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Chapter 01

1. The essence of decision analysis is:
- breaking down complex situations into manageable elements.
 - choosing the best course of action among alternatives.
 - finding the root cause of why something has gone wrong.
 - thinking ahead to avoid negative consequences.

ANSWER: b

2. Why would someone wish to use a spreadsheet model?
- To implement a computer model.
 - Because spreadsheets are convenient.
 - To analyze decision alternatives.
 - All of these.

ANSWER: d

3. Which of the following fields of study is defined in Chapter One as the one that "uses computers, statistics, and mathematics to solve business problems"?
- Accounting
 - Information systems
 - Business analytics
 - Scientific management

ANSWER: c

4. In a decision-making problem, anchoring effects occur when
- decision makers are tied too closely to previous decisions.
 - organizations refuse to consider new alternatives.
 - a seemingly trivial factor serves as a starting point for estimations.
 - a person in a position of authority exerts his or her opinion very forcefully.

ANSWER: c

5. Virtually everyone who uses a spreadsheet today for model building and decision making
- is a practitioner of business analytics.
 - possesses an advanced knowledge of mathematics and computer programming languages.
 - is a CPA.
 - is in a position to influence decision makers.

ANSWER: a

6. Which of the following statements is true of using models in problem solving and decision analysis?
- It is a fairly new idea.
 - It is required in order to find good solutions.
 - It is something everyone has done before.
 - It is tied to the use of computers.

ANSWER: c

7. A road map is an example of

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- a. a mathematical model.
- b. a mental model.
- c. a physical model.
- d. a visual model.

ANSWER: d

8. The textbook figure of the problem-solving process is an example of a

- a. mental model.
- b. prescriptive model.
- c. graphical model.
- d. visual model.

ANSWER: d

9. Which of the following is most likely to be used when faced with the decision of how to arrange furniture in a room?

- a. Mathematical model
- b. Mental model
- c. Physical model
- d. Visual model

ANSWER: b

10. To illustrate how a complex system will be built, an engineer will likely use a

- a. mathematical model.
- b. mental model.
- c. physical model.
- d. visual model.

ANSWER: d

11. Which of the following is the type of model used throughout this textbook?

- a. Mathematical model
- b. Mental model
- c. Physical model
- d. Visual model

ANSWER: a

12. The best models

- a. accurately reflect relevant characteristics of the real-world object or decision.
- b. are mathematical models.
- c. replicate all aspects of the real-world object or decision.
- d. replicate the characteristics of a component in isolation from the rest of the system.

ANSWER: a

13. A mathematical model is considered to be "valid" when

- a. it accurately represents the relevant characteristics of the object or decision.
- b. it has passed a validation test.

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- c. it replicates all aspects of the object or decision.
- d. the left-hand and right-hand sides of expressions are equal.

ANSWER: a

14. All of the following are benefits of modeling except:

- a. Modeling delivers needed information on a more timely basis.
- b. Modeling finds the right answers to incorrect or flawed problem statements.
- c. Modeling is helpful in examining things that would be impossible to do in reality.
- d. Modeling is less expensive than implementing several alternative solutions.

ANSWER: b

15. Better decision making due to using a modeling process is achieved due to

- a. the interaction with the spreadsheet.
- b. the visualization of the system being studied.
- c. the insight gained through the process.
- d. the timeliness of the results obtained.

ANSWER: c

16. In this text we use the term "mathematics" to encompass

- i. familiar elements of math such as algebra.
 - ii. logic.
-
- a. i only
 - b. ii only
 - c. Both i and ii
 - d. Neither i nor ii

ANSWER: c

17. The specification or description of the relationship between the dependent and independent variables is generally called

- a. a constraint.
- b. a declaration.
- c. a function.
- d. a mathematical model.

ANSWER: c

18. Variables are termed independent when they satisfy which of the following?

- a. The function value depends upon their values.
- b. The decision maker has no control over them.
- c. The variables have no relationship to one another.
- d. The variable is described as an output of the spreadsheet model.

ANSWER: a

19. In the following expression, which is (are) the dependent variable(s)?

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PROFIT = REVENUE – EXPENSES

- a. Profit
- b. Revenue
- c. Expenses
- d. (b) and (c)

ANSWER: a

20. In a spreadsheet, input cells correspond conceptually to

- a. dependent variables.
- b. functions.
- c. independent variables.
- d. output cells.

ANSWER: c

21. The categories of modeling techniques presented in this book include all of the following except:

- a. descriptive models.
- b. predictive models.
- c. prescriptive models.
- d. preventive models.

ANSWER: d

22. Consider the spreadsheet model shown in the figure below. This is an example of a

	A	B	C
1			
2			
3	Purchase price	\$32,500	
4	less:		
5	Down payment	\$ 6,500	
6	Trade-in	\$ 4,000	
7	Amount financed	\$22,000	
8			
9	Term of loan	5 years	
10			
11	Annual interest rate	11.25%	
12			
13	Monthly payment	\$481.08	
14			

- a. descriptive model.
- b. predictive model.

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- c. prescriptive model.
- d. preventive model.

ANSWER: c

23. Solutions to which of the following categories of modeling techniques indicate a course of action to the decision maker?

- a. Descriptive models
- b. Predictive models
- c. Prescriptive models
- d. Preventive models

ANSWER: c

24. In which of the following categories of modeling techniques do the independent variables have unknown or uncertain values or coefficients?

- a. Descriptive models
- b. Predictive models
- c. Prescriptive models
- d. Probabilistic models

ANSWER: a

25. In which of the following categories of modeling techniques are the specifications of the relationships between dependent and independent variables unknown or ill-defined?

- a. Descriptive models
- b. Open models
- c. Predictive models
- d. Prescriptive models

ANSWER: c

26. Which of the following categories of modeling techniques includes optimization techniques?

- a. Capitalistic models
- b. Descriptive models
- c. Predictive models
- d. Prescriptive models

ANSWER: d

27. Which of the following categories of modeling techniques addresses uncertainty in the values of the independent variables?

- a. Descriptive models
- b. Predictive models
- c. Prescriptive models
- d. Scale models

ANSWER: a

28. Which of the following categories of modeling techniques involves determining the value of a dependent variable based on specific values of independent variables?

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- a. Biased models.
- b. Descriptive models.
- c. Predictive models.
- d. Prescriptive models.

ANSWER: c

29. To be effective, a modeler must
- a. be an effective presenter of results.
 - b. collect the proper input data for the model.
 - c. understand how modeling fits into the problem-solving process.
 - d. apply the correct modeling technique.

ANSWER: c

30. Identifying the real problems faced by the decision maker
- a. is not important since the decision maker has already defined the problem.
 - b. requires insight, some imagination, time and a good bit of detective work.
 - c. first requires a well-defined problem statement.
 - d. will lead to developing the best model.

ANSWER: b

31. The ultimate goal of the problem identification step of the problem-solving process is
- a. collecting lots of information.
 - b. helping the decision maker realize there is a problem.
 - c. identifying the root problem or problems causing the mess.
 - d. convincing the decision maker the mess is really a problem that can be solved.

ANSWER: c

32. Which step of the problem-solving process is considered the most important?
- a. Identify problem.
 - b. Analyze model.
 - c. Test results.
 - d. Implement solution.

ANSWER: a

33. Which of the following steps in the problem-solving process is most likely to incur resistance from people affected by the proposed solution?
- a. Formulate model
 - b. Use model to analyze problem
 - c. Test results
 - d. Implement solution

ANSWER: d

34. There are a variety of problems a manager might face. While presenting and defending your approach, how would you complete this thought?

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Several different modeling techniques are available to solve managerial decision problems,

- a. the wrong choice of modeling technique is a common source of implementation difficulties.
- b. students should develop a strong preference and expertise in one technique so when faced with problems as managers they can formulate them as a model that can be solved by their favorite technique.
- c. fundamental characteristics of the problem guide the selection of an appropriate modeling technique.
- d. most problems faced by managers are fundamentally the same.

ANSWER: c

35. In which step of the problem-solving process is the main focus to generate and evaluate alternatives?

- a. Identify problem
- b. Formulate model
- c. Use model to analyze problem
- d. Test results

ANSWER: c

36. Which of the following is true of "What if?" analysis?

- a. A well-designed spreadsheet facilitates "What if?" analysis.
- b. It is not very useful when working with non mathematical models.
- c. "What if?" analysis is an efficient optimization technique.
- d. "What if?" analysis is useful in creating a well-defined problem statement.

ANSWER: a

37. Beneficial uses of the testing process include all of the following except:

- a. double checking the validity the model.
- b. finding that some important assumption has been left out of the model.
- c. giving no new insights into the nature of the problem.
- d. improving solutions after the implementation step.

ANSWER: d

38. Implementing solutions to problems involves people and change. Which of the following is a suggested approach to effectively implement solutions?

- a. Decision-making authority centralized to those who have specialized training in decision making.
- b. Involve anyone affected by the decision in all steps of the problem-solving process.
- c. Making decisions according to majority vote.
- d. More skillful communication of management decisions.

ANSWER: b

39. Which of the following problem-solving steps is often considered the most difficult?

- a. Identify the problem.
- b. Analyze the model.
- c. Test results.
- d. Implement the solution.

ANSWER: d

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40. If we do not identify the correct problem, the best we can hope for is:

- a. wasted time and effort.
- b. useful experience in problem definition efforts.
- c. a descriptive model.
- d. the right answer to the wrong question.

ANSWER: d

41. Chapter One discussed all of the following except:

- a. how models of decision problems differ in a number of important characteristics.
- b. how spreadsheet modeling and analysis fit into the problem-solving process.
- c. how spreadsheet models of decision problems can be used to analyze the consequences of possible courses of action.
- d. how to implement a problem formulation as a spreadsheet model.

ANSWER: d

42. The Chapter One "The World of Business Analytics" case reading offers the CEO alternatives to start the OR/MS collaboration process. All the following are alternatives offered except:

- a. Require the OR/MS group to save their yearly salary in every study.
- b. Use OR/MS personnel as consultants.
- c. Hire some OR/MS professionals and give them a problem to work.
- d. Institute more participation from OR analysts.

ANSWER: a

43. The main point brought forward in the Chapter One "The World of Business Analytics" case reading is:

- a. At a cocktail party, it is more efficient to divide the dip into several bowls and place them around the room.
- b. Competitive rivalry between IS and OR/MS groups can be turned to advantage when tackling business process re-engineering projects.
- c. Information system analysts trained in management science can help turn ordinary information systems into money-saving decision-support systems.
- d. OR/MS professionals lack communication skills and tend to focus on "rigor without relevance".

ANSWER: c

44. Operations Research got its start

- a. during World War II.
- b. with the first Univac computers in the early 1950's.
- c. from roots in Operations Management.
- d. from Frederick Taylor's Scientific Management.

ANSWER: a

45. The Chapter One "The World of Business Analytics" case reading discusses the relationship between OR/MS and IS professionals. Which of the following statements is NOT true?

- a. OR/MS analysts need IS professionals' data for their models.
- b. OR/MS analysts need to take many of the IS customers.
- c. The IS professional cannot use OR/MS tools in their applications.

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- d. The IS tools can start to recommend solutions using OR/MS skills.

ANSWER: d

46. The goal of the modeling approach to problem solving is to

- a. help individuals make good decisions.
- b. ensure optimality of decisions.
- c. determine a set of optimal decisions.
- d. determine feasibility of decisions.

ANSWER: a

47. A situation when decision quality is good and the resulting outcome quality is good is referred to as

- a. pure luck.
- b. deserved success.
- c. dumb luck.
- d. poetic justice.

ANSWER: b

48. A factor that plays a role in determining whether a good or bad outcome occurs is called

- a. luck.
- b. intuition.
- c. certainty.
- d. predictability.

ANSWER: a

49. Consistently using a structured, model based process to make decisions

- a. should produce good outcomes more frequently.
- b. is less effective than making decisions in a haphazard manner.
- c. is evidence that luck plays an important role in decision making.
- d. always leads to well-deserved success in managerial decision making.

ANSWER: a

50. A purely rational decision maker should

- a. consistently select the same alternative, regardless of how the problem is framed.
- b. disregard the consequences of his/her choices.
- c. always select optimal action.
- d. allow emotions influence the decision.

ANSWER: a

51. Two of the effects associated with decision problems are:

- a. anchoring and framing.
- b. anchoring and loading.
- c. framing and complacency.
- d. anchoring and luck

ANSWER: a

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52. Anchoring occurs when:

- a. a trivial factor is used as a starting point for estimations in a decision-making problem.
- b. a difficult factor is incorporated in a problem.
- c. an easy solution is obtained to a difficult problem.
- d. obtaining a solution is trivial.

ANSWER: a

53. Framing effect refers to:

- a. how a decision maker views the alternatives in a decision problem.
- b. how difficult the decision is.
- c. whether a software program can be used to obtain an optimal solution to a decision problem.
- d. how structured the decision problem is.

ANSWER: a

54. In a model $Y=f(x_1, x_2)$, Y is called:

- a. a dependent variable.
- b. an independent variable.
- c. a confounded variable.
- d. a convoluted variable.

ANSWER: a

55. In a model $Y=f(x_1, x_2)$, x_1 is called:

- a. an independent variable.
- b. a dependent variable.
- c. a confounded variable.
- d. a convoluted variable.

ANSWER: a

56. A valid model:

- a. accurately represents a decision problem being studied.
- b. produces an optimal solution.
- c. produces a good solution.
- d. produces a feasible solution.

ANSWER: a

57. In a decision-making framework presented in Chapter One, the term "poetic justice" refers to a situation when the following occur:

- a. Good decision quality and good outcome quality.
- b. Good decision quality and bad outcome quality.
- c. Bad decision quality and good outcome quality.
- d. Bad decision quality and bad outcome quality.

ANSWER: d

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58. A situation when decision quality is good and the resulting outcome quality is bad is referred to as
- a. pure luck.
 - b. deserved success.
 - c. bad luck.
 - d. poetic justice.

ANSWER: c

59. A situation when decision quality is bad and the resulting outcome quality is bad is referred to as
- a. pure luck.
 - b. deserved success.
 - c. bad luck.
 - d. poetic justice.

ANSWER: d

60. A situation when decision quality is bad and the resulting outcome quality is good is referred to as
- a. dumb luck.
 - b. deserved success.
 - c. bad luck.
 - d. poetic justice.

ANSWER: a

61. In a decision-making framework presented in Chapter One, the term "dumb luck" refers to a situation when the following occur:

- a. Good decision quality and good outcome quality.
- b. Good decision quality and bad outcome quality.
- c. Bad decision quality and good outcome quality.
- d. Bad decision quality and bad outcome quality.

ANSWER: c

62. In a decision-making framework presented in Chapter One, the term "deserved success" refers to a situation when the following occur:

- a. Good decision quality and good outcome quality.
- b. Good decision quality and bad outcome quality.
- c. Bad decision quality and good outcome quality.
- d. Bad decision quality and bad outcome quality.

ANSWER: a

63. In a decision-making framework presented in Chapter One, the term "bad luck" refers to a situation when the following occur:

- a. Good decision quality and good outcome quality.
- b. Good decision quality and bad outcome quality.
- c. Bad decision quality and good outcome quality.
- d. Bad decision quality and bad outcome quality.

ANSWER: b

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64. In which step of the problem-solving process is the concept of "probortunity" introduced?

- a. Identify problem
- b. Formulate model
- c. Use model to analyze problem
- d. Test results

ANSWER: a

65. In order to be useful to a decision-maker, decision problems need to be

- a. valid.
- b. analyzed.
- c. simplified.
- d. tested.

ANSWER: a

66. Business analytics focuses on

- a. identifying and leveraging business opportunities.
- b. formulating analytical models.
- c. using models to analyze problem.
- d. testing and implementing results.

ANSWER: a

67. Business opportunities can be viewed and formulated as

- a. decision problems.
- b. analytical models.
- c. empirical models.
- d. testing tools.

ANSWER: a

68. The notion that every problem is also an opportunity is reflected in the term

- a. probortunity.
- b. formulation.
- c. simulation.
- d. business opportunity.

ANSWER: a

69. In the textbook the words "opportunity" and "problem" are

- a. disjoint.
- b. used interchangeably.
- c. mutually exclusive.
- d. complementary.

ANSWER: b

70. The mathematical modeling approaches presented in the textbook

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- a. are a subset of the total problem-solving process.
- b. cover the entire spectrum of decision support approaches.
- c. are exhaustive.
- d. are complementary.

ANSWER: a

71. The concept of "proportunity" is
- a. the first step in the problem-solving process.
 - b. a decision support method.
 - c. part of testing results.
 - d. part of solution implementation.

ANSWER: a

72. If results testing produces unsatisfactory results
- a. the problem-solving process requires new formulation and implementation.
 - b. minor adjustments to the existing model.
 - c. checking the solution algorithm.
 - d. repeated testing.

ANSWER: a

73. The proliferation of powerful PCs and the development of easy-to-use electronic spreadsheets have made the tools of business analytics far more practical and available to a much larger audience.
- a. True
 - b. False

ANSWER: True

74. A mathematical model uses mathematical relationships to describe or represent an object or decision problem.
- a. True
 - b. False

ANSWER: True

75. Because they simplify reality, models are generally not helpful in examining things that would be impossible to do in reality.
- a. True
 - b. False

ANSWER: False

76. In spreadsheet modeling of a problem, there is no direct correspondence between mathematical equation and the spreadsheet.
- a. True
 - b. False

ANSWER: False

77. Defining a problem well will often make it much easier to solve.

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a. True

b. False

ANSWER: True

78. Humans usually do not make errors in estimation due to anchoring and framing effects.

a. True

b. False

ANSWER: False

79. Good decisions always result in good outcomes.

a. True

b. False

ANSWER: False

80. OR/MS specialists do not deliver business value.

a. True

b. False

ANSWER: False