TEXAS A&M UNIVERSITY (TAMU) MATH140 MATHEMATICS FOR BUSINESS AND SOCIAL SCIENCES FINAL PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

VISIT US ONLINE FOR THE FULL VERSION STUDY GUIDE

https://tamu-math140-final.examzify.com

Copyright © 2026 by Examzify - A Kaluba Technologies Inc. product.

ALL RIGHTS RESERVED.

No part of this book may be reproduced or transferred in any form or by any means, graphic, electronic, or mechanical, including photocopying, recording, web distribution, taping, or by any information storage retrieval system, without the written permission of the author.

Notice: Examzify makes every reasonable effort to obtain accurate, complete, and timely information about this product from reliable sources.

SAMPLE

Table of Contents

Copyright 1
Table of Contents 2
Introduction 3
How to Use This Guide 4
Questions 5
Answers 8
Explanations 10
Next Steps 15

SAMPLE

Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

SAMPLE

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

SAMPLE

Questions

SAMPLE

1. How do you calculate the rate of return on investment (ROI)?

A. ROI = (Cost of Investment / Net Profit) x 100%

B. ROI = (Net Profit - Cost of Investment) / Cost of Investment

C. ROI = (Net Profit / Cost of Investment) x 100%

D. ROI = (Cost of Investment - Net Profit) x 100%

2. What is the role of the alternative hypothesis in statistics?

A. It always contradicts the null hypothesis

B. It defines the parameters of the distribution

C. It proposes that there is an effect or relationship

D. It can only be accepted if the null hypothesis is rejected

3. How do you find the future value of an investment using compound interest?

A. FV = P(1 + rt)

B. FV = P(1 + r/n)^(nt)

C. FV = P + rt

D. FV = P(1 + r/n)

4. What is a matrix in mathematics?

A. A geometric shape used to model equations

B. A rectangular arrangement of numbers or expressions

C. A list of variables and their values

D. A single numerical value

5. What is a dependent event in probability?

A. Events where the outcome or occurrence does not affect one another

B. Events where the outcome or occurrence of the first affects the outcome or occurrence of the second

C. Any two events that can occur at the same time

D. Events that are completely unrelated

SAMPLE

6. How is the element in the ith row and jth column of a matrix A denoted?

A. A(i,j)

B. A(ij)

C. A[i,j]

D. element(A, i, j)

7. What does the term "standard deviation" refer to?

A. A measure of central tendency

B. A measure of the amount of variation in a set of values

C. A measure of correlation between two variables

D. A measure of probability distribution

8. What notation represents the transpose of a matrix?

A. A^2

B. A^T

C. TA

D. A' (A prime)

9. Which is the first step in graphing an inequality?

A. Shade the applicable side of the line

B. Replace the inequality sign with an equal sign

C. Identify the slopes

D. Label the x and y intercepts

10. How is the expected value of a random variable calculated?

A. E(X) = x1p1 + x2p2 + ... + xnpn

B. E(X) = p1 + p2 + ... + pn

C. E(X) = x1 + x2 + ... + xn

D. E(X) = x1 + x2p1 + x3p2

SAMPLE

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. How do you calculate the rate of return on investment (ROI)?

A. ROI = (Cost of Investment / Net Profit) x 100%

B. ROI = (Net Profit - Cost of Investment) / Cost of Investment

C. ROI = (Net Profit / Cost of Investment) x 100%

D. ROI = (Cost of Investment - Net Profit) x 100%

The rate of return on investment (ROI) is a crucial financial metric used to evaluate the efficiency of an investment. To calculate ROI, you take the net profit generated by the investment, divide it by the cost of the investment, and then multiply by 100 to express it as a percentage. This formula provides a clear indication of how much profit is made for each dollar invested, thus offering insight into the overall performance of the investment. In this context, the correct formula highlights that the relationship between net profit and cost of investment is key to understanding how effectively the investment has performed. The multiplication by 100 is necessary to convert the figure into a percentage format, making it easier to interpret and compare against other investments or benchmarks. Other provided formulas do not accurately describe how to calculate ROI: one option suggests dividing the cost of investment by net profit, which does not properly reflect the profit made relative to the investment; another option subtracts the cost of investment from net profit before dividing, which is not aligned with the standard ROI formula; and the last option incorrectly frames the relationship by reversing the roles of profit and investment. Overall, option C correctly captures the essence of ROI calculation, making it easier for investors to gauge the success of their investments.

2. What is the role of the alternative hypothesis in statistics?

A. It always contradicts the null hypothesis

B. It defines the parameters of the distribution

C. It proposes that there is an effect or relationship

D. It can only be accepted if the null hypothesis is rejected

The alternative hypothesis plays a crucial role in statistical hypothesis testing as it posits that there is an effect, relationship, or difference that exists in the population being studied. This hypothesis serves as the research hypothesis that a researcher typically aims to support. It suggests the presence of a measurable effect or relationship that warrants further exploration. When conducting statistical tests, researchers start with a null hypothesis, which often states that there is no effect or relationship present. The alternative hypothesis is used to explore the possibility of what might occur when that assumption is challenged—essentially, it reflects the researcher's belief or expectation about the data or conditions under investigation. The acceptance of the alternative hypothesis is contingent upon the result of statistical tests, which assess the likelihood of observing the sample data under the assumption that the null hypothesis is true. If the results show sufficient evidence to reject the null hypothesis, it is concluded that the alternative hypothesis may be a more accurate representation of the underlying reality. Understanding the role of the alternative hypothesis is essential in both designing experiments and properly interpreting statistical results, as it provides a clear statement of what the researcher is seeking to find evidence for in the data.

SAMPLE

3. How do you find the future value of an investment using compound interest?

A. FV = P(1 + rt)

B. FV = P(1 + r/n)^(nt)

C. FV = P + rt

D. FV = P(1 + r/n)

The future value of an investment using compound interest is calculated with the formula that accounts for compounding periods. In this formula, the future value (FV) is determined by multiplying the principal amount (P) by the expression (1 + r/n) raised to the power of nt. Here, r represents the annual nominal interest rate, n is the number of times interest is compounded per year, and t is the total number of years the money is invested or borrowed. This formula effectively adjusts the interest earned based on how often it is compounded. For example, if interest is compounded quarterly, the interest rate is divided by four (n = 4), and the total number of compounding periods over t years is calculated as 4t. Thus, the formula accurately reflects the effect of compounding on the growth of the investment over time. The other options provided represent different calculations. The first option, which uses P(1 + rt), describes simple interest rather than compound interest, as it does not involve compounding over multiple periods. The third option (FV = P + rt) also illustrates simple interest, where the total value is simply the original principal plus the interest earned without compounding. The fourth option, FV = P(1 +

4. What is a matrix in mathematics?

A. A geometric shape used to model equations

B. A rectangular arrangement of numbers or expressions

C. A list of variables and their values

D. A single numerical value

A matrix in mathematics is defined as a rectangular arrangement of numbers, symbols, or expressions, organized in rows and columns. This structure allows for efficient manipulation and representation of data, making matrices a fundamental concept in various areas such as linear algebra, computer science, and statistics. For example, you might encounter a matrix used to represent a system of linear equations, where each row corresponds to an equation and each column corresponds to different variables. This organized form of data makes it easier to perform operations such as addition, multiplication, and finding determinants, which are essential in solving systems of equations and performing transformations in higher dimensions. While other options describe different mathematical concepts or objects, such as geometric shapes, lists, or single values, they do not accurately depict the structured arrangement that characterizes a matrix. This is why the description of a matrix as a rectangular arrangement of numbers or expressions is the most accurate among the given choices.

SAMPLE

5. What is a dependent event in probability?

A. Events where the outcome or occurrence does not affect one another

B. Events where the outcome or occurrence of the first affects the outcome or occurrence of the second

C. Any two events that can occur at the same time

D. Events that are completely unrelated

A dependent event in probability occurs when the outcome of one event influences or affects the outcome of another event. When the occurrence of the first affects the probability of the second event, this indicates a relationship between the two events, which is a defining feature of dependent events. For example, consider drawing cards from a deck without replacement. If the first card drawn is a spade, this impacts the probability of what the second card will be, since there is now one fewer spade in the deck. This scenario highlights how the outcome of the first event directly impacts the second, which is the essence of dependent events. In contrast, independent events, where the occurrence of one event does not affect the other, do not share this relationship. Therefore, the correct understanding of dependent events revolves around their interdependence and the influence they can have on each other's outcomes. This is why the identification of dependent events is crucial in probability theory.

6. How is the element in the ith row and jth column of a matrix A denoted?

A. A(i,j)

B. A(ij)

C. A[i,j]

D. element(A, i, j)

The element in the ith row and jth column of a matrix A is properly denoted using the notation A[i,j]. This notation clearly indicates the specific position within the matrix: the first index corresponds to the row number (i), and the second index refers to the column number (j). This two-dimensional indexing is standard in mathematical literature and programming environments, making it universally understood among those studying matrices. The use of parentheses (as in A(i,j) or A(ij)) or the function style (such as element(A, i, j)) does not conform to the conventional notation for accessing elements of a matrix. Using square brackets for this purpose effectively communicates the matrix's structure and allows for clarity in the representation of its elements, which is crucial in both mathematical analysis and practical applications, such as in business and social sciences.

7. What does the term "standard deviation" refer to?

A. A measure of central tendency

B. A measure of the amount of variation in a set of values

C. A measure of correlation between two variables

D. A measure of probability distribution

Standard deviation is fundamentally defined as a measure of the amount of variation or dispersion in a set of values. It quantifies how much the individual data points differ from the mean (average) of the dataset. A low standard deviation indicates that the values tend to be close to the mean, while a high standard deviation suggests that the values are spread out over a wider range. This concept is particularly important in statistics and various fields that rely on data analysis because it provides insight into the reliability and consistency of the data. For instance, in a business context, understanding standard deviation can help assess the risk associated with investments or the variability in sales figures. Understanding why this reflects variation helps in making informed decisions based on the dataset's spread, as it influences other statistical operations such as confidence intervals and hypothesis testing. This explanation emphasizes the role of standard deviation in analyzing data variability rather than central tendencies, relationships between variables, or probability distributions, which pertain to other statistical concepts.

SAMPLE

8. What notation represents the transpose of a matrix?

A. A^2

B. A^T

C. TA

D. A' (A prime)

The notation that represents the transpose of a matrix is denoted as A^T. The transpose of a matrix involves flipping the matrix over its diagonal, which converts the row vectors into column vectors and vice versa. For example, if you have a matrix A that is structured as follows: \[A = \begin{bmatrix} a & b \\ c & d \end{bmatrix} \] The transpose, A^T, would be: \[A^T = \begin{bmatrix} a & c \\ b & d \end{bmatrix} \] This operation is significant in various mathematical contexts, such as linear algebra, where the transpose is used in operations involving dot products, determinants, and eigenvalues, among others. The other representations do not correctly indicate the transpose of a matrix. A^2 signifies the matrix A multiplied by itself, while TA does not represent any commonly recognized operation associated with transposition. A'—while sometimes used in specific contexts—does not follow the standard notation that is widely accepted in linear algebra, which favors A^T for clarity and consistency in mathematical literature.

9. Which is the first step in graphing an inequality?

A. Shade the applicable side of the line

B. Replace the inequality sign with an equal sign

C. Identify the slopes

D. Label the x and y intercepts

The first step in graphing an inequality involves preparing to plot the line that represents the boundary of the inequality. By replacing the inequality sign with an equal sign, you create an equation that defines the boundary line. This line either includes or does not include points depending on whether the original inequality was strict (e.g., < or >) or non-strict (e.g., ≤ or ≥). Once this line is established, you can determine whether the line should be solid or dashed (solid for non-strict inequalities and dashed for strict inequalities) and then proceed to the next steps, such as identifying slopes or intercepts and shading the appropriate area that satisfies the inequality. This initial step is crucial because it sets the foundation for accurately representing the region where the inequality holds true.

10. How is the expected value of a random variable calculated?

A. E(X) = x1p1 + x2p2 + ... + xnpn

B. E(X) = p1 + p2 + ... + pn

C. E(X) = x1 + x2 + ... + xn

D. E(X) = x1 + x2p1 + x3p2

The expected value of a random variable, often denoted as E(X), represents the long-term average outcome of a random variable based on its probability distribution. It is computed by multiplying each possible value of the random variable by the probability of that value occurring and then summing these products. In this context, the formula E(X) = x1p1 + x2p2 + ... + xnpn precisely captures this process. Here, x1, x2, ..., xn are the possible values of the random variable, while p1, p2, ..., pn are their corresponding probabilities. This formula accounts for each outcome and how likely it is to occur, thus giving a weighted average of all possible values. The other options do not properly describe how to compute the expected value. For instance, simply summing probabilities or outcomes without considering their corresponding weights will not yield the correct expected value calculation, as it neglects the essential aspect of the probability linked to each outcome.

SAMPLE

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://tamu-math140-final.examzify.com

We wish you the very best on your exam journey. You've got this!

SAMPLE