Chapter 1  
introduction

# True-False Questions

1-1 Managers need to know the mathematical theory behind the techniques of management science so that they can lead management science teams.  
F

1-2 Spreadsheets allow many managers to conduct their own analyses in management science studies.  
T

1-3 Management science is a discipline that attempts to aid managerial decision making by applying a scientific approach to managerial problems that involve quantitative factors.  
T

1-4 The discovery of the simplex method in 1947 was the beginning of management science as a discipline.  
F

1-5 Managers make decisions based solely on the quantitative factors involved in the problem.  
F

1-6 A management science team will try to conduct a systematic investigation of a problem that includes careful data gathering, developing and testing hypotheses, and then applying sound logic in the analysis.  
T

1-7 The mathematical model of a business problem is the system of equations and related mathematical expressions that describes the essence of the problem.  
T

1-8 Once management makes its decisions, the management science team typically is finished with its involvement in the problem.  
F

1-9 A cost that varies with the production volume would be a fixed cost.  
F

1-10 A cost that varies with the production volume would be a variable cost.  
T

1-11 At the break-even point, management is indifferent between producing a product and not producing it.  
T

1-12 A constraint is an algebraic variable that represents a quantifiable decision to be made.  
F

1-13 A decision variable is an algebraic variable that represents a quantifiable decision to be made.  
T

1-14 A parameter in a model is a variable that represents a decision to be made.  
F

1-15 The objective function for a model is a mathematical expression of the measure of performance for the problem in terms of the decision variables.  
T

1-16 Sensitivity analysis is used to check the effect of changes in the model.  
T

# Multiple-Choice Questions

1-17 Enlightened future managers should know which of the following?  
a. The power and relevance of management science.  
b. When management science can and cannot be applied.  
c. How to apply the major techniques of management science.  
d. How to interpret the results of a management science study.  
\*e. All of the above.

1-18 The rapid development of the management science discipline can be credited in part to:  
a. World War I.  
b. George Dantzig.  
c. the computer revolution.  
\*d. b. and c. only.  
e. a., b., and c..

1-19 Managers may base their decisions on which of the following?  
a. Quantitative factors.  
b. Their best judgement.  
c. Opinions from other managers.  
d. Past experience.  
\*e. All of the above.

1-20 Management science is based strongly on which of the following fields?  
a. Mathematics.  
b. Computer science.  
c. Business administration.  
\*d. a. and b. only.  
e. All of the above.

1-21 Which of the following are components of a mathematical model for decision making?  
a. Decision variables.  
b. An objective function.  
c. Constraints.  
d. Parameters.  
\*e. All of the above.

1-22 Which of the following are steps in a typical management science study?  
a. Define the problem and gather data.  
b. Formulate a model to represent the problem.  
c. Test the model and refine it as needed.  
d. Help to implement the recommendations.  
\*e. All of the above.

1-23 Which of the following is a mathematical expression that gives the measure of performance for the problem?  
a. Decision variable.  
b. Parameter.  
\*c. Objective function.  
d. Constraint.  
e. None of the above.

1-24 Which of the following is a constant in a mathematical model?  
a. Decision variable.  
\*b. Parameter.  
c. Objective function.  
d. Constraint.  
e. None of the above.

1-25 Which of the following is an inequality or equation that expresses a restriction in a mathematical model?  
a. Decision variable.  
b. Parameter.  
c. Objective function.  
\*d. Constraint.  
e. None of the above.

1-26 Which of the following is an inequality or equation that expresses a restriction in a mathematical model?  
a. Decision variable.  
b. Parameter.  
c. Objective function.  
\*d. Constraint.  
e. None of the above.