic: IMPLEMENTATION—NOT JUST THE FINAL STEP
LO: 1.7: Recognize implementation concerns of quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

56) If the quantitative analyst is not an integral element of the department facing the problem
A) the solution is usually not accepted and implemented.
B) analyst morale is usually higher.
C) departmental morale is improved.
D) sometimes the modeling activity becomes an end to itself.
Answer: D
Diff: Moderate
Topic: IMPLEMENTATION—NOT JUST THE FINAL STEP
LO: 1.7: Recognize implementation concerns of quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

57) At its core, what is the most important skill for problem solving?
A) data literacy
B) communication skills
C) critical thinking
D) information technology
Answer: C
Diff: Moderate
Topic: DEVELOPING SKILLS FOR YOUR CAREER
LO: 1.8: Recognize the employable skill sets that are covered in this text.
AACSB: Analytical thinking
Classification: Application

58) The ability to access, assess, interpret, manipulate and summarize data is
A) data literacy.
B) communication skills.
C) critical thinking.
D) information technology.
Answer: A
Diff: Easy
Topic: DEVELOPING SKILLS FOR YOUR CAREER
LO: 1.8: Recognize the employable skill sets that are covered in this text.
AACSB: Analytical thinking
Classification: Application

1.3 Essay

1) Identify the steps of the quantitative analysis approach.
Answer: (1) Defining the Problem, (2) Developing a Model, (3) Acquiring Input Data, (4) Developing a Solution, (5) Testing the Solution, (6) Analyzing the Results, and (7) Implementing the Results
Diff: Moderate
Topic: THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.3: Describe the use of modeling in quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

2) What are the three categories of business analytics?
Answer: (1) Descriptive analytics, (2) Predictive Analytics, and (3) Prescriptive analytics
Diff: Moderate
Topic: BUSINESS ANALYTICS
LO: 1.2: Describe the three categories of business analytics.
AACSB: Analytical thinking
Classification: Concept

3) Identify some possible problems in the quantitative analysis approach.
Answer: Answers will vary but may include: conflicting viewpoints, ignoring the impact on other departments, poor assumptions, outdated solutions, difficulty matching the textbook approach, trading off model complexity with ease of understanding, poor input data, hard-to-understand mathematics, and having only one answer is limiting.
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

4) Identify three potential problems with people (two with management and one with the quantitative analysts themselves) that may hinder successful implementation of a quantitative model.
Answer: Answers will vary but may include: (1) lack of commitment by management, (2) resistance to change by management, and (3) lack of commitment by quantitative analysts.
Diff: Moderate
Topic: IMPLEMENTATION—NOT JUST THE FINAL STEP
LO: 1.7: Recognize implementation concerns of quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

5) How can an analyst overcome the threats to successful implementation of a quantitative model?
Answer: Answers will vary; one solution is for analysts to work with users and take their feelings into account instead of telling them what to do.
Diff: Moderate
Topic: IMPLEMENTATION—NOT JUST THE FINAL STEP
LO: 1.7: Recognize implementation concerns of quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

A nutrition enthusiast is weighing the pros and cons of keeping a few chickens in his backyard, reasoning that eggs that he doesn't eat he can sell to friends and neighbors. One trip to his local hardware store later, he returns with $560 worth of lumber, paint and carpet and a weekend of fun assembling a chicken coop. He starts small, and invests another $20 in two barred rock and two Buff Orpington hens. A 50-pound sack of layer pellets costs $12 and water is essentially free. Much to his dismay, his doctor tells him his cholesterol is high, so he elects to sell all of his eggs to raise money for a popular statin medication. It takes the four hens a month to work their way through the sack of feed and during that time he collects 84 eggs, which he sells for $5 per dozen.

6) What is his break-even point in dozens?
Answer: 580/(5 - 1.7142) = 176.52 dozen
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

7) What is his profit the first month?
Answer: $5 × 7 - $580 - $12 = -$557
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

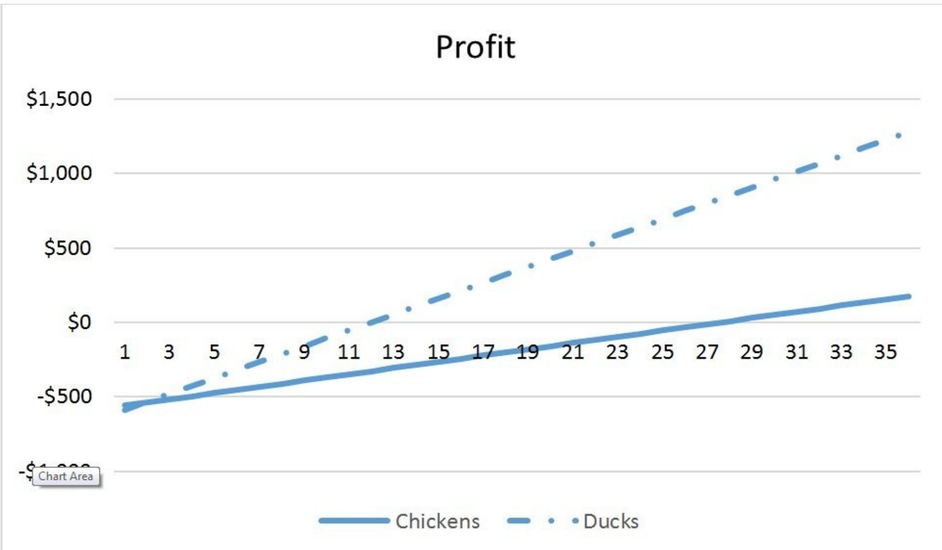
8) How many months pass before he realizes a profit from this enterprise?
Answer: Revenue is $35 per month and expenses are $12, so his monthly profit is $23, which must offset his initial investment of $580 in hardware and chickens. 580/23 = 25.22 so approximately 25 (and 6.6 days) months pass before he realizes a profit from this business.
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

An urban farmer is pondering whether to invest in ducks or chickens to raise for eggs that she plans to sell to friends and neighbors. The materials needed to make a good henhouse and chicken run will cost $560. A simple setup for ducks will be slightly higher at $620 since they require water at all times. Ducklings and chicks are about the same in price – she figures that $20 will be needed to get four females of either species. A 50-pound sack of layer pellets costs $14 and water is essentially free. It will take the four hens a month to work their way through the sack of feed and during that time she can collect 84 eggs, which she plans to sell for $5 per dozen. Ducks eat at the same rate but lay eggs at a higher rate – in one month she believes she can collect 108 eggs. Duck eggs are also more highly prized by consumers; the urban farmer believes they will sell for $6 per dozen.

9) What is the break-even point for duck eggs? What is the break-even point for chicken eggs?
Answer: Chicken eggs have a variable cost of 14/7 = $2 per dozen and break-even of 580/(5 - 2) = 193.33 dozen. Duck eggs have a variable cost of 14/9 = $1.56 per dozen and a break-even of 640/(6 - 1.56) = 144 dozen.
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

10) Suppose she decides to get both ducks and chickens, each receiving their own area in her backyard with separate housing. How many months after startup (assume that she buys mature birds that begin laying immediately) will profit from chickens equal profit from ducks?
Answer: Chicken profit can be modeled as $35 less $14 for feed and the initial cost of $580 while duck profit is $54 less $14 for feed and an initial cost of $640. Setting these equal yields $21x - $580 = $40x - $640, so at 3.16 months, the profit will be identical.
Diff: Difficult
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

11) Suppose she decides to get both ducks and chickens, each receiving their own area in her backyard with separate housing. Plot profit lines for both ventures over a three-year period and determine a range of output for which each venture is superior.
Answer: Chicken profit can be modeled as $35 less $14 for feed and the initial cost of $580 while duck profit is $54 less $14 for feed and an initial cost of $640. The chickens are initially more profitable (operate at a lower loss) but after 3.16 months the ducks are more profitable and continue as the months progress.



Diff: Difficult
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

12) Suppose she decides to get both ducks and chickens, each receiving their own area in her backyard with separate housing. How much should the farmer charge for a dozen chicken eggs in order to make the profit from the chicken egg venture equal to the profit of the duck egg venture at the 12 month point of her operation? (Assume that she buys mature birds that begin laying immediately.)
Answer: She will need to charge $7 per dozen chicken eggs. Duck egg profit at month 12 is -$160.
Diff: Difficult
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

13) Suppose she decides to get both ducks and chickens, each receiving their own area in her backyard with separate housing. How much should the farmer charge for a dozen chicken eggs in order to make the chicken egg venture break even at month 12? (Assume that she buys mature birds that begin laying immediately.)
Answer: She will need to charge $8.90 per dozen chicken eggs.
Diff: Difficult
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

14) Suppose she decides to get both ducks and chickens, each receiving their own area in her backyard with separate housing. How much should the farmer charge for a dozen duck eggs in order to make the duck egg venture break even at month 12? (Assume that she buys mature birds that begin laying immediately.)
Answer: She will need to charge $7.00 per dozen duck eggs.
Diff: Moderate
Topic: HOW TO DEVELOP A QUANTITATIVE ANALYSIS MODEL
LO: 1.4: Prepare a quantitative analysis model.
AACSB: Analytical thinking
Classification: Application

15) What is meant by the term *data validity*?
Answer: Just as a valid model is one that is accurate and correctly represents the system under analysis, valid data is accurate and measures what it is represented as measuring.
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

16) Where is data usually collected at a firm and what problem arises from this for business analysts?
Answer: Most data generated in a firm come from basic accounting reports. Frequently quantitative analysts tackling a problem need to collect data on costs not relevant to routine accounting analysis. If they ask for such data, they may be shocked to find that the data were simply never collected.
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

17) What are some issues with an analyst's use of mathematical models in an organization?
Answer: The first concern in developing solutions is that although the mathematical models we use may be complex and powerful, they may not be completely understood. Fancy solutions to problems may have faulty logic or data. The aura of mathematics often causes managers to remain silent when they should be critical. Complex models can give results that are not intuitive and therefore are rejected by managers.
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept

18) Once a quantitative solution has been found to a business problem, what are the considerations in implementing it?
Answer: Once a solution has been tested, the results must be analyzed in terms of how they will affect the total organization. You should be aware that even small changes in organizations are often difficult to bring about. If the results indicate large changes in organization policy, the quantitative analyst can expect resistance. In analyzing the results, the analyst should ascertain who must change and by how much, if the people who must change will be better or worse off, and who has the power to direct the change.
Diff: Moderate
Topic: POSSIBLE PROBLEMS IN THE QUANTITATIVE ANALYSIS APPROACH
LO: 1.6: Recognize possible problems in using quantitative analysis.
AACSB: Analytical thinking
Classification: Concept