

# FTCE Mathematic Grade 5-9 Practice Test (Sample)

## Study Guide



**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. Don't worry about getting everything right, 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, and take breaks to retain information better.**

## **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.**

## **7. Use Other Tools**

**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. Which rule applies to determine if a number is divisible by 3?**
  - A. The last digit must be zero**
  - B. The sum of its digits must be divisible by 3**
  - C. It must be an even number**
  - D. All of its digits must be 3**
  
- 2. Which type of numbers results from dividing by 2?**
  - A. Odd numbers only**
  - B. Even numbers only**
  - C. All integers**
  - D. Prime numbers only**
  
- 3. If a rectangle has dimensions of 10 units by 4 units, what is the perimeter?**
  - A. 28 units**
  - B. 40 units**
  - C. 20 units**
  - D. 50 units**
  
- 4. What mathematical properties are commonly visualized with the use of geoboards?**
  - A. Fractions**
  - B. Functions**
  - C. Geometry**
  - D. Patterns**
  
- 5. What does it mean for an equation to be balanced?**
  - A. A balanced equation has equal values on both sides of the equals sign.**
  - B. An unbalanced equation has unequal values on both sides of the equals sign.**
  - C. Only one side of a balanced equation can contain variables.**
  - D. A balanced equation requires at least one variable.**

- 6. Naturalistic assessment involves which of the following?**
- A. Written tests**
  - B. Observation**
  - C. Group discussions**
  - D. Quizzes**
- 7. What is the diameter if the radius of a circle is 6?**
- A. 3**
  - B. 12**
  - C. 6**
  - D. 18**
- 8. What is the result of multiplying a positive number by a negative number?**
- A. A positive number**
  - B. A negative number**
  - C. A zero**
  - D. Undefined**
- 9. What does the term "median" refer to in a data set?**
- A. The average of the data set**
  - B. The highest value in the data set**
  - C. The middle value when the data is ordered**
  - D. The difference between highest and lowest values**
- 10. What is the probability of flipping heads on a fair coin?**
- A. Probability =  $\frac{1}{4}$**
  - B. Probability =  $\frac{1}{3}$**
  - C. Probability =  $\frac{1}{2}$**
  - D. Probability =  $\frac{2}{3}$**

## **Answers**

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

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## **Explanations**

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1. Which rule applies to determine if a number is divisible by 3?

- A. The last digit must be zero
- B. The sum of its digits must be divisible by 3**
- C. It must be an even number
- D. All of its digits must be 3

To determine if a number is divisible by 3, the rule states that the sum of its digits must be divisible by 3. This is derived from the properties of the number system, where any integer can be expressed in terms of its digits and their place values. When you sum the digits of a number, the total gives you an equivalent modulo 3 result as the original number. For instance, if you take the number 123, the sum of its digits is  $1 + 2 + 3 = 6$ , which is divisible by 3. Therefore, 123 is also divisible by 3. This method simplifies the process of checking for divisibility, especially for larger numbers. The other options do not correctly represent the divisibility rule for 3. The last digit being zero does not guarantee divisibility by 3, an even number is not necessarily divisible by 3, and not all digits needing to be 3 is an incorrect condition for divisibility. Thus, the sum of the digits must indeed be divisible by 3 to ascertain if the entire number meets the criteria for divisibility by 3.

2. Which type of numbers results from dividing by 2?

- A. Odd numbers only
- B. Even numbers only**
- C. All integers
- D. Prime numbers only

When dividing a whole number by 2, the result can either be a whole number or a decimal, depending on whether the original number is even or odd. However, when we specifically consider the question of what type of numbers result from the division by 2, even numbers consistently yield whole numbers. Even numbers are defined as integers that are divisible by 2 without leaving a remainder, which means dividing an even number by 2 will always result in another integer. For example, dividing 4 by 2 gives you 2, and dividing 10 by 2 gives you 5. In contrast, when odd numbers are divided by 2, the result is a fraction or decimal (like 3 divided by 2 equals 1.5). Thus, the correct answer highlights that only even numbers yield whole number results when divided by 2, reinforcing the understanding of even and odd numbers within the context of division.

3. If a rectangle has dimensions of 10 units by 4 units, what is the perimeter?

- A. 28 units**
- B. 40 units
- C. 20 units
- D. 50 units

To find the perimeter of a rectangle, you can use the formula:  $\text{Perimeter} = 2 * (\text{length} + \text{width})$ . In this case, the length is 10 units and the width is 4 units. Plugging those values into the formula gives:  $\text{Perimeter} = 2 * (10 + 4) = 2 * 14 = 28 \text{ units}$ . Thus, the correct answer, which is 28 units, reflects the total distance around the rectangle, confirming the accurate application of the perimeter formula for a rectangle.

#### 4. What mathematical properties are commonly visualized with the use of geoboards?

- A. Fractions
- B. Functions
- C. Geometry**
- D. Patterns

Geoboards are specifically designed tools that allow students to explore and visualize various concepts in mathematics, particularly in the field of geometry. They consist of a grid of pegs on which rubber bands can be stretched to form shapes, lines, angles, and other geometric figures. When using geoboards, students can create and manipulate geometric shapes, such as triangles, squares, rectangles, and more complex polygons. This hands-on activity promotes a deeper understanding of geometric properties, spatial relationships, area, perimeter, and symmetry. By physically constructing shapes, students can better grasp abstract geometric concepts and relate them to real-world scenarios. While fractions, functions, and patterns can certainly be explored mathematically, they are not the primary focus of geoboards. The unique design and functionality of geoboards make them ideal for engaging with concepts specifically tied to geometry, thus reinforcing the importance of visual representation in developing a solid foundation in this area of mathematics.

#### 5. What does it mean for an equation to be balanced?

- A. A balanced equation has equal values on both sides of the equals sign.**
- B. An unbalanced equation has unequal values on both sides of the equals sign.
- C. Only one side of a balanced equation can contain variables.
- D. A balanced equation requires at least one variable.

A balanced equation indeed has equal values on both sides of the equals sign, reflecting a fundamental principle in algebra and mathematics. This concept is central to maintaining equality, which is a crucial aspect of solving equations. When an equation is balanced, it indicates that whatever operation is performed on one side must be equivalently performed on the other side to maintain that equality. This principle underscores many areas of mathematics, such as solving for unknowns in algebraic expressions. For example, in the equation  $(x + 3 = 7)$ , both sides are equal when  $(x)$  is 4, which keeps the equation balanced. In effect, a balanced equation maintains consistency and allows for meaningful mathematical interpretations and calculations. The idea of balance is not dependent on the presence of variables or the specific numerical values being used; it is solely about the equality represented in the equation itself. Options that discuss the inequality of values or the presence of variables in relation to balance do not accurately represent the core definition of a balanced equation.

**6. Naturalistic assessment involves which of the following?**

**A. Written tests**

**B. Observation**

**C. Group discussions**

**D. Quizzes**

Naturalistic assessment primarily relies on observation to evaluate a student's skills, behaviors, and interactions in real-life settings rather than controlled, artificial environments. This method allows educators to see how students apply their knowledge and skills in everyday situations, providing a more comprehensive understanding of their abilities and needs. By focusing on observation, this approach captures a range of student responses and behaviors that written tests, group discussions, or quizzes may not fully encapsulate. For instance, during naturalistic assessments, teachers can observe social interactions, problem-solving strategies, and the application of concepts in practice, which are valuable information not typically gathered in more structured assessment settings. This kind of assessment aligns closely with authentic learning and is often utilized in educational settings to gain insights that enhance individualized learning plans and instructional strategies.

**7. What is the diameter if the radius of a circle is 6?**

**A. 3**

**B. 12**

**C. 6**

**D. 18**

To determine the diameter of a circle when the radius is given, you use the relationship between the diameter and the radius. The diameter of a circle is twice the length of the radius. This can be expressed with the formula:  $\text{Diameter} = 2 \times \text{Radius}$ . In this case, if the radius is 6, you would calculate the diameter as follows:  $\text{Diameter} = 2 \times 6 = 12$ . This confirms that the correct answer is 12, as it accurately reflects the mathematical relationship between a circle's radius and its diameter. Understanding this relationship is fundamental in geometry, especially when working with properties of circles.

**8. What is the result of multiplying a positive number by a negative number?**

- A. A positive number**
- B. A negative number**
- C. A zero**
- D. Undefined**

When multiplying a positive number by a negative number, the result is always a negative number. This occurs because of the fundamental properties of multiplication regarding the signs of numbers. In mathematics, one way to understand this is to consider the concept of direction. Positive numbers can be thought of as representing a forward direction, while negative numbers represent a backward direction. When you multiply a positive number by a negative number, you are essentially taking a quantity in the positive direction and applying an influence that is in the opposite direction (negative), resulting in a negative outcome. Additionally, this concept can be verified through examples. For instance, if you multiply 3 (a positive number) by -2 (a negative number), the result will be -6, which is indeed negative. This consistent outcome across different examples reinforces the understanding that the product of a positive and a negative number will never yield a positive or zero result, making the selection of a negative number the correct choice in this scenario.

**9. What does the term "median" refer to in a data set?**

- A. The average of the data set**
- B. The highest value in the data set**
- C. The middle value when the data is ordered**
- D. The difference between highest and lowest values**

The term "median" refers specifically to the middle value of a data set when the values are arranged in ascending or descending order. This means that to find the median, you must first sort the data from least to greatest (or greatest to least) and then identify the central number. If the data set has an odd number of values, the median is the single middle number. However, if the data set contains an even number of values, the median is calculated by taking the average of the two middle numbers. This characteristic makes the median a useful measure of central tendency, especially in a data set that may have extreme values (outliers) that could skew the average. This clarity in the definition highlights why the median represents an essential concept in understanding data distribution.

**10. What is the probability of flipping heads on a fair coin?**

**A. Probability =  $1/4$**

**B. Probability =  $1/3$**

**C. Probability =  $1/2$**

**D. Probability =  $2/3$**

In the case of a fair coin, there are two equally likely outcomes when it is flipped: heads or tails. Since both outcomes are equally probable, we can determine the probability by considering the number of favorable outcomes over the total number of possible outcomes. Here, there is 1 favorable outcome (getting heads) out of a total of 2 possible outcomes (heads or tails). Thus, the probability of flipping heads is calculated as follows: Probability of heads = Number of favorable outcomes / Total number of outcomes =  $1 / 2$ . This means that for every flip of the coin, there is a 50% chance of landing on heads. Therefore, the answer of  $1/2$  accurately represents the probability of flipping heads on a fair coin.

## 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](mailto:hello@examzify.com).**

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

**<https://ftcmathgr5to9.examzify.com>**

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