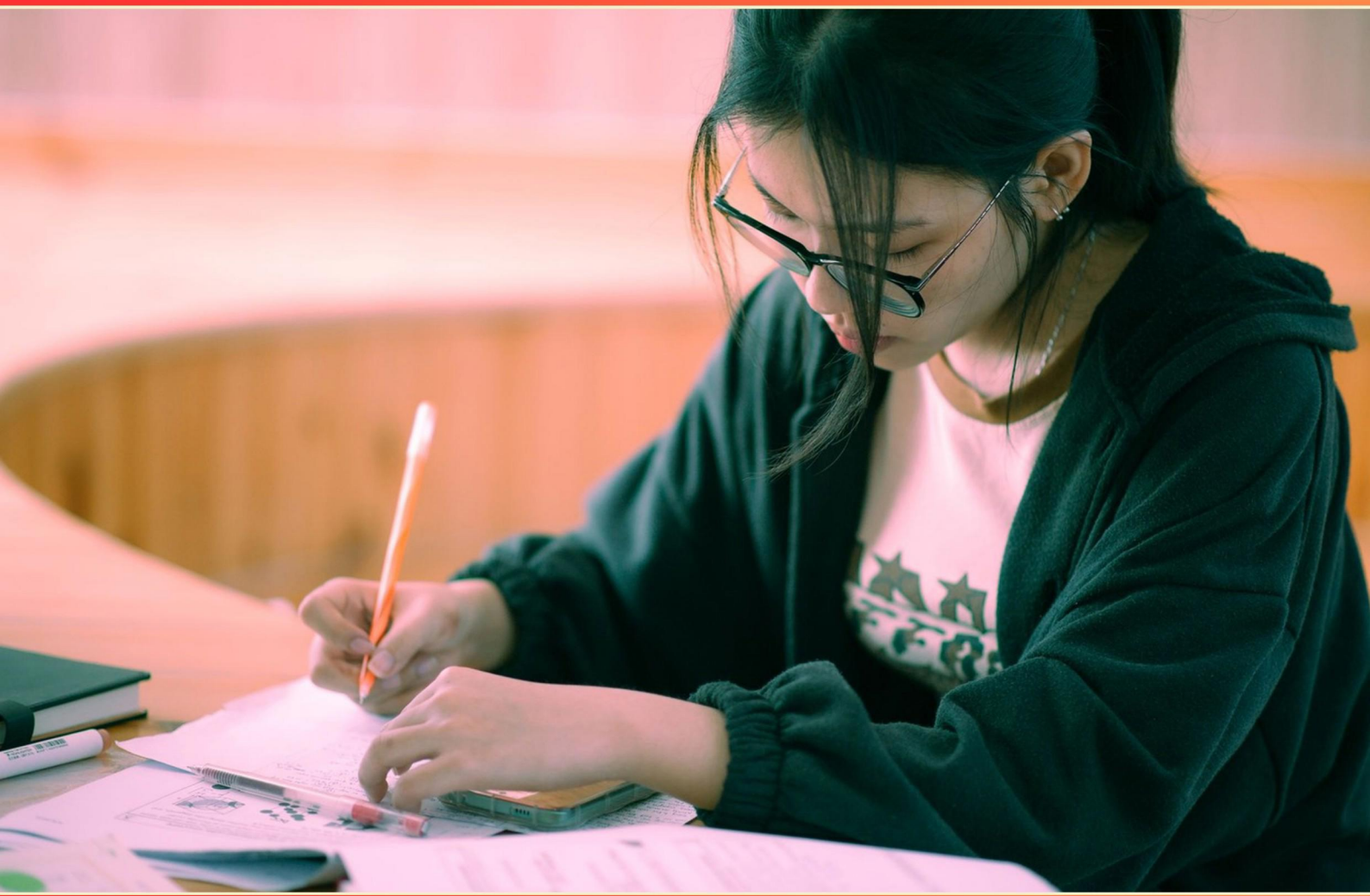
SAE MATHEMATICS PRACTICE EXAM (SAMPLE)

STUDY GUIDE



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.

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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!

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Questions

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1. **In a survey of 150 students, how many students chose baseball as their favorite sport?**

   A. 20 students

   B. 30 students

   C. 40 students

   D. 50 students

2. **What is the value of \(5^3 \)?**

   A. 100

   B. 125

   C. 150

   D. 175

3. **What type of mathematical strategy is used when decomposing 76 + 9 into 76 + 10 - 1?**

   A. Compensation

   B. Decomposition

   C. Estimation

   D. Trial and improvement

4. **Which decimal represents the value of 75 thousandths?**

   A. 0.075

   B. 0.0075

   C. 0.75

   D. 0.005

5. **In a math classroom, which type of learning is enhanced by allowing students to choose their multiplication strategies?**

   A. Critical thinking

   B. Computation

   C. Set theory

   D. Declarative knowledge

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6. If $a = 4$ and $b = 3$, what is $a^2 + b^2$?

A. 25

B. 20

C. 18

D. 16

7. What is the value of the expression: 7 x 8 - 10?

A. 46

B. 54

C. 48

D. 50

8. What is the area of a triangle with a base of 10 cm and height of 5 cm?

A. 20 cm²

B. 25 cm²

C. 30 cm²

D. 35 cm²

9. How do you calculate the area of a trapezoid?

A. (Base1 + Base2) × Height / 2

B. Base1 × Base2

C. (Base1 - Base2) × Height

D. (Base1 + Base2) / Height

10. What is the value of 5 + 3 × 2?

A. 11

B. 16

C. 10

D. 8

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Answers

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

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Explanations

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1. In a survey of 150 students, how many students chose baseball as their favorite sport?

A. 20 students

B. 30 students

C. 40 students

D. 50 students

To determine how many students chose baseball as their favorite sport, it is essential to know the specific statistics or data gathered from the survey. In this scenario, the correct choice indicates that 30 students selected baseball as their favorite sport. This choice reflects a plausible outcome in a diverse group of 150 students and aligns with potential survey findings that might suggest baseball holds a moderate level of popularity among the options provided. Survey responses can vary widely, but 30 students out of 150 signifies that a considerable portion of the group has a preference for baseball, which can be effectively represented as 20% of the surveyed population. Understanding this context helps contextualize why this number may have been the result of the survey, taking into account various factors such as the overall popularity of baseball as a sport among students and what other options may have been available. The correct selection showcases a reasonable alignment with what one might expect from a group of this size, emphasizing the importance of analyzing survey data critically.

2. What is the value of \(5^3 \)?

A. 100

B. 125

C. 150

D. 175

To determine the value of \(5^3 \), you need to understand the concept of exponentiation. The expression \(5^3 \) means that the base, which is 5, is multiplied by itself a total of three times. Mathematically, this can be expressed as: \[5^3 = 5 \times 5 \times 5 \] First, calculate \(5 \times 5 \): \[5 \times 5 = 25 \] Next, take this result and multiply it by 5 once more: \[25 \times 5 = 125 \] Thus, the final result of \(5^3 \) is 125. This is why the correct answer is the value of 125, as it accurately represents the calculation involving the exponent.

3. What type of mathematical strategy is used when decomposing 76 + 9 into 76 + 10 - 1?

A. Compensation

B. Decomposition

C. Estimation

D. Trial and improvement

The mathematical strategy used when decomposing 76 + 9 into 76 + 10 - 1 is known as compensation. This technique involves adjusting one of the numbers to make the arithmetic simpler. In this case, adding 10 instead of 9 makes it easier to calculate, and then subtracting 1 balances the equation back to the original sum. Compensation is particularly useful in mental math, as it simplifies calculations by allowing for easier rounding or adjusting numbers while maintaining the same overall value. This method is widely employed for its efficiency in performing addition or subtraction in a more manageable form.

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4. Which decimal represents the value of 75 thousandths?

A. 0.075

B. 0.0075

C. 0.75

D. 0.005

To determine which decimal represents 75 thousandths, it's essential to understand how decimal values correspond to fractional parts. The term "thousandths" indicates a division by 1,000. Therefore, 75 thousandths can be expressed as a fraction: \[\frac{75}{1000} \] To convert this fraction into decimal form, you divide 75 by 1000. Doing the division: \[75 \div 1000 = 0.075 \] This shows that 0.075 is the decimal representation of 75 thousandths. Each of the digits in 0.075 corresponds to its position relative to the decimal point — the first digit after the decimal point represents tenths (0.0), the second digit represents hundredths (0.07), and the third digit represents thousandths (0.075). In contrast, the other choices represent different values. For example, 0.0075 corresponds to 7.5 ten-thousandths, 0.75 represents 75 hundredths, and 0.005 denotes 5 thousandths. Therefore, recognizing these distinctions is crucial for interpreting decimal values correctly. Consequently, the correct answer is that 75 thousandths is represented

5. In a math classroom, which type of learning is enhanced by allowing students to choose their multiplication strategies?

A. Critical thinking

B. Computation

C. Set theory

D. Declarative knowledge

Allowing students to choose their multiplication strategies enhances critical thinking because it requires them to evaluate different methods and select the one that they believe will be the most effective for a given problem. This process of decision-making involves analyzing the advantages and disadvantages of various strategies, which nurtures the ability to think critically about mathematical concepts. Critical thinking in math also involves problem-solving and reasoning skills, as students reflect on their choices and consider how their strategy impacts their understanding of multiplication. This kind of learning environment encourages deeper engagement with the material, fostering independence and confidence in mathematical reasoning. In contrast, computation focuses more on executing mathematical operations accurately, while set theory and declarative knowledge pertain to understanding specific mathematical concepts and facts. These aspects, while important, do not necessarily promote the same level of critical engagement and personal strategy development as choosing one's multiplication methods does.

6. If \(a = 4 \) and \(b = 3 \), what is \(a^2 + b^2 \)?

A. 25

B. 20

C. 18

D. 16

To determine the value of \(a^2 + b^2 \) when \(a = 4 \) and \(b = 3 \), we first compute \(a^2 \) and \(b^2 \) individually. Calculating \(a^2 \): \[a^2 = 4^2 = 16 \] Next, we calculate \(b^2 \): \[b^2 = 3^2 = 9 \] Now, we add these two results together: \[a^2 + b^2 = 16 + 9 = 25 \] Thus, the value of \(a^2 + b^2 \) is 25. This confirms that the correct answer is 25, which corresponds to one of the given choices. The other options do not align with the calculations performed, as they represent different sums that do not properly account for the squares of 4 and 3. Therefore, 25 is indeed the correct sum of the squares of \(a \) and \(b \).

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7. What is the value of the expression: 7 x 8 - 10?

A. 46

B. 54

C. 48

D. 50

To solve the expression \(7 \times 8 - 10 \), you must first calculate the multiplication before performing the subtraction, following the order of operations (often remembered by the acronym PEMDAS: Parentheses, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right)). First, compute \(7 \times 8 \): \[7 \times 8 = 56 \] Next, subtract 10 from this product: \[56 - 10 = 46 \] Thus, the value of the expression \(7 \times 8 - 10 \) is 46. This is why the correct answer reflects that value. The calculations adhere to standard arithmetic procedures, leading to the result being derived accurately.

8. What is the area of a triangle with a base of 10 cm and height of 5 cm?

A. 20 cm²

B. 25 cm²

C. 30 cm²

D. 35 cm²

To find the area of a triangle, you can use the formula: Area = (base × height) / 2. In this case, the base is 10 cm and the height is 5 cm. Plugging these values into the formula gives: Area = (10 cm × 5 cm) / 2 = 50 cm² / 2 = 25 cm². Thus, the area of the triangle is indeed 25 cm². This calculation is fundamental in geometry and illustrates how the dimensions of base and height directly contribute to the triangular area.

9. How do you calculate the area of a trapezoid?

A. (Base1 + Base2) × Height / 2

B. Base1 × Base2

C. (Base1 - Base2) × Height

D. (Base1 + Base2) / Height

The area of a trapezoid is calculated using the formula that involves both of its bases and the height. A trapezoid has two parallel sides, referred to as Base1 and Base2. To find the area, you need to take the average of the lengths of these two bases, which is represented by the expression (Base1 + Base2) / 2. This average is then multiplied by the height of the trapezoid, representing the perpendicular distance between the two bases. Therefore, the entire formula for the area is (Base1 + Base2) × Height / 2. This approach allows for an accurate calculation that accounts for the varying lengths of the bases, as a trapezoid can have bases of different lengths, unlike a rectangle where the bases are equal. The other options do not correctly encapsulate the relationship between the height and the bases needed to calculate the area of a trapezoid.

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10. What is the value of 5 + 3 × 2?

A. 11

B. 16

C. 10

D. 8

To solve the expression 5 + 3 × 2, it's important to follow the order of operations, which is often remembered by the acronym PEMDAS (Parentheses, Exponents, Multiplication and Division (from left to right), Addition and Subtraction (from left to right)). In this case, multiplication takes precedence over addition. Thus, you should first perform the multiplication: 1. Calculate 3 × 2, which equals 6. 2. Then, add that result to 5: 5 + 6 equals 11. Hence, the final result of the expression 5 + 3 × 2 is 11. This confirms that the correct answer is indeed the first choice. Understanding the order of operations is crucial in arithmetic to ensure that calculations are performed correctly.

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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://saemathematics.examzify.com

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

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