

UGA MATH PLACEMENT PRACTICE EXAM (SAMPLE)

STUDY GUIDE

$$\begin{array}{l} 3. \sqrt{64} = 8 \\ 4. 3[8 + (4 + 2)] = 4^2 \\ 5. \frac{2^5}{2^3} = 4 \\ 6. 3(4^2 + 1) = 30 \end{array}$$



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.

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

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1. What is the solution to the equation $2x + 3 = 11$?
- A. $x = 4$
 - B. $x = 5$
 - C. $x = 6$
 - D. $x = 7$
2. What value does 'a' represent in the standard form of a quadratic?
- A. The width and direction of the parabola
 - B. The maximum value of the function
 - C. The y-intercept
 - D. The x-intercept
3. What is the formula for $\tan(x/2)$?
- A. $\sin(x)/(1 + \cos(x))$
 - B. $\sin(x)/(1 - \cos(x))$
 - C. plus or minus square root $(1 - \cos(x))/(1 + \cos(x))$
 - D. $1/(\sin(x) + \cos(x))$
4. If a coin is flipped 10 times, what is the total number of possible outcomes?
- A. 512
 - B. 256
 - C. 1024
 - D. 2048
5. To find the axis of symmetry, which mathematical operation is primarily used?
- A. Division
 - B. Multiplication
 - C. Subtraction
 - D. Addition

6. In the equation k equals some value, what does ' k ' represent?
- A. The slope of a line.
 - B. The intercept of a line.
 - C. The constant of variation.
 - D. The variable in an equation.
7. Which equation would you use to find the slope of a line between two points (x_1, y_1) and (x_2, y_2) ?
- A. $(y_2 - y_1) / (x_2 - x_1)$
 - B. $(x_2 - x_1) / (y_2 - y_1)$
 - C. $(y_2 + y_1) / (x_2 + x_1)$
 - D. $(x_1 - x_2) / (y_1 - y_2)$
8. Calculate the factorial of 4 ($4!$).
- A. 12
 - B. 20
 - C. 24
 - D. 36
9. What effect does an increase in ' b ' have on a rational function?
- A. Moves function left
 - B. Moves function inward
 - C. Moves function outward
 - D. Moves function upward
10. When an object strikes the ground, what does the equation $s(t)$ equal?
- A. 0
 - B. 1
 - C. -1
 - D. t

Answers

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

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Explanations

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1. What is the solution to the equation $2x + 3 = 11$?

A. $x = 4$

B. $x = 5$

C. $x = 6$

D. $x = 7$

To solve the equation $(2x + 3 = 11)$, the goal is to isolate the variable (x) . Start by eliminating the constant term on the left side. This can be achieved by subtracting 3 from both sides of the equation: $(2x + 3 - 3 = 11 - 3)$ This simplifies to: $(2x = 8)$ Next, to isolate (x) , divide both sides by 2: $(\frac{2x}{2} = \frac{8}{2})$ This simplifies to: $(x = 4)$ Thus, the solution to the equation is $(x = 4)$. This value satisfies the original equation, confirming its correctness. When substituted back into the equation, it yields $(2(4) + 3 = 8 + 3 = 11)$, which holds true.

2. What value does 'a' represent in the standard form of a quadratic?

A. The width and direction of the parabola

B. The maximum value of the function

C. The y-intercept

D. The x-intercept

In the standard form of a quadratic equation, which is represented as $(y = ax^2 + bx + c)$, the value of 'a' plays a crucial role in determining the shape and orientation of the parabola. Specifically, 'a' influences both the width and direction of the parabola. When 'a' is positive, the parabola opens upwards, indicating that it has a minimum point (the vertex is the lowest point). Conversely, when 'a' is negative, the parabola opens downwards, signifying a maximum point at the vertex. The absolute value of 'a' determines how "wide" or "narrow" the parabola appears; a larger absolute value results in a narrower parabola, while a smaller absolute value makes it wider. This understanding is essential when analyzing quadratic functions, as it impacts the graphical representation of the function and helps in determining key features such as the vertex and the overall behavior of the quadratic across the x-axis.

3. What is the formula for $\tan(x/2)$?

A. $\sin(x)/(1 + \cos(x))$

B. $\sin(x)/(1 - \cos(x))$

C. $\pm \sqrt{(1 - \cos(x))/(1 + \cos(x))}$

D. $1/(\sin(x) + \cos(x))$

The formula for $(\tan(\frac{x}{2}))$ is derived from the half-angle identities in trigonometry. One of the most useful forms of the half-angle identity for tangent is expressed as: $(\tan(\frac{x}{2}) = \frac{\sin(x)}{1 + \cos(x)})$ and also can be expressed as: $(\tan(\frac{x}{2}) = \pm \sqrt{\frac{1 - \cos(x)}{1 + \cos(x)}})$ The selected response aligns with the latter form, which is useful especially when calculating the tangent of half angles in certain applications. The derivation of this formula involves fundamental trigonometric identities where, by manipulating the sine and cosine functions through double angle formulas, this expression emerges. The square root notation indicates that the sign of $(\tan(\frac{x}{2}))$ depends on the quadrant in which the angle $(\frac{x}{2})$ lies. Thus, the correct answer provides an alternate representation of $(\tan(\frac{x}{2}))$ that is valid for every angle (x) .

4. If a coin is flipped 10 times, what is the total number of possible outcomes?

- A. 512
- B. 256
- C. 1024**
- D. 2048

When a coin is flipped, it has two possible outcomes for each flip: it can either land on heads or tails. To determine the total number of possible outcomes when flipping a coin multiple times, you can use the formula (2^n) , where (n) is the number of flips. In this case, since the coin is flipped 10 times, you would calculate (2^{10}) . Here's how that breaks down: - The first flip has 2 outcomes. - The second flip, independent of the first, also has 2 outcomes. - This pattern continues for all 10 flips. Therefore, the total number of outcomes is: $[2^{10} = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 1024]$ Thus, the total number of possible outcomes when a coin is flipped 10 times is 1024. This is why the choice of 1024 is the correct answer in this scenario.

5. To find the axis of symmetry, which mathematical operation is primarily used?

- A. Division
- B. Multiplication
- C. Subtraction**
- D. Addition

The axis of symmetry for a quadratic function, which commonly takes the form $(y = ax^2 + bx + c)$, can be found using a specific formula derived from the coefficients of the function. The formula to find the axis of symmetry is $(x = -\frac{b}{2a})$. In this formula, the operation of subtraction is used within the expression $(-b)$, which is the first step in determining the x-coordinate of the vertex for this quadratic function. After calculating $(-b)$, division by $(2a)$ is performed to find the final result. While division is essential in the overall computation, the key initial operation that sets the process in motion is the subtraction of the coefficient (b) from zero. Thus, recognizing that the process begins with subtraction clarifies why this answer is relevant when identifying the axis of symmetry.

6. In the equation k equals some value, what does ' k ' represent?

- A. The slope of a line.
- B. The intercept of a line.
- C. The constant of variation.**
- D. The variable in an equation.

In the equation where ' k ' is assigned a specific value, it typically represents the constant of variation. This concept is crucial in various mathematical contexts, particularly in relationships expressed as direct or inverse variations. For instance, in a direct variation scenario, the equation can be written as $y = kx$, where ' k ' is the constant of proportionality that illustrates how ' y ' depends on ' x '. It indicates the rate at which one variable changes in relation to another, making ' k ' a key element in understanding the relationship between the variables involved. When ' k ' is referred to as a constant of variation, it emphasizes that it does not change regardless of the values of the other variables in the equation. This constancy is vital for maintaining the relationship defined by the equation. Overall, recognizing ' k ' as the constant of variation helps in grasping how different quantities relate to each other mathematically, making it a fundamental concept in algebra and other branches of mathematics.

7. Which equation would you use to find the slope of a line between two points (x_1, y_1) and (x_2, y_2) ?

A. $(y_2 - y_1) / (x_2 - x_1)$

B. $(x_2 - x_1) / (y_2 - y_1)$

C. $(y_2 + y_1) / (x_2 + x_1)$

D. $(x_1 - x_2) / (y_1 - y_2)$

To determine the slope of a line between two points, you need to understand what slope represents. The slope is a measure of the steepness of a line and is defined as the change in the vertical coordinate (y-coordinates) divided by the change in the horizontal coordinate (x-coordinates) between two points. When considering two points represented as (x_1, y_1) and (x_2, y_2) , the change in y (the vertical change) is calculated as $(y_2 - y_1)$, which represents how much y changes when moving from the first point to the second. Similarly, the change in x (the horizontal change) is expressed as $(x_2 - x_1)$, showing how much x changes between the two points. Thus, the formula for slope is derived from these changes, leading to the expression $(y_2 - y_1) / (x_2 - x_1)$. This correctly represents the ratio of the vertical change to the horizontal change, giving you the slope of the line connecting the two points. In contrast, the other choices do not accurately represent the slope in the context of the standard definition, either inverting the necessary relationship or failing to reflect the concept of change correctly. Therefore, the first choice is

8. Calculate the factorial of 4 (4!).

A. 12

B. 20

C. 24

D. 36

To calculate the factorial of a number, you multiply that number by every positive integer less than it down to 1. For the factorial of 4, you would calculate it as follows: $4! = 4 \times 3 \times 2 \times 1$. Calculating it step-by-step: - First, multiply 4 and 3, which gives you 12. - Next, multiply that result (12) by 2, resulting in 24. - Finally, multiply 24 by 1, which keeps it at 24. Thus, $4! = 24$. The correct choice, therefore, is the one that states $4!$ equals 24. Understanding this process is key in factorial calculations and lays the foundation for more complex combinatorial problems, where factorials are frequently used to determine arrangements and selections.

9. What effect does an increase in 'b' have on a rational function?

A. Moves function left

B. Moves function inward

C. Moves function outward

D. Moves function upward

In the context of a rational function, an increase in the variable 'b' typically refers to a modification in the function's structure that can affect its shape or position on the graph. When examining how a rational function behaves with respect to changes in parameters, the term 'b' often represents a coefficient in the numerator or denominator. If 'b' is included within the denominator of a rational function, increasing 'b' can make the function's values approach zero more quickly as the input values are manipulated, particularly influencing vertical asymptotes. Additionally, if 'b' is part of the structure determining how the function approaches those asymptotes, it may create a zoning effect, pushing the function values inward toward the vertical asymptotes or drastically affecting the function's range. Therefore, in this context, an increase in 'b' indeed moves parts of the function inward, affecting the function's overall behavior and graphical depiction. The interpretation of the other choices may not align correctly with standard transformations related to rational functions; hence, they do not adequately describe the effect seen when 'b' is increased.

10. When an object strikes the ground, what does the equation $s(t)$ equal?

A. 0

B. 1

C. -1

D. t

The correct answer is that $s(t)$ equals 0 when an object strikes the ground. In the context of this question, $s(t)$ represents the vertical position of the object at time t , typically measured from a reference point like the ground level. When an object is in free fall and hits the ground, its vertical position is at the ground level, which is commonly defined as zero in many mathematical models. Thus, $s(t) = 0$ indicates that the object has reached ground level after its descent. This understanding aligns with the physics of free fall, where the object's height above the ground decreases until it reaches the point of impact. Therefore, at the moment the object strikes the ground, its height, represented by $s(t)$, is zero.

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:

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

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