Quantitative Business Analysis (QBA) Exam 2 Practice Test (Sample)

Study Guide

BY EXAMZIFY

Everything you need from our exam experts!

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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.

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!

Questions

1. **Which statement about the standard error of the mean is true?**
   - A. It increases with sample size.
   - B. It equals the population standard deviation.
   - C. It equals the population standard deviation divided by the square root of the sample size.
   - D. It is equal to the square root of the sample variance.

2. **The Central limit applies to samples that are:**
   - A. nonrandom
   - B. dependent
   - C. consist of a finite number of observations
   - D. random and independent

3. **What is P(X = c) if X is a continuous random variable?**
   - A. P(X=c) is undefined
   - B. P(X=c) can be one
   - C. P(X=c) is always zero
   - D. P(X=c) equals the density at c

4. **An observed value that can provide us with some idea as to what a parameter is equal to is called what?**
   - A. Estimate
   - B. Estimator
   - C. Statistic
   - D. Parameter

5. **Which parameter is μX?**
   - A. Location parameter
   - B. Dispersion parameter
   - C. Shape parameter
   - D. Scale parameter

6. The ________ of a random variable X, denoted σX, is simply the square root of the variance

A. Variance

B. Standard deviation

C. Mean

D. Skewness

7. A retail store tracks the number of customers entering each hour and the amount each customer spends. Which of the following correctly classifies the variables?

A. Both are discrete

B. Both are continuous

C. Customers = discrete; amount spent = continuous

D. Customers = continuous; amount spent = discrete

8. Which type of estimator has a standard deviation that does not converge to 0 as the sample size increases, meaning more data does not make estimates more precise?

A. Unbiased

B. Biased

C. Consistent

D. Inconsistent

9. The distribution that is symmetric and bell-shaped but with thicker tails and that approaches the Z-distribution as degrees of freedom increase is the

A. Z-distribution

B. Chi-square

C. t-distribution

D. Uniform

10. According to the Central Limit Theorem, as the sample size increases, the distribution of all possible sample means tends to be

A. Uniformly distributed

B. Exponentially distributed

C. Approximately normally distributed

D. Skewed left

Answers

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

Explanations

1. **Which statement about the standard error of the mean is true?**

    A. It increases with sample size.

    B. It equals the population standard deviation.

    C. It equals the population standard deviation divided by the square root of the sample size.

    D. It is equal to the square root of the sample variance.

The standard error of the mean captures how much the sample average is expected to vary from one random sample to another. When you take independent observations with a constant variance, the sampling distribution of the sample mean has a standard deviation equal to the population standard deviation divided by the square root of the sample size. In formula terms, SE(mean) = sigma / sqrt(n). This means larger samples give more precise estimates of the true mean, since the variability of the sample mean decreases with n. You can estimate this from data by using s / sqrt(n), where s is the sample standard deviation. Why the other ideas don't fit: the standard error is not the population standard deviation itself, and it's not the square root of the sample variance (that would be the sample standard deviation, not the standard error of the mean). Also, the standard error decreases as sample size grows, it does not increase.

2. **The Central limit applies to samples that are:**

    A. nonrandom

    B. dependent

    C. consist of a finite number of observations

    D. random and independent

The central limit theorem describes what happens to the distribution of the sample mean when you draw data that are random and independent. When you take many independent observations from a population and average them, the distribution of those sample means tends to look like a normal distribution, especially as the sample size gets larger, even if the underlying population isn't normal. The key requirements here are randomness (the data come from random draws) and independence (the draws do not influence each other). If samples aren't random, you can get biased results and the normal-shape behavior may not emerge. If observations are dependent, the standard CLT doesn't apply in its usual form because the variability of the average is affected by the dependence. The fact that you have a finite number of observations isn't the defining issue—the theorem is about what happens as the sample size grows, not about the sample being finite.

3. What is P(X = c) if X is a continuous random variable?

- A. P(X=c) is undefined
- B. P(X=c) can be one
- C. P(X=c) is always zero
- D. P(X=c) equals the density at c

For a continuous random variable, probabilities are assigned to intervals, not exact points. The probability density function describes density, not direct probabilities. The probability that X equals a single value c is the integral of the density over the single point {c}, which has zero width: $P(X = c) = \int_c^c f(x)\,dx = 0$. The density value f(c) is the height of the curve, used to compute probabilities over intervals via $P(a \le X \le b) = \int_a^b f(x)\,dx$. As an interval shrinks to a point, the probability approaches zero, since it's effectively density times an infinitesimal length. The only exception would be a degenerate distribution that puts all mass at c, but that is not a continuous distribution. Therefore, P(X = c) is always zero for a continuous random variable.

4. An observed value that can provide us with some idea as to what a parameter is equal to is called what?

- A. Estimate
- B. Estimator
- C. Statistic
- D. Parameter

Estimating a population parameter using sample data. The observed value you get from the sample—the number you actually compute using your data—is called an estimate. It serves as a best guess of the unknown population parameter based on the information in the sample. The rule or method you use to produce that guess is an estimator, while the actual numerical result is the estimate. A statistic is a general term for any numerical summary computed from the sample, and the parameter is the true value of the characteristic in the population, which you're trying to learn about. So, the observed value that gives us an idea of the parameter's value is an estimate.

5. Which parameter is µX?

- A. Location parameter
- B. Dispersion parameter
- C. Shape parameter
- D. Scale parameter

The main idea is understanding what µX represents. µX denotes the mean (expected value) of X, which identifies the distribution's center on the number line. That center is what shifts when you add a constant to X, so it's a location parameter. It doesn't describe how spread out X is (that's dispersion, like standard deviation), nor the distribution's shape (skewness or kurtosis), nor a scaling factor that changes the size of X. For a normal distribution, µX is the center of the bell curve and moves left or right with shifts in µ, while the spread is controlled by the dispersion parameter. Thus µX is a location parameter.

6. The _______ of a random variable X, denoted σX, is simply the square root of the variance

A. Variance

B. Standard deviation

C. Mean

D. Skewness

Standard deviation is the measure of how spread out a random variable is around its mean. It is defined as the square root of the variance: σX = sqrt(Var(X)). The variance captures the average squared deviation from the mean, which ends up in squared units, making interpretation harder. Taking the square root brings it back to the same units as X, giving a intuitive sense of typical deviation. The variance itself is Var(X), the mean is the expected value, and skewness describes asymmetry in the distribution. So the square root of the variance is the standard deviation, denoted σX.

7. A retail store tracks the number of customers entering each hour and the amount each customer spends. Which of the following correctly classifies the variables?

A. Both are discrete

B. Both are continuous

C. Customers = discrete; amount spent = continuous

D. Customers = continuous; amount spent = discrete

The key idea is distinguishing discrete versus continuous variables. A discrete variable takes separate, countable values. The number of customers entering each hour is a count, so you can have 0, 1, 2, and so on, but not fractional customers—that makes it discrete. A continuous variable can take on any value within a range. The amount spent by each customer can vary in many small amounts (like 12.99, 12.999, etc.) and, in theory, could take on infinitely many values within a range, so it's continuous. Therefore, the correct classification is: customers are discrete, and amount spent is continuous.

8. Which type of estimator has a standard deviation that does not converge to 0 as the sample size increases, meaning more data does not make estimates more precise?

A. Unbiased

B. Biased

C. Consistent

D. Inconsistent

This question targets the idea of estimator consistency and how precision improves with more data. An estimator is consistent when, as the sample size grows, its distribution concentrates around the true parameter value. That means both the bias must go to zero and the variance (hence the standard deviation) must shrink to zero. If the standard deviation does not approach zero as n increases, the spread of the estimates stays roughly the same regardless of how much data you collect, so the estimates do not converge to the true parameter. In other words, more data won't make them more precise in the long run. This describes an inconsistent estimator. Note that unbiasedness alone doesn't guarantee consistency—an estimator can be unbiased but still have variance that doesn't vanish, and thus not be consistent.

9. The distribution that is symmetric and bell-shaped but with thicker tails and that approaches the Z-distribution as degrees of freedom increase is the

A. Z-distribution

B. Chi-square

C. t-distribution

D. Uniform

This distribution is used when you're estimating a population mean but the population standard deviation is unknown. Because you're substituting the sample standard deviation for the true one, there's extra uncertainty, and the resulting distribution has heavier (fatter) tails than the normal distribution. It remains symmetric and bell-shaped, like the normal, but with these fatter tails to account for that extra variability. As the degrees of freedom increase (which happens with larger sample sizes), the estimate of the standard deviation becomes more reliable, so the extra tail heaviness diminishes. In the limit, the distribution converges to the standard normal distribution. This is why the t-distribution is described as approaching the Z-distribution as degrees of freedom grow. Why the other options don't fit: the Z-distribution is the normal distribution with known population standard deviation and does not account for extra uncertainty from estimating variability; the chi-square distribution is skewed to the right and not symmetric; the uniform distribution is flat, not bell-shaped.

10. According to the Central Limit Theorem, as the sample size increases, the distribution of all possible sample means tends to be

A. Uniformly distributed

B. Exponentially distributed

C. Approximately normally distributed

D. Skewed left

A key idea is that averaging many independent observations smooths out irregularities in the data. The Central Limit Theorem states that, for a large enough sample size, the distribution of the sample mean is approximately normal, with mean equal to the population mean and variance equal to the population variance divided by n. As n grows, this variance shrinks, so the sampling distribution becomes tighter around the true mean and looks bell-shaped. This holds even if the underlying population isn't normally distributed, provided the variance is finite. Therefore, the distribution of all possible sample means tends to be approximately normally distributed as the sample size increases. It's not uniform, not exponential, and not skewed left.

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!