

PSAT 8/9 Math 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

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

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. Which trig ratio is opposite over adjacent?
 - A. SINE
 - B. COSINE
 - C. TANGENT
 - D. COTANGENT

2. If two angles of a triangle measure 50 degrees and 60 degrees, what is the measure of the third angle?
 - A. 70
 - B. 60
 - C. 50
 - D. 80

3. Are quadratic function graphs symmetrical with respect to their axis of symmetry?
 - A. Yes
 - B. No
 - C. Sometimes
 - D. Not at all

4. Compute the surface area of a rectangular prism with length 2, width 3, and height 4.
 - A. 52
 - B. 72
 - C. 96
 - D. 108

5. Factor out the greatest common factor from $3x^2 - 12x - 36$; which of the following is the correct factored form?
 - A. $3(x^2 - 4x - 12)$
 - B. $3(x^2 + 4x - 12)$
 - C. $2(x^2 - 4x - 18)$
 - D. $x(3x - 12) - 36$

6. A triangle has two angles measuring 30 degrees and 70 degrees. What is the measure of the third angle?
- A. 60 degrees
 - B. 80 degrees
 - C. 70 degrees
 - D. 50 degrees
7. What is the base (common ratio) of the exponential expression $y = 40 \times (0.75)^3$?
- A. 0.50
 - B. 0.75
 - C. 1.00
 - D. 1.25
8. What is the standard formula for the surface area of a rectangular prism with length l , width w , and height h ?
- A. $2(lw + lh + wh)$
 - B. $lw + lh + wh$
 - C. $2(lw) + 2(h)$
 - D. $l w h$
9. Which symbol represents 'at least, greater than or equal to'?
- A. \leq
 - B. \geq
 - C. $<$
 - D. $>$
10. If $\sin \theta = 1/2$ and $\cos \theta = \sqrt{3}/2$ for some acute angle θ , then $\tan \theta$ equals which value?
- A. $\sqrt{3}/3$
 - B. 1
 - C. $\sqrt{3}$
 - D. 2

Answers

SAMPLE

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

SAMPLE

Explanations

SAMPLE

1. Which trig ratio is opposite over adjacent?

- A. SINE
- B. COSINE
- C. TANGENT**
- D. COTANGENT

In a right triangle, the ratio formed by the side opposite the angle and the side adjacent to the angle is what tells you how steep the angle is. That ratio is defined as tangent. So when you see opposite over adjacent, that's the tangent ratio. To see why the others don't fit: sine uses opposite over the hypotenuse, which involves the longest side, not the adjacent. Cosine uses adjacent over the hypotenuse, again involving the hypotenuse. Cotangent is the reciprocal of tangent, which is adjacent over opposite, the inverse of what's asked. So the only one that matches opposite over adjacent is tangent. For example, if opposite is 3 and adjacent is 4, tangent is $\frac{3}{4}$, illustrating this exact relationship.

2. If two angles of a triangle measure 50 degrees and 60 degrees, what is the measure of the third angle?

- A. 70**
- B. 60
- C. 50
- D. 80

In any triangle, the angles add up to 180 degrees. So the third angle is 180 minus the sum of the other two: $180 - (50 + 60) = 180 - 110 = 70$ degrees. Checking the total: $50 + 60 + 70 = 180$, which confirms it. If the third angle were 60, 50, or 80, the angles would add to 170, 160, or 190 respectively, which isn't possible for a triangle. So the third angle measures 70 degrees.

3. Are quadratic function graphs symmetrical with respect to their axis of symmetry?

- A. Yes**
- B. No
- C. Sometimes
- D. Not at all

Parabolas always have a vertical line of symmetry through their vertex. For any quadratic function in standard form $y = ax^2 + bx + c$ with $a \neq 0$, the graph is a parabola that mirrors itself across the vertical line $x = -b/(2a)$. In vertex form $y = a(x - h)^2 + k$, this line is $x = h$. This means for every point at $x = h + t$ there is a matching point at $x = h - t$ with the same y-value, so the left and right sides match perfectly. Because of this, the graph is symmetric about its axis of symmetry for all quadratics. The other options would imply no symmetry or conditional symmetry, which doesn't fit how a parabola behaves.

4. Compute the surface area of a rectangular prism with length 2, width 3, and height 4.

A. 52

B. 72

C. 96

D. 108

Surface area of a rectangular prism is found by adding the areas of all six faces, which each come in pairs of equal size. Use the formula $2(lw + lh + wh)$. With length 2, width 3, and height 4: $lw = 2 \cdot 3 = 6$, $lh = 2 \cdot 4 = 8$, $wh = 3 \cdot 4 = 12$. Add them: $6 + 8 + 12 = 26$. Double for the pairs of opposite faces: $26 \times 2 = 52$. So the surface area is 52. If you only summed the three distinct face areas once or made a miscount with the doubling, you'd get a different number.

5. Factor out the greatest common factor from $3x^2 - 12x - 36$; which of the following is the correct factored form?

A. $3(x^2 - 4x - 12)$

B. $3(x^2 + 4x - 12)$

C. $2(x^2 - 4x - 18)$

D. $x(3x - 12) - 36$

Factoring out the greatest common factor means pulling out the largest factor that appears in every term. The terms $3x^2$, $-12x$, and -36 share a factor of 3 (they don't all share an x , since -36 has no x). Pulling out 3 gives $3(x^2 - 4x - 12)$. Distributing back confirms we get $3x^2 - 12x - 36$, so this is the correct factored form. The other options either use the wrong factor, change the sign in the middle term, or don't present a proper common-factor extraction.

6. A triangle has two angles measuring 30 degrees and 70 degrees. What is the measure of the third angle?

A. 60 degrees

B. 80 degrees

C. 70 degrees

D. 50 degrees

In any triangle, the interior angles sum to 180 degrees. The two given angles add up to $30 + 70 = 100$, so the third angle must be $180 - 100 = 80$ degrees. A quick check shows $30 + 70 + 80 = 180$, confirming the result. The other options don't work because they would give totals less than 180 ($60 \rightarrow 160$), ($70 \rightarrow 170$), or ($50 \rightarrow 150$).

7. What is the base (common ratio) of the exponential expression $y = 40 \times (0.75)^3$?

- A. 0.50
- B. 0.75**
- C. 1.00
- D. 1.25

In an exponential expression written as $a \times r^n$, the base (or common ratio) is the number r that gets raised to a power. In $y = 40 \times (0.75)^3$, the base is 0.75 because that is the number being raised to the third power. The 40 is the starting amount, not the base. Since 0.75 is less than 1, multiplying by it three times shrinks the value: $(0.75)^3 = 0.421875$, so $y = 40 \times 0.421875 = 16.875$.

8. What is the standard formula for the surface area of a rectangular prism with length l , width w , and height h ?

- A. $2(lw + lh + wh)$**
- B. $lw + lh + wh$
- C. $2(lw) + 2(h)$
- D. $l w h$

Surface area is found by adding the areas of all six faces of a rectangular prism. There are two faces with area lw , two with area lh , and two with area wh . So the total is $2(lw) + 2(lh) + 2(wh)$, which factors to $2(lw + lh + wh)$. This is why the standard formula is $2(lw + lh + wh)$. Expressions like $lw + lh + wh$ miss the factor of 2 because they count only one of each face, $2(lw) + 2(h)$ leaves out a pair of faces, and $l w h$ is the volume, not the surface area.

9. Which symbol represents 'at least, greater than or equal to'?

- A. \leq
- B. \geq**
- C. $<$
- D. $>$

At least means you include the boundary value, so the quantity can be equal to the number or bigger. The symbol that captures this idea is the greater-than-or-equal-to symbol. It shows that the left-hand side is either greater than the right-hand side or exactly the same as it. For example, $x \geq 5$ means x could be 5, 6, 7, and so on. The other symbols describe stricter or opposite relations: \leq means at most (no more than), $<$ means strictly less than (not equal), and $>$ means strictly greater than (not equal).

10. If $\sin \theta = 1/2$ and $\cos \theta = \sqrt{3}/2$ for some acute angle θ , then $\tan \theta$ equals which value?

A. $\sqrt{3}/3$

B. 1

C. $\sqrt{3}$

D. 2

Tan is the ratio of sine to cosine, so $\tan \theta = \sin \theta / \cos \theta$. With $\sin \theta = 1/2$ and $\cos \theta = \sqrt{3}/2$, the ratio is $(1/2) \div (\sqrt{3}/2) = (1/2) \times (2/\sqrt{3}) = 1/\sqrt{3}$, which can be written as $\sqrt{3}/3$. Since θ is acute, both sine and cosine are positive, so the positive value is correct. This corresponds to a 30° angle in a 30-60-90 triangle, where $\tan 30^\circ = 1/\sqrt{3} = \sqrt{3}/3$.

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.

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

<https://psat8thand9thmath.examzify.com>

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

SAMPLE