QUANTITATIVE BUSINESS ANALYSIS (QBA) EXAM 2 PRACTICE TEST (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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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.

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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!

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Questions

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1. What is the general form of a simple linear regression model?

A. $y = \alpha 0 + \alpha 1\ x^2 + \varepsilon$.

B. $y = \beta 0 + \varepsilon$.

C. $y = \beta 0 + \beta 1\ x + \varepsilon$, where ε has mean 0 and constant variance.

D. $y = \beta 1\ x$.

2. For very large samples, the z-distribution can be used even if the population standard deviation is unknown.

A. The z-distribution should always be used regardless of sigma.

B. The t-distribution should never be used with large samples.

C. For very large samples, the z-distribution can be used even if sigma unknown.

D. The choice has no impact on CI width.

3. What is the relationship between standard deviation and variance?

A. The standard deviation is the square of the variance

B. The standard deviation is the square root of the variance

C. They are unrelated

D. The standard deviation is twice the variance

4. What is the difference between Bayesian and frequentist interpretations of probability?

A. Frequentist interprets probability as long-run frequency; Bayesian updates beliefs with prior and data to form posterior.

B. Bayesian interprets probability as long-run frequency; Frequentist updates beliefs with prior and data to form posterior.

C. Probability is always an observed frequency.

D. Prior beliefs are ignored in Bayesian updating.

5. The area under the probability density function between two values represents the probability that a continuous random variable falls within that interval.

A. True

B. False

C. It cannot be determined from the information given

D. Only for discrete variables

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6. The Central Limit Theorem describes the behavior of:

A. individual numeric observations in a population.

B. the distribution of all possible sample variances as the sample size increases.

C. the distribution of all possible sample standard deviations as the sample size increases.

D. the distribution of all possible sample means as the sample size increases.

7. Which statement about confidence-interval width is true?

A. The width is fixed and does not depend on the data.

B. The width decreases as sample size increases and variability decreases.

C. The width increases as the sample size increases.

D. The width is determined solely by the confidence level and not by sample size.

8. Which statement is true about the two-parameter normal distribution?

A. It is determined by variance and skewness

B. It is determined by mean and variance

C. It is determined by mean and range

D. It is determined by mean and standard deviation

9. What does N(0,1) denote in the context of standard normal distribution?

A. Normal distribution with mean 0 and standard deviation 1

B. Normal distribution with mean 1 and standard deviation 0

C. Uniform distribution on [0,1]

D. Exponential distribution with rate 1

10. Which term describes the rule that produces an estimate?

A. Variable

B. Estimator

C. Statistic

D. Parameter

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Answers

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

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Explanations

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1. What is the general form of a simple linear regression model?

A. $y = \alpha 0 + \alpha 1\ x^2 + \varepsilon$.

B. $y = \beta 0 + \varepsilon$.

C. $y = \beta 0 + \beta 1\ x + \varepsilon$, where ε has mean 0 and constant variance.

D. $y = \beta 1\ x$.

The main idea is that a simple linear regression describes y as a straight-line function of x, with an intercept and a slope, plus random error that captures other factors. The general form is $y = \beta 0 + \beta 1\ x + \varepsilon$, where the error term ε has a mean of zero and constant variance (often denoted σ^2) and is independent of x. This structure lets you express a baseline level ($\beta 0$) and how much y changes with each unit increase in x ($\beta 1$), while the ε term accounts for randomness around that line. The other options don't fit: including x^2 would make the relationship non-linear in x, omitting the slope ignores how y changes with x, and forcing the intercept to zero removes the baseline level unless the true relationship passes through the origin.

2. For very large samples, the z-distribution can be used even if the population standard deviation is unknown.

A. The z-distribution should always be used regardless of sigma.

B. The t-distribution should never be used with large samples.

C. For very large samples, the z-distribution can be used even if sigma unknown.

D. The choice has no impact on CI width.

For very large samples, using the z-distribution even when the population standard deviation is unknown works because the distribution of the sample mean becomes highly stable and well-approximated by a normal curve as n grows. When sigma isn't known, you typically estimate the standard error with $s/\sqrt{n}$ and would use the t-statistic. However, the t distribution with $df = n-1$ converges to the standard normal distribution as the degrees of freedom increase. That means the critical values from t and z become nearly identical and the resulting confidence intervals (or hypothesis tests) are virtually the same for large n. So the z approach is a good approximation in this context. In contrast, for small samples the t-distribution is preferred because it has heavier tails and more accurately accounts for the additional uncertainty in estimating sigma. The choice does affect the width of the CI in finite samples—the z interval is typically narrower than the t interval when sigma is unknown and n isn't large enough.

3. What is the relationship between standard deviation and variance?

A. The standard deviation is the square of the variance

B. The standard deviation is the square root of the variance

C. They are unrelated

D. The standard deviation is twice the variance

The standard deviation is the square root of the variance. Variance measures how spread out data are by averaging the squared deviations from the mean, which keeps all deviations positive and emphasizes larger ones. Taking the square root brings that measure back to the same units as the original data, making it easier to interpret. So if the variance is 4, the standard deviation is 2. The variance is in squared units, while the standard deviation matches the data's units. That's why the other ideas don't fit: the standard deviation isn't the square of the variance (that would give 16 in the example), it's not unrelated, and it isn't simply twice the variance (that would give 8 in the example).

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4. What is the difference between Bayesian and frequentist interpretations of probability?

A. Frequentist interprets probability as long-run frequency; Bayesian updates beliefs with prior and data to form posterior.

B. Bayesian interprets probability as long-run frequency; Frequentist updates beliefs with prior and data to form posterior.

C. Probability is always an observed frequency.

D. Prior beliefs are ignored in Bayesian updating.

Probability means different things in the two approaches. In the frequentist view, probability is about long-run frequencies: if you could repeat the same experiment many times, the proportion of times an event occurs would converge to a fixed value. The parameter you're estimating is considered fixed but unknown, and you don't ascribe a probability to it. Inference relies on sampling distributions and properties like long-run coverage of intervals. In the Bayesian view, probability is a degree of belief about a proposition, such as the value of a parameter. This belief is encoded in a prior distribution and is updated after observing data to form a posterior distribution, using Bayes' rule. The result is a probabilistic statement about the parameter that reflects both prior information and the data. The stated answer captures this distinction: frequentists use long-run frequency for probability, while Bayesians update beliefs with a prior and data to form a posterior. The other options mix up which interpretation belongs to which framework, describe probability purely as observed frequency, or claim priors are ignored in Bayesian updating. An example helps: for a coin with unknown bias, a frequentist would estimate the bias with the observed frequency and use confidence intervals; a Bayesian would start with a prior over the bias, update it with the data, and obtain a posterior distribution that reflects updated beliefs.

5. The area under the probability density function between two values represents the probability that a continuous random variable falls within that interval.

A. True

B. False

C. It cannot be determined from the information given

D. Only for discrete variables

In a continuous distribution, probabilities come from area under the density curve. The probability that the variable X falls between two values a and b is the integral of the density f(x) from a to b, which geometrically is the area under the curve between a and b. This is why the area between two points represents that probability. Remember that the total area under the curve over its entire support is 1, and the area of a single point is zero, so exact values have probability zero in continuous cases. This area interpretation doesn't apply to discrete variables, where probabilities are sums of point masses. So the statement is true for continuous random variables.

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6. The Central Limit Theorem describes the behavior of:

A. individual numeric observations in a population.

B. the distribution of all possible sample variances as the sample size increases.

C. the distribution of all possible sample standard deviations as the sample size increases.

D. the distribution of all possible sample means as the sample size increases.

The Central Limit Theorem focuses on the distribution of the sample mean when you take repeated samples from a population. As the sample size grows, the distribution of those sample means becomes approximately normal, even if the underlying population isn't normal. This normal distribution has a mean equal to the population mean and a standard deviation equal to the population standard deviation divided by the square root of the sample size (sigma/sqrt(n)). In other words, it's about all possible sample means you could obtain from repeated sampling, not about individual observations or about the distributions of variances or standard deviations across samples.

7. Which statement about confidence-interval width is true?

A. The width is fixed and does not depend on the data.

B. The width decreases as sample size increases and variability decreases.

C. The width increases as the sample size increases.

D. The width is determined solely by the confidence level and not by sample size.

The width of a confidence interval reflects how uncertain our estimate is, which comes from the standard error. The standard error gets smaller when we have more data or when the data are less variable, because our estimate becomes more precise. Specifically, the standard error scales roughly as the variability (like the standard deviation) divided by the square root of the sample size. So increasing the sample size reduces the width, and reducing variability also reduces the width. That's why the statement that the interval width decreases as sample size increases and variability decreases is true. Note that width also depends on the chosen confidence level (a higher level makes the interval wider) and is not entirely fixed or determined solely by the confidence level. The other options are not correct because the width does change with data and sample size, it does not increase with larger n, and it isn't determined only by the confidence level.

8. Which statement is true about the two-parameter normal distribution?

A. It is determined by variance and skewness

B. It is determined by mean and variance

C. It is determined by mean and range

D. It is determined by mean and standard deviation

A normal distribution is completely specified by where it sits and how spread out it is. In the two-parameter form, those two pieces are the mean (which centers the distribution) and the standard deviation (which controls its spread). The standard form shows this clearly: $f(x) = (1/(\sigma\sqrt{(2\pi)})) \exp(-(x-\mu)^2/(2\sigma^2))$. Here μ is the center of the bell curve, and σ is the scale that sets how wide the curve is. Because the standard deviation has the same units as the data, it's the natural way to describe spread. The variance is just σ^2, so you could describe the spread with mean and variance, but the conventional two-parameter specification uses mean and standard deviation. Skewness is not a parameter you set for a normal distribution; it is zero for all normal distributions. The range is not a defining parameter because a normal distribution extends to infinity in both directions, making range an uninformative descriptor for its shape. So, the statement that the two-parameter normal distribution is determined by the mean and the standard deviation is the correct way to specify it.

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9. What does N(0,1) denote in the context of standard normal distribution?

A. Normal distribution with mean 0 and standard deviation 1

B. Normal distribution with mean 1 and standard deviation 0

C. Uniform distribution on [0,1]

D. Exponential distribution with rate 1

This denotes the standard normal distribution: a normal distribution centered at zero with unit spread. In the notation N(μ, σ^2), μ is the mean and σ^2 is the variance; here the variance is 1, so the standard deviation is also 1. This is the canonical normal used to standardize any normal variable by transforming Z = (X − μ)/σ, which then follows N(0,1). The probability density function is f(z) = (1/√(2π)) exp(-z^2/2), and probabilities are read from the standard normal CDF Φ(z).

10. Which term describes the rule that produces an estimate?

A. Variable

B. Estimator

C. Statistic

D. Parameter

The rule that produces an estimate is called an estimator. In estimation, you start with a rule or function (the estimator) and apply it to your sample data to generate a numerical value—the estimate. The actual number you obtain from the data is a statistic, while the true quantity you're trying to infer is the parameter. For example, the sample mean is an estimator of the population mean; applying this rule to your data gives you the estimate, a statistic. The other terms describe different ideas: a variable is a characteristic that can vary, a statistic is the computed value from the data, and a parameter is the true population value you aim to estimate.

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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://qba2.examzify.com

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

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