

# 8th Grade FAST Mathematics Pre-Algebra Practice Test (Sample)

## Study Guide



**Everything you need from our exam experts!**

**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

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

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.

# 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

SAMPLE

1. If  $a = 2$  and  $b = 5$ , what is  $(ab)^2$ ?
  - A. 20
  - B. 10
  - C. 100
  - D. 25
  
2. Solve for  $x$ :  $(2x)/3 = 8$ 
  - A. 12
  - B. 6
  - C. 8
  - D. 16
  
3. Which axis runs left to right in the coordinate plane?
  - A. Y-axis
  - B. Origin
  - C. Both
  - D. X-axis
  
4. Which theorem states that in a right triangle, the squares of the legs sum to the square of the hypotenuse?
  - A. Distance Formula
  - B. Pythagorean Theorem
  - C. Law of Sines
  - D. Law of Cosines
  
5. Solve the proportion  $4/9 = x/27$  for  $x$ .
  - A. 108
  - B. 12
  - C.  $27/4$
  - D. 9
  
6. Which statement best describes scientific notation?
  - A. A rounding method
  - B. A compact way of writing very large or very small numbers.
  - C. A method to solve equations
  - D. A type of irrational number

7. The equations  $y = 3x + 1$  and  $y = 3x + 4$  represent parallel lines. How many solutions does the system have?
- A. No solution
  - B. One solution
  - C. Infinitely many solutions
  - D. The lines are the same
8. If the two lines are parallel and distinct, the solution set is
- A. One solution
  - B. Infinitely many solutions
  - C. The lines are the same
  - D. No solution
9. What is the sum of the interior angles of a quadrilateral?
- A. 180 degrees
  - B. 270 degrees
  - C. 360 degrees
  - D. 540 degrees
10. What are the slope and y-intercept of the line  $y = -2x + 5$ ?
- A. Slope 2, y-intercept 5
  - B. Slope -2, y-intercept 5
  - C. Slope 0, y-intercept 5
  - D. Slope -2, y-intercept -5

## Answers

SAMPLE

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

SAMPLE

## **Explanations**

SAMPLE

1. If  $a = 2$  and  $b = 5$ , what is  $(ab)^2$ ?

- A. 20
- B. 10
- C. 100**
- D. 25

Squaring a product means you square each factor:  $(ab)^2 = a^2 b^2$ . With  $a = 2$  and  $b = 5$ , you get  $a^2 = 4$  and  $b^2 = 25$ , and multiplying them gives  $4 \times 25 = 100$ . Alternatively,  $ab = 2 \times 5 = 10$ , and then  $10^2 = 100$ . So the result is 100. The other numbers come from squaring only one factor or not squaring the product at all.

2. Solve for  $x$ :  $(2x)/3 = 8$

- A. 12**
- B. 6
- C. 8
- D. 16

This tests solving a simple linear equation by undoing the operations on  $x$ . First undo the division by 3 by multiplying both sides by 3, giving  $2x = 24$ . Then undo the multiplication by 2 by dividing both sides by 2, so  $x = 12$ . You can check by substituting back:  $(2 \times 12)/3 = 24/3 = 8$ , which matches the right side. Other candidate values wouldn't make the left side equal 8 (for example, if  $x$  were 6, the left side would be 4; if  $x$  were 8, it would be  $16/3$ ; if  $x$  were 16, it would be  $32/3$ ). So 12 is the correct solution.

3. Which axis runs left to right in the coordinate plane?

- A. Y-axis
- B. Origin
- C. Both
- D. X-axis**

The horizontal axis runs left to right. In the standard coordinate plane, the X-axis is the horizontal line that marks  $x$ -values and increases as you move to the right. The Y-axis is vertical, marking  $y$ -values, and the Origin is the point where the two axes intersect at  $(0,0)$ . Since only the horizontal axis fits the description, the axis that runs left to right is the X-axis.

4. Which theorem states that in a right triangle, the squares of the legs sum to the square of the hypotenuse?

- A. Distance Formula
- B. Pythagorean Theorem**
- C. Law of Sines
- D. Law of Cosines

In a right triangle, the lengths of the two legs relate to the hypotenuse by  $a^2 + b^2 = c^2$ , where  $a$  and  $b$  are the legs and  $c$  is the hypotenuse. This means the sum of the squares of the two shorter sides equals the square of the longest side. It's easy to see its power with a quick check: a 3-4-5 triangle satisfies  $3^2 + 4^2 = 5^2$  because  $9 + 16 = 25$ . The Distance Formula uses the same squared-difference idea to measure distance between points, but that's a broader tool, not the specific relationship inside a right triangle. The Law of Sines relates all sides to their opposite angles in any triangle, and the Law of Cosines generalizes the Pythagorean relation to any triangle (reducing to the familiar  $a^2 + b^2 = c^2$  when the included angle is 90 degrees). The statement described is the Pythagorean Theorem.

5. Solve the proportion  $\frac{4}{9} = \frac{x}{27}$  for  $x$ .

- A. 108
- B. 12**
- C.  $\frac{27}{4}$
- D. 9

You're working with a proportion, so the two fractions are equal. Use cross-multiplication: 4 times 27 equals 9 times  $x$ . That gives  $108 = 9x$ , so  $x = \frac{108}{9} = 12$ . You can also see it by scaling the right side:  $x$  equals 27 times the fraction  $\frac{4}{9}$ , which is  $27 \cdot (\frac{4}{9}) = 12$ . Substituting back shows  $\frac{12}{27}$  simplifies to  $\frac{4}{9}$ , confirming the solution.

6. Which statement best describes scientific notation?

- A. A rounding method
- B. A compact way of writing very large or very small numbers.
- C. A method to solve equations**
- D. A type of irrational number

Scientific notation is a compact way of writing very large or very small numbers. It expresses a number as a coefficient between 1 and 10 multiplied by a power of 10. For example, 4,500,000 can be written as  $4.5 \times 10^6$ , and 0.00032 as  $3.2 \times 10^{-4}$ . This form makes it easy to compare magnitudes and to multiply or divide by simply adding or subtracting the exponents. It's not a rounding method, not a way to solve equations, and not a type of irrational number.

7. The equations  $y = 3x + 1$  and  $y = 3x + 4$  represent parallel lines. How many solutions does the system have?

- A. No solution**
- B. One solution**
- C. Infinitely many solutions**
- D. The lines are the same**

When two linear equations are written in slope-intercept form, if they share the same slope but have different y-intercepts, they are parallel and never cross. A solution to the system would be a point that lies on both lines, so it would have to satisfy both equations at once. Since these lines never meet, there is no such point. That means there are no solutions to the system. If they were the same line, there would be infinitely many solutions, because every point on the line would satisfy both equations. If they intersected at exactly one point, there would be one solution.

8. If the two lines are parallel and distinct, the solution set is

- A. One solution**
- B. Infinitely many solutions**
- C. The lines are the same**
- D. No solution**

When solving a system of linear equations, you're looking for a point that lies on both lines. If two lines are parallel and distinct, they never cross each other, so there isn't any point that satisfies both equations at once. That means there is no solution to the system. To compare with other scenarios: if the lines crossed at one point, there would be exactly one solution. If they were the same line, every point on that line would satisfy both equations, giving infinitely many solutions. But with parallel and distinct lines, none of those situations occurs, so the correct description is that there is no solution.

9. What is the sum of the interior angles of a quadrilateral?

- A. 180 degrees**
- B. 270 degrees**
- C. 360 degrees**
- D. 540 degrees**

For any polygon, the interior angles add up to  $(n - 2) \times 180$  degrees, where  $n$  is the number of sides. A quadrilateral has 4 sides, so the sum is  $(4 - 2) \times 180 = 360$  degrees. You can see this by drawing a diagonal to split the shape into two triangles; each triangle's interior angles total 180 degrees, so together they make 360 degrees. The other numbers come from polygons with different numbers of sides (three sides give 180, five sides give 540), so they don't apply to a four-sided figure.

**10. What are the slope and y-intercept of the line  $y = -2x + 5$ ?**

**A. Slope 2, y-intercept 5**

**B. Slope -2, y-intercept 5**

**C. Slope 0, y-intercept 5**

**D. Slope -2, y-intercept -5**

In this line, the slope-intercept form is  $y = mx + b$ , where  $m$  is the slope and  $b$  is the y-intercept—the value of  $y$  when  $x$  is 0. Here, the coefficient of  $x$  is  $-2$ , so the slope is  $-2$ . When  $x = 0$ ,  $y = -2(0) + 5 = 5$ , so the line crosses the  $y$ -axis at 5, which is the y-intercept. That gives a line that falls as  $x$  increases (negative slope) and passes through  $(0, 5)$ . So the slope is  $-2$  and the y-intercept is 5. If the slope were positive, the line would rise as  $x$  increases; if it were 0, it would be horizontal; if the intercept were  $-5$ , it would cross the  $y$ -axis at  $-5$ .

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

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

**<https://8thgradefastmathprealgebra.examzify.com>**

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

SAMPLE