PSAT 8/9 Math 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. 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. Any non-zero number raised to the zero power equals 1. Which of the following expresses this fact?

A. 1

B. 0

C. The base

D. Undefined

2. What is the minimum value of $f(x) = (x - 3)^2$?

A. 0

B. 1

C. 3

D. -3

3. If f(x) = 3x, what is f(6)?

A. 18

B. 12

C. 21

D. 24

4. What is Sonya's age in terms of Dave's age d, given Sonya is three times Dave's age?

A. d

B. 3d

C. 2d

D. 4d

5. What is b^0 for a nonzero b?

A. 0

B. 1

C. b

D. Undefined

6. A percentage fee of the sales price paid to a salesperson is known as a _____.

A. Commission

B. Tip

C. Tax

D. Fee

7. Simplify (2x)^2

A. 4x^2

B. x^2

C. 2x^2

D. 8x^2

8. What is the fully factored form of 3x^2 - 12x - 36?

A. 3 (x - 6)(x + 2)

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

C. (3x - 12)(x + 3)

D. 3x (x - 6)

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

A. 52

B. 72

C. 96

D. 108

10. What is Sonya's age minus Dave's age in terms of d?

A. 2d

B. 0

C. d

D. 3d

Answers

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

Explanations

1. Any non-zero number raised to the zero power equals 1. Which of the following expresses this fact?

A. 1

B. 0

C. The base

D. Undefined

The key idea is that raising a nonzero number to the zero power gives 1. This comes from the exponent rule a^m / a^n = a^(m-n). If you set m = n, you get a^0 = a^m / a^m = 1. So any nonzero base raised to 0 equals 1. This fact is expressed by the number 1, because a^0 equals 1 for any nonzero base. The other options don't express the value: zero is not the result of a^0, the base is the quantity being raised, and undefined would apply in some different situations (like 0^0, which is not what this statement is about).

2. What is the minimum value of $f(x) = (x - 3)^2$?

A. 0

B. 1

C. 3

D. -3

This question hinges on the idea that a square can't be negative. The expression $(x - 3)^2$ is always greater than or equal to 0, and it equals 0 exactly when x = 3. So the smallest value f(x) can take is 0, and that happens at x = 3. For any other x, the square is positive, so you can't get any smaller value.

3. If f(x) = 3x, what is f(6)?

A. 18

B. 12

C. 21

D. 24

When a function is given as f(x) = 3x, it means the output is three times the input. To find f(6), substitute x with 6: f(6) = 3 × 6 = 18. So the result is 18.

4. What is Sonya's age in terms of Dave's age d, given Sonya is three times Dave's age?

A. d

B. 3d

C. 2d

D. 4d

The main idea is that when one person's age is a multiple of another's, you multiply the smaller age by that multiple. Sonya is three times as old as Dave, and Dave's age is d, so Sonya's age is 3 × d, which is 3d. For a quick check, if Dave were 6, Sonya would be 18, which matches three times as old. The other expressions don't reflect the "three times" relationship: d would mean the same age, 2d would be twice as old, and 4d would be four times as old.

5. What is b^0 for a nonzero b?

A. 0

B. 1

C. b

D. Undefined

Raising a nonzero number to the zero power yields 1. This follows the exponent rule a^m / a^n = a^{m-n} for a ≠ 0. If you divide the same power by itself, you get 1, and that equals a^{m-m} = a^0. So b^0 = 1 for any nonzero b. The base being nonzero matters because it lets us divide by the same base without hitting division by zero. The other possibilities don't fit the exponent rule: it isn't 0 or b, since those would correspond to different exponents, and it isn't undefined because the base is nonzero.

6. A percentage fee of the sales price paid to a salesperson is known as a _____.

A. Commission

B. Tip

C. Tax

D. Fee

A commission is the amount a salesperson earns that's based on a percentage of the sale price. This setup ties earnings directly to how much is sold, rewarding higher sales. For example, earning 8% on a $1,000 sale gives $80. A tip is a gratuity for service, not typically tied to the sale price. A tax is money collected by the government, not paid to the salesperson. A fee is a charge for a service, often fixed rather than a percentage of the sale. So, the term that fits is commission.

7. Simplify (2x)^2

A. 4x^2

B. x^2

C. 2x^2

D. 8x^2

Squaring a product means you square each factor. So (2x)^2 = (2)^2 · (x)^2 = 4x^2, which is the same as (2x)(2x) = 4x^2. This shows why the coefficient 2 is squared and the x is squared as well. The other results would come from squaring only part of the expression or not squaring the coefficient, which isn't what happens when you square the entire product. The correct result is 4x^2.

8. What is the fully factored form of 3x^2 - 12x - 36?

A. 3 (x - 6)(x + 2)

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

C. (3x - 12)(x + 3)

D. 3x (x - 6)

When you see a quadratic, start by pulling out any common factor, then factor the remaining expression completely. Here, every term shares a factor of 3, so factor that out: 3(x^2 - 4x - 12). Now factor the trinomial x^2 - 4x - 12 by finding two numbers that multiply to -12 and add to -4. Those numbers are -6 and 2, giving (x - 6)(x + 2). Put it all together: 3(x - 6)(x + 2). This is the fully factored form because it's a product of linear factors with no common factors left. Quick check by expanding: (x - 6)(x + 2) = x^2 - 4x - 12, and multiplying by 3 gives 3x^2 - 12x - 36, which matches the original expression. Other forms either don't factor completely or produce a different expansion.

9. 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 = 2·3 = 6, lh = 2·4 = 8, wh = 3·4 = 12. Add them: 6 + 8 + 12 = 26. Double for the pairs of opposite faces: 26 × 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.

10. What is Sonya's age minus Dave's age in terms of d?

A. 2d

B. 0

C. d

D. 3d

Subtracting expressions that share the same variable lets you combine like terms. If Sonya's age is 3d and Dave's age is d, then Sonya's age minus Dave's age is (3d) − (d) = 2d. The d stays as a factor, showing the difference scales with d. So the expression for Sonya's age minus Dave's age is 2d.

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!