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Prerequisite Requirements(Section 1) † [Top](#) †

While a prior degree in business is not required for admission to the MBA program, the completion of certain prerequisite foundation courses is required. Details on these required courses and options to meet these requirements are given below. Most students accepted into the Andrews University MBA program will have already completed twelve (12) prerequisites foundation courses (or equivalent) in business and related areas as part of their undergraduate studies. For reference, these courses are listed below. Following each course title is a brief description of course content (in italics).

1. Business and Society

Topics: study of how business operates within the political, legal and social environment, government agencies and controls, relation of business to social problems, and ethical considerations.

2. Business Finance

Topics: financial analysis, planning, and control; management of working capital, long-term assets, and long-term financing.

3. Business Law

Topics: general principles of law: coverage of business torts and crimes, contract and sales law, property law, debtor-creditor relations including bankruptcy, partnership and corporate law, employment law, estate planning, international law.

4. Information Systems Theory and Applications

Topics: applications on advanced spreadsheets, database usage, development of interactive web pages.

5. Fundamentals of Accounting

Fundamental concepts of financial, managerial, and cost accounting with emphasis on the accounting cycle and preparation of financial statements. NOTE: This is usually the first year university-level accounting course.

6. Macroeconomics

Topics: analysis of national income and expenditures according to current theories, government monetary and fiscal policies, inflation and recession, economic growth, unemployment, modern banking, and money supply.

7. Microeconomics

Topics: markets, supply and demand, pricing and production, theories to explain how people choose what to consume and produce.

8. Management and Organization

Concepts of effective management including planning, organizing, leading, and controlling, nature of individual and group behavior, role of management in dealing with employee needs and organizational requirements.

9. Operations Management

Analysis of problems and issues faced by production / operations managers in manufacturing and service industries. Topics include: operations scheduling, quality control, plant layout, facility location, line balancing, queues, production and inventory controls, forecasting and linear programming.

10. Principles of Marketing

Major marketing methods, institutions, and practices; exchange transactions linking producers and consumers.

11. Statistics

Basic descriptive and inferential statistics including elementary probability and probability distributions, statistical inference involving binomial, normal and t distributions, and hypothesis testing.

Options to Fulfill Prerequisite Requirements(Section 2) [↩ Top ↪](#)

If a student has not fulfilled one or more of the these prerequisites, he or she has three possible options:

1. Option 1: Take an equivalent course at the undergraduate level at a recognized university (including distance-learning, open learning university courses).
2. Option 2: Take a continuing education course as offered by the site agent.
3. Option 3: Take a Proficiency Examination as offered by the School of Business at Andrews University.

Option 1 is preferred, particularly for those who need or desire an official transcript.

Option 2 is available **only** if the site agent is able to provide qualified instructors and adequate academic library support.

Option 3 is available to those who have professional experience in the appropriate area.

Deadlines to Meet Prerequisites Requirements(Section 3) [↩ Top ↪](#)

All prerequisite requirements must be completed by the time a student has completed 50% of the MBA program -- except for BSAD 688, Management and the Environment (an elective MBA course) which may be taken at any time in the program by those who have not fulfilled the Business and Society prerequisite. In addition, specific prerequisite requirements must be completed before taking the MBA course for which it is applicable as follows:

Prerequisite Course Requirements for Specific MBA Courses	
Prerequisite	MBA Course
Business Finance	Financial Management
Fundamentals of Accounting	Managerial Accounting
Macro- and Microeconomics	Managerial Economics
	Macroeconomic Analysis
Management and Organization	Organizational Behavior
Principles of Marketing	Marketing Management

All prerequisites requirements must be fulfilled before the completion of 50% of the program (normally 15 graduate credits)

Proficiency Examination Procedures(Section 4) [↩ Top ↪](#)

Any student wishing to take a proficiency test must make a written request to the Director of Off-Campus Programs to take such a proficiency test. The request must indicate the area to be tested and the student must provide evidence that he or she has professional experience in the area to be tested. This evidence may include a letter of reference from any employer indicating that the student has been working in a particular area.

Proficiency tests may be taken in August, December, March, and June. These tests will be proctored by School of Business faculty during a visit to the local site to deliver course lectures. Students wishing to take a Proficiency Test must apply at least one month in advance of the lecturer's visit.

A student must obtain an overall grade of C on the test. A proficiency test may only be attempted once. In the event that a student does not obtain a satisfactory grade, he or she will then need to take an accredited university-level course to meet the prerequisite requirement.

Study Guides(Section 5) † [Top](#) †

In order to assist students wishing to take a proficiency test, the following study guides are provided. These guides provide recommendations on textbooks for review, basic topics to be covered in the proficiency test, and testing information (nature of the test and sample questions as available). Note: It is not essential to obtain the specified edition of review textbooks. These are recommendations only. Any standard textbook in the area should be suitable for review purposes. Although students are expected to have professional experience in the subject area, students are advised to review the topic several months or weeks in advance of the tests.

(Section 6)

Business and Society

Study Guide

Students who have not taken an equivalent course on the undergraduate university level, may take the elective graduate course, BSAD 688 Management and Environment, in lieu of this prerequisite.

Because this equivalent course may be taken as an elective in the MBA program, a prerequisite examination in this topic has not been allowed.

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(Section 7)

Business Finance

Study Guide

Recommended Textbooks:

Brigham, Eugene F. *Fundamentals of Financial Management*. 8th ed. Harcourt Brace Jovanovich, 1997.

Keown, Arthur J., David F. Scott, John D. Martin, and J. William Petty. *Basic Financial Management*. 7th ed. Prentice-Hall, 1997.

Ross, Stephen A., Randolph W. Westerfield, and Bradford D. Jordan. *Fundamentals of Corporate Finance*. 4th ed. Irwin, 1997.

Topics:*General Introductory Knowledge*

- alternative forms of business organization
- appropriate goals of a corporation -- shareholder wealth maximization
- financial statements and reports

Financial Environment

- financial markets
- financial institutions
- stock markets
- interest rate levels
- determinants of market interest rates
- term structure of interest rates
- interest rate levels and stock prices

Common Stock and the Investment Banking Process

- balance sheet accounts and definitions
- legal rights and privileges
- types of common stock
- the market for common stock
- the investment banking process

Long-Term Debt

- traditional debt instruments
- specific debt contract features
- bond ratings

- rationale for using different types of securities
- factors influencing long-term financing decisions
- preferred stock

Risks and Rates of Return

- defining and measuring risk
- expected rate of return
- portfolio risk and capital asset pricing model

Time Value of Money

- future value
- present value
- solving for time and interest rates
- future value of an annuity
- perpetuities
- uneven cash flow streams
- semiannual and other compounding periods
- amortized loads
- comparison of different types of interest rates

Bond and Stock Valuation

- bond valuation
- preferred stock valuation
- common stock valuation

Sample Test Questions:

The Finance Proficiency Test will normally consists of 25 - 50 multiple choice and short answer questions. The following are samples of the type of questions asked. Examinees may use a financial calculator where appropriate. Choose the best answer.

1. The primary goals of a publically-owned form interested in serving its stockholders should be to:
 - A. maximize expected total corporate profit.
 - B. maximize expected EPS.

- C. minimize the chances of losses.
- D. maximize the stock price per share.
- E. maximize expected net income.

2. An inverted yield curve

- A. exists when short-term rates exceed long-term rates.
- B. exists when long-term rates exceed short-term rates.
- C. represents the "normal state of affairs."
- D. signifies that investors can get higher returns by investing in bonds than in stocks.
- E. signifies that investors can get higher returns on stocks than on bonds.

3. The sale of new common stock at a price greater than par value will affect which balance sheet accounts? (Choose the most complete answer)

- A. Common stock, paid-in capital, retained earnings.
- B. Assets, common stock, paid-in capital.
- C. Liabilities, common equity.
- D. Common stock, retained earnings.
- E. Common stock, paid-in capital.

4. Which of the following types of debt protect a bondholder against an increase in interest rates?

- A. Floating rate debt.
- B. Bonds that are redeemable at par.
- C. Bonds with call provisions.
- D. Both a and b above
- E. a, b, and c above

5. If the risk-free rate is 7 percent, the expected return on the market is 10 percent, and the expected return on Security J is 13 percent, then what is the beta of Security J?

- A. 1.0
- B. 1.5
- C. 2.0
- D. 2.5
- E. 3.0

6. If a 5-year regular annuity has a present value of \$1000, and if the interest rate is 10%, then what is the amount of each annuity payment? (Always choose the closest answer: your answer may be slightly different due to rounding.)

- A. \$240.42
- B. \$263.80
- C. \$300.20
- D. \$315.38
- E. \$346.87

7. You have just borrowed \$20,000 to buy a new car. The loan agreement calls for 60 monthly payments of \$444.89 each. If interest is compounded monthly, then what is the effective annual rate on this loan?

- A. 12.68%
- B. 14.12%
- C. 12.00%
- D. 13.25%
- E. 15.08%

8. Given some amount to be received several years in the future, if the interest rate increase, the present value of the future amount will be:

- A. higher.
- B. lower.
- C. stay the same.
- D. cannot tell.
- E. variable.

9. A share of common stock has an expect long-run constant growth rate of 10 percent and is currently priced at \$66 per share. If investors require a 15 percent rate of return, then what was the last dividend paid on the stock?

- A. \$2.20
- B. \$1.95
- C. \$6.15
- D. \$3.00
- E. \$4.50

Fish & Chips, Inc. has two bond issues outstanding and both sell for \$701.22. The first issue has a coupon rate of 8 percent and 20 years to maturity. The second has an identical yield to maturity as the first but only 5 years until maturity. Both issues pay interest annually. What is the annual interest payment on the second issue?

- A. \$120.00
- B. \$37.12
- C. \$56.42
- D. \$29.68

Correct Answers:

- 1. D
- 2. A
- 3. B
- 4. D
- 5. C
- 6. B
- 7. A
- 8. B
- 9. D
- 10. B

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Business Law

Study Guide

Recommended Textbooks:

Davidson, Daniel V. et al. *Business Law: Principles and Cases in the Legal Environment*. 6th ed. West, 1998.

Topics:

The American Legal System

Court Jurisdiction

Torts

Civil Suits and Alternate Methods for Resolving Disputes

Contracts

Contract Law and Contract Theory

Contractual Agreement: Mutual Consent

Consideration: The Basis for the Bargain

Contractual Capacity, Legality of Subject Matter, and Reality of Consent

Proper Form and Interpretation of Contracts

The Rights of Third Parties

Contractual Discharge and Remedies

Sales and Leases

Formation of the Sales Contract

Performance, Title, and Risk of Loss

Warranties and Product Liability

International Sales of Goods

Agency and Businesses

The Creation and Termination of an Agency or Business

Liability for Contracts, Torts and Crimes

Sample Examination Questions:

Sample questions and answers will be provided at a later date.

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(Section 9)

Business Microcomputer Applications

Study Guide

Because of the variety of possible topics in this area, a specific study guide has not been prepared.

Students who have professional work experience in any of the topic areas listed below will need to correspond directly with the MBA advisor to determine procedures to fulfill this prerequisite:

Topic areas:

Word processing, such as Word 97 or Corel WordPerfect 8, at an advanced level

Spreadsheets usage (with emphasis on accounting applications)

Database development

Power point presentations

Networking, including web page development

Students who do not have professional work experience in this usage are advised to take an equivalent course either at a university level or as a professional continuing education program.

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(Section 10)

Fundamentals of Accounting

Study Guide

Recommended Textbooks:

Weygandt, Jerry J., Donald E. Kieso, and Walter G. Kell. *Accounting Principles*. 4th ed. Wiley, 1996.

Larson, Kermit D. and Paul B. W. Miller. *Fundamental Accounting Principles*. 13th ed. Irwin, 1993.

Needles, Belverd E., Henry R. Anderson, James C. Caldwell, and Sherry K. Mills. *Principles of Accounting*. 6th ed. Houghton Mifflin, 1996.

Topics:

The proficiency exam will test a student's understanding of fundamentals of accounting in the following areas:

Identifying, analyzing, and journalizing transactions

posting to ledger accounts

making, adjusting, and closing entries

Preparing financial statements, including the balance sheet, income statement, statement of changes in owners' equity, and the statement of cash flows

basic accounting procedures for:

cash, particularly preparing bank reconciliations

accounts receivable

inventory valuation

depreciation of plant assets

corporation accounting

stocks and bonds

Sample Test Questions:

The Accounting Proficiency Test will normally consists of 75 - 100 multiple choice and short answer questions. The following are samples of the type of questions asked.

1. The basic accounting equation may be expressed as:

- A. Assets = Equities
- B. Assets - Liabilities = Owner's Equity
- C. Assets = Liabilities + Owner's Equity
- D. all of the above

2. Net income results when:

- A. Assets = Liabilities
- B. Revenues = Expenses
- C. Revenues > Expenses
- D. Revenues < Expenses

3. Assets normally show:

- A. credit balances
- B. debit balances
- C. debit and credit balances
- D. debit or credit balances

4. If a company fails to make an adjusting entry to record supplies expenses, then:

- A. owner's equity will be understated.
- B. expense will be understated.
- C. assets will be understated.
- D. net income will be understated.

5. Closing entries are made:

- A. in order to terminate the business as an operating entity.
- B. so that all assets, liabilities, and owner's capital accounts will have zero balances when the next accounting period starts.
- C. in order to transfer net income (or loss) and owner's drawing to the owner's capital account.
- D. so that financial statements can be prepared.

6. Barcelona Shoe Store had a beginning merchandise inventory of \$15,000. During the period, Purchases were \$60,000; Purchase Returns, \$2,000; and Freight-in \$5,000. A physical count of inventory at the end of the period revealed that \$10,000 was still on hand. The cost of goods available for sale was:

- A. \$72,000
- B. \$68,000
- C. \$78,000
- D. \$82,000

7. Three accounting issues associated with accounts receivable are:

- A. depreciation, returns, and valuation.
- B. depreciation, valuation, and collection.
- C. recognition, valuation, and disposition.
- D. accrual, bad debts, and disposition.

8. If a company fails to record estimated bad debts expense:

- A. cash realizable value is understated.
- B. expenses are understated.
- C. revenues are understated.
- D. receivables are understated.

9. A recommended internal control procedure for taking physical inventories is that the counting should be done by employees who do not have custodial responsibility for the inventory. This is an example of what type of internal control procedure?

- A. Establishment of responsibility
- B. Documentation procedure
- C. Independent internal verification
- D. Segregation of duties

10. The relationship of current assets to current liabilities is used in evaluating a company's:

- A. operating cycle.
- B. revenue-producing ability
- C. short-term debt paying ability
- D. long-range solvency

1. D

2. C

3. B

4. B

5. C

6. C

7. C

8. B

9. D

10. C

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Intermediate Spreadsheets

Study Guide

Because of the variety of possible software spreadsheet packages available in this area, a specific study guide has not been prepared.

Students who have professional work experience in using Excel, Quattro Pro, or Lotus 1-2-3 (or any equivalent spreadsheet program) and are familiar with formula building and the use of macros will need to correspond directly with the MBA advisor to determine procedures to fulfill this prerequisite:

Students who do not have professional work experience in this usage are advised to take an equivalent course either at a university level or as a professional continuing education program.

(Section 12)

Macro and Microeconomics

Study Guide

Recommended Textbooks:

Mankin, N. Gregory. *Principles of Economics*. Harcourt Brace, 1998.

McConnell, Campbell and Stanley Brue. *Economics*. 13th ed. McGraw-Hill, 1996.

Samuelson, Paul and William Nordhaus. *Economics*. 15th ed. McGraw-Hill, 1995.

Topics:

A student is expected to be proficient in the following areas of Macroeconomics and Microeconomics:

Macroeconomics

inflation, unemployment, business cycle
measurement of output and the price level
aggregate demand and aggregate supply
expenditure fluctuations and fiscal policy
money, banking, and prices
financial institutions and interest rates
fiscal and monetary policies and their impact

trading with the world

the balance of payments and international finance

Microeconomics

demand and supply

price, income, and cross price elasticities

utility maximization

indifference curve and budget line

production and cost of production

market structures: competition and monopoly

market structures: oligopoly and monopolistic competition

factor markets: land, labor, and capital

distribution of income and wealth

Sample Test Questions:

The prerequisite examination will consist of approximately 100 multiple-choice questions. Examples are given below:

1. Disposable income is defined as

- A. personal income minus personal income tax and nontax payments.
- B. the sum of wages and salary, rent, and interest income.
- C. wages and salaries, rent, and interest income minus personal income tax.
- D. national income minus net exports.
- E. all of the above.

2. A curve showing the amount of real output we collectively wish to purchase at various alternative price levels is called the

- A. aggregate production function.
- B. aggregate demand curve.
- C. full employment level of output.
- D. aggregate supply curve.
- E. the equilibrium level of output.

3. A decrease in the reserve requirement will make a bank

- A. more willing to lend, but less willing to buy securities.
- B. less willing to lend, with no effect on securities.

- C. more willing to lend and to buy securities.
- D. less willing to lend and to buy securities.
- E. stop lending.

4. According to Friedman's "permanent income hypothesis"

- A. consumption today is based on income today.
- B. consumption for future periods is based on today's income.
- C. income is never permanent because of the government's ability to tax.
- D. consumption depends on our expected income stream over time.
- E. income today depends on our expected consumption over time.

5. Using the "leakages equals injections" approach, the equilibrium level of national income and output occurs when

- A. $C + I + G = S + T + X$
- B. $S + T + X - M = I + G$
- C. $I + G + X = S + T + M$
- D. $I + G + M = S + T + X$
- E. $TE = C + I + G (X - M)$

6. The coefficient price elasticity of demand is defined as the

- A. quantity demanded divided by the price.
- B. percentage change in demand.
- C. percentage change in quantity divided by the percentage change in the price.
- D. percentage change in price.
- E. slope of the demand curve.

7. An indifference curve represents combinations of consumer goods that yield

- A. increasing total utility negatively sloped curves.
- B. constant total utility along negatively sloped curves.
- C. diminishing total utility along positively sloped curves.
- D. constant cost characterized by curves with slopes of zero throughout.
- E. constant profit characterized by curves with constant slopes throughout.

8. In pure competition, when the firm is making zero profit,

- A. $MR > MC$
- B. $AC = MC = AR = MR = P$
- C. $MC > MR$
- D. AC is declining
- E. AVC is declining

9. Consumer surplus is

- A. Equal to the deadweight loss.
- B. The gain in demand due to utility increases.
- C. A bonus in terms of utility received because the consumer would have been willing to pay higher prices for previous units.
- D. $MR - AR$
- E. $MR - MC$

10. The marginal revenue product curve is

- A. demand curve for the resource.
- B. supply curve for the input.
- C. demand curve for the good.
- D. supply curve for the service.
- E. cost curve for the product.

Correct Answers:

- 1. A
- 2. B
- 3. C
- 4. D
- 5. C
- 6. C
- 7. B
- 8. B
- 9. C
- 10. A

Management and Organization

Study Guide

Recommended Textbooks:

Bartol, Kathryn M. and David C. Martin. *Management*. 3rd ed. Irwin McGraw-Hill, 1998.

Daft, Richard L. and Dorothy Marcic. *Understanding Management*. 2nd ed. Dryden Press, 1998.

Lussier, Robert N. *Management: Concepts, Applications, Skill Development*. South-Western, 1997.

Topics:

The proficiency examination will test a student's understanding of the basic principles of management in the following areas:

Defining management

History of management thought

Environment of management

Planning

Controlling

Organizing

Decision making

Leadership

Groups

Communication

Motivation

Sample Test Questions:

The proficiency examination will consist of about 100 multiple-choice questions. Examples are given below.

1. Management is the process of

- A. planning, organizing, leading, decision-making
- B. planning, leading, controlling, coordination.
- C. planning, organizing, leading, controlling.
- D. controlling, leading, organizing, communication

2. One of the reasons for the emergence of the behavioral school is that the classical approach

- A. was mechanistic.
- B. did not anticipate people's behavior.

- C. was not efficient.
- D. was not effective.

3. Corporate social responsiveness studies how organizations become

- A. knowledgeable about the homeless.
- B. aware of and respond to social issues.
- C. frustrated with their philanthropic roles.
- D. None of the above.

4. The primary contribution of scientific management theory was

- A. time and motion studies.
- B. efficiency.
- C. industrial engineering.
- D. overall management.

5. A narrow span of management and many hierarchical levels creates a _____ organizational structure.

- A. tall
- B. wide
- C. short
- D. flat

6. _____ is the degree to which members of various departments work together in a unified manner.

- A. Differentiation
- B. Specialization
- C. Integration
- D. Span of control

7. Entrepreneurs are characterized by a

- A. willingness to take moderate risks.
- B. high level of need achievement.
- C. tolerance for ambiguity.
- D. All of the above.

8. An organization that has expanded into different industries and diversified its product offering is called a _____ firm.

- A. vertically integrated
- B. multi divisional
- C. horizontally integrated
- D. functional

9. Organizational culture encompasses all of the following EXCEPT

- A. values.
- B. beliefs.
- C. norms.
- D. skills.

10. The functions of management are differentiated by

- A. the amount of time spent on each
- B. the type of organization.
- C. the levels in the organizational hierarchy.
- D. all of the above.

Correct Answers:

- 1. C
- 2. B
- 3. B
- 4. B
- 5. A
- 6. C
- 7. D
- 8. B
- 9. D
- 10. D

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Recommended Textbooks:

Any current quantitative text on operations management would be useful as a study guide. In particular:

Gaither, Norman. *Production and Operations Management*. 7th ed. Duxbury, 1996

Krajewski, Lee J. and Larry P. Ritzman. *Operations Management: Strategy and Analysis*. 4th ed. Addison-Wesley, 1996.

Topics:

Forecasting:

Quantitative forecasting using linear regression and associated statistical paraphernalia, moving averages, exponential smoothing, and seasonalized forecasts.

Production:

Economic evaluation and estimation of costs functions, break-even analysis and operating leverage; evaluating and ranking economic consequences, rating and ranking algorithms.

Resource Allocation:

Constrained optimization using linear programming - formulating problems, solutions using graphical analysis.

Facility Layout Analysis:

Sequence and block diagram analysis, load / distance / cost analysis and line balancing.

Production Planning:

Estimating economic implications of aggregate planning strategies; matching demand, level capacity. Master production scheduling; produce to stock? Produce to order?

Inventory:

Economic analysis of fixed order quantity strategies EOQ, EOQ with discounts, and EOQ for production lots. Estimating cost implications of order point strategies and service levels using payoff table, marginal analysis, and even rules of thumb.

Material Requirements -- Scheduling Production:

Structure trees, scheduling, capacity planning and load schedules. Gantt Charts, sequencing rules, evaluation of sequencing algorithms; batch scheduling, EOQ production lots and Run-out techniques; Line of Balance delivery scheduling.

Productivity:

Analysis of work methods, labor and time standards, and incentive pay systems

Quality Control:

Control using statistical analysis of attributes and variable, sampling distributions, control charts, and acceptance plans.

Maintenance and Reliability:

Economic consequences of preventive maintenance scheduling, estimating system reliability, minimizing the costs of parts inventories.

Testing:

This is a closed book, no notes, problem solving exercise. Eight (8) problems will be given. Sample questions are not available. However, review exercises are available in standard operations management textbooks.

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(Section 15)

Principles of Marketing

Study Guide

Recommended Textbooks:

Kotler, Philip and Gary Armstrong. *Marketing: An Introduction*. 4th ed. Prentice-Hall, 1997.

Pride, William M. and O. C. Ferrell. *Marketing: Concepts and Strategies*. 10th ed. Houghton-Mifflin, 1997.

Topics:

An examinee should have an understanding of the following fundamental marketing concept areas:

Marketing mix variables of: Product, Price, Place, and Promotion

Promotional mix variables of: Public Relations, Publicity, Advertising, Personal Selling

Segmentation

Targeting

Marketing for services

Industrial marketing / organizational buyer behavior

Produce life cycle

International Marketing (overview)

Ethical and regulatory issues

Sample Test Questions:

The proficiency examination will consist of approximately 100 multiple-choice questions. Examples are given below.

1. Marketing is necessary because:

- A. it is a basic functional area of business.
- B. it is at the heart of all business.
- C. businesses must earn profits.

- D. people have needs and wants.
- E. none of the above.

2. The process concerned with the "fit" between an organization and its environment is called:

- A. company planning.
- B. headquarter planning.
- C. strategic planning.
- D. business planning.
- E. none of the above.

3. The first step in business planning is the step:

- A. marketing
- B. production
- C. personnel development
- D. purchasing
- E. finance

4. The product manager for educational software made by Preview, Inc., a producer of computer software, was trying to determine whether to add new features to some of their products. She felt she could benefit from knowing the degree to which these new features would be desired by various target markets. This illustrates which development:

- A. expanded geographical coverage from local to national markets.
- B. increased buyer selectivity in their choice of goods.
- C. increased price competition.
- D. decreased price competition.
- E. none of the above.

5. A firm's marketing environment could be best defined as:

- A. a set of controllable forces.
- B. a set of noncontrollable forces.
- C. a set of internal forces.
- D. a combination of controllable and uncontrollable forces.
- E. none of the above.

6. Individual and households who buy or acquire products for personal consumption comprise the market:

- A. reseller
- B. personal
- C. consumer
- D. reseller
- E. buying

7. Organizational buying behavior differs from consumer buying behavior in that:

- A. organizations buy products to satisfy a variety of goals.
- B. more people typically participate in organizational buying decisions.
- C. organizational buyers are more restricted because of the organization's policies.
- D. buying instruments (quotations, purchase contracts, etc.) are not typically found in consumer buying.
- E. all of the above.

8. Companies need to know all of the following about competitors except:

- A. who they are.
- B. what their strategies are.
- C. what their objectives are.
- D. what their strengths and weaknesses are.
- E. all of the above need to be known.

9. All of the following are characteristics used in defining markets except:

- A. consumer decisions.
- B. consumer interest.
- C. consumer income.
- D. consumer access.
- E. all of the above are characteristics.

10. Mass marketing occurs when the marketer:

- A. produces several products for a large market.
- B. offers one product for all buyers in a market.

- C. markets large quantities of a product.
- D. all of the above.
- E. none of the above.

Correct Answers:

- 1. B
- 2. C
- 3. A
- 4. E
- 5. D
- 6. C
- 7. E
- 8. E
- 9. E
- 10. D

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Statistics
Study Guide

Recommended Textbooks:

Brightman, Harvey J. and Howard Schneider. *Statistics for Business Problem Solving*. 2nd ed. South-Western, 1994.

McClave, James T., P. George Benson, and Terry Sincich. *A First Course in Business Statistics*. 5th ed. Prentice-Hall, 1995.

Sincich, Terry. *Business Statistics by Example*. 5th ed. Prentice-Hall, 1996.

Topics:

Describe data sets using graphs or numerical methods

Compute measures of central tendency and dispersion for a set of observations of a variable.

Describe and explain basic concepts of probability.

Explain the differences between discrete and continuous probability distributions.

Draw a simple, random sample from a population.

Estimate population parameters.

Test hypotheses of univariate and bivariate data.

Descriptive statistics include: tables and graphs, computation of measures of central tendency (mode, median, mean, arithmetic, geometric, harmonic), computation of measure of dispersion (range, average deviation, quartile deviation, standard deviation)

Probability includes: sampling distributions, binomial distribution, Poisson distribution, normal distribution.

Statistical inference includes: normal distribution (confidence intervals, one tail two tail, estimate of population mean), "t" distribution, percentages, chi-square distribution

Sample Test Questions:

1. Each year, during a period of seven years, Mrs. Smith gave birth to a child. The standard deviation of the ages (in whole years) of the 7 children of the family Smith is equal to

- A. 2
- B. 4
- C. 7
- D. Cannot be calculated if the present age of the children is not known.

2. One card is drawn from a standard 52 card deck. In describing the occurrence of two possible events, an Ace and a King, these two events are said to be:

- A. independent
- B. mutually exclusive
- C. random variables
- D. randomly independent.

3. Suppose you were told that scores on an examination were converted to standard scores with a mean = 500, range of 800, and a standard deviation of 100. A person with a score of 600 has performed better than what percent of the persons taking the test?

- A. 20 percent
- B. 50 percent
- C. 57 percent
- D. 84 percent
- E. 97.5 percent

4. What is the principal distinction between a discrete and continuous random variable? Give an example of each.

5. True or False? Populations are always infinite.

6. Given: Population 1: 3, 4, 5

Population 2: 0, 3

Draw all possible samples of size 2 from population 1 with replacement, and all possible samples of size 3 from population 2

with replacement.

7. Samples from 3 classes were given an identical math test. The scores are given as follows.

Test the hypothesis that the performances of the 3 classes are equal. (ALPHA = .05)

Class A Class B Class C

5 107

4 2 7

6 1 6

10 5 5

42 7

77 8

3 810

92 1

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Total 48 3751

Source of variation SS df MS F

Between classes 13.583 26.7915

Within classes (error) 220.75 2110.5

Total 234.33323

Correct Answers:

1. a.

For the calculation of the standard deviation it does not make any difference if the present ages are 1,2,3,4,5,6, and 7 years or 15,

16,17,18,19,20, and 21, or whatsoever. So take 1,2,3,4,5,6, and 7 and calculated $S = \sqrt{[(X - \mu)^2]/n}$.

2. b. mutually exclusive.

3. d. 84 percent

$$Z = (X - \mu) / \text{Standard Deviation}$$

$$Z = (600 - 500) / 100 = 1$$

$$\text{Area between Z and Mean} = .3413$$

$$\text{Area to Left of Z} = .5 + .3413 = .8413$$

$$\text{Percentile Rank} = 100 * .8413 = 84.13$$

Therefore, the person has performed better than 84 percent of the people.

4. The principal distinction is that a discrete random variable can assume a countable number of values, while a continuous random variable can assume an uncountably infinite number of values.

Examples of a discrete random variable:

- a. The number of heads obtained when a coin is flipped three times.
- b. The number that turns up when a die is rolled.
- c. The number of people waiting in line at a movie theater

Examples of a continuous random variable:

- a. The height of a human
- b. The amount of rainfall
- c. Time required to run a mile

5. False.

6. All possible samples of size 2 from population 1 with replacement:

(3, 3)(3, 4)(3, 5)

(4, 3)(4, 4)(4, 5)

(5, 3)(5, 4)(5, 5)

7. All possible samples of size 3 from population 2 with replacement:

(0, 0, 0)(0, 0, 3) (0, 3, 0) (0, 3, 3)

(3, 0, 0)(3, 0, 3) (3, 3, 0) (3, 3, 3)

7. H(O): $\mu(1) = \mu(2) = \mu(3)$

H(A): $\mu(1) \neq \mu(2) \neq \mu(3)$

$$\begin{aligned} F(\text{calculated}) &= \text{MS for classes}/\text{MS for error} \\ &= 6.7915/10.5 \\ &= .646 \end{aligned}$$

$$F(\text{critical, df}=2, 21, \text{ALPHA} = .05) = 3.47$$

Since $F(\text{calculated}) < F(\text{critical})$ do not reject H_0 . Therefore performances of the 3 classes are not found to be different.

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Revised: 5 August 2002