

ONTARIO MATHEMATICS PROFICIENCY PRACTICE TEST (SAMPLE) STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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THE FULL VERSION STUDY GUIDE

<https://ontario-mathematicsproficiency.examzify.com>



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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

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1. Which expression is equal to $\sqrt{3(x + 2) + 4}$?
- A. $3x + 6 + 4$
 - B. $3x + 10$
 - C. $3x + 8$
 - D. $3x + 12$
2. What is the square root of 144?
- A. 10
 - B. 11
 - C. 12
 - D. 14
3. What is the perimeter of a rectangle with a length of 12 m and a width of 5 m?
- A. 30 m
 - B. 34 m
 - C. 40 m
 - D. 50 m
4. What is the median in a data set with an even number of values?
- A. The highest value in the set
 - B. The lowest value in the set
 - C. The average of the two middle values
 - D. The most frequently occurring value
5. If a recipe requires 2 cups of flour for 3 servings, how much is needed for 12 servings?
- A. 4 cups
 - B. 6 cups
 - C. 8 cups
 - D. 10 cups

6. What is the integral of $\int (2x) dx$ with respect to x ?

- A. $x + C$
- B. $x^2 + C$
- C. $2x^2 + C$
- D. $3x + C$

7. What characterizes exponential growth?

- A. Growth at a constant rate
- B. Growth proportional to the current value
- C. Growth that increases linearly
- D. Growth that decreases over time

8. What is the square of -8 ?

- A. 16
- B. 32
- C. 64
- D. 81

9. What is the quadratic formula used to solve equations of the form $ax^2 + bx + c = 0$?

- A. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
- B. $x = -b / (2a)$
- C. $x = b^2 - 4ac$
- D. $x = (b \pm \sqrt{a - c}) / a$

10. What is the circumference of a circle with a radius of 7 cm (use $\pi \approx 3.14$)?

- A. 43.96 cm
- B. 21.98 cm
- C. 14 cm
- D. 18.28 cm

Answers

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

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Explanations

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1. Which expression is equal to $3(x + 2) + 4$?

- A. $3x + 6 + 4$
- B. $3x + 10$**
- C. $3x + 8$
- D. $3x + 12$

To determine which expression is equal to $3(x + 2) + 4$, we need to simplify the given expression step by step. Start with the expression: $3(x + 2) + 4$. First, distribute the 3 across the terms inside the parentheses: $3 \cdot x + 3 \cdot 2 + 4$. This simplifies to: $3x + 6 + 4$. Next, combine the like terms $(6 + 4)$: $3x + 10$. Thus, the expression $3(x + 2) + 4$ simplifies to $3x + 10$. Therefore, the expression that is equal to the original one is indeed $3x + 10$. This means the correct choice reflects the proper simplification process and the mathematical principles of distribution and combining like terms.

2. What is the square root of 144?

- A. 10
- B. 11
- C. 12**
- D. 14

The square root of a number is a value that, when multiplied by itself, gives the original number. In this case, we are looking for a value that, when squared, results in 144. Calculating the square root involves finding which number multiplied by itself equals 144. When we multiply 12 by itself (12×12), we arrive at 144. Therefore, the square root of 144 is indeed 12. This process illustrates why the answer is correct, as 12 meets the criteria of being the square root of 144. Meanwhile, the other options do not satisfy this condition, as their squares ($10 \times 10 = 100$; $11 \times 11 = 121$; and $14 \times 14 = 196$) do not equal 144.

3. What is the perimeter of a rectangle with a length of 12 m and a width of 5 m?

- A. 30 m
- B. 34 m**
- C. 40 m
- D. 50 m

To find the perimeter of a rectangle, you use the formula: $\text{Perimeter} = 2 \times (\text{length} + \text{width})$. In this case, the length of the rectangle is 12 meters, and the width is 5 meters. Plugging these values into the formula: $\text{Perimeter} = 2 \times (12 \text{ m} + 5 \text{ m})$. $\text{Perimeter} = 2 \times 17 \text{ m}$. $\text{Perimeter} = 34 \text{ m}$. Thus, the correct answer is that the perimeter of the rectangle is 34 meters. This number reflects the total distance around the rectangle, reinforcing the concept of perimeter as the sum of all four sides of the shape.

4. What is the median in a data set with an even number of values?

- A. The highest value in the set
- B. The lowest value in the set
- C. The average of the two middle values**
- D. The most frequently occurring value

The median of a data set is a measure of central tendency that represents the middle value. When dealing with an even number of values in a data set, the median is calculated by taking the average of the two middle values. This is necessary because there is no single middle value when the data set has an even number of entries; hence, the two central values must be averaged to find the median. For instance, in a data set with the values arranged in ascending order, if there are eight values, you would need to identify the fourth and fifth values, then calculate their average to determine the median. This method ensures that the median accurately reflects the center of the data set, providing a better representation of the typical value. The other options do not correctly describe how to calculate the median for a data set with an even number of values. They refer to other statistical measures or values that do not correspond to the definition of median.

5. If a recipe requires 2 cups of flour for 3 servings, how much is needed for 12 servings?

- A. 4 cups
- B. 6 cups
- C. 8 cups**
- D. 10 cups

To determine how much flour is needed for 12 servings when a recipe calls for 2 cups of flour for 3 servings, you can use a simple scaling method. First, find the amount of flour needed for one serving by dividing the amount of flour by the number of servings: $2 \text{ cups of flour} \div 3 \text{ servings} = \frac{2}{3} \text{ cup of flour per serving}$. Next, to find the amount needed for 12 servings, multiply the amount needed for one serving by 12: $\frac{2}{3} \text{ cup per serving} \times 12 \text{ servings} = 8 \text{ cups of flour}$. This calculation reveals that for 12 servings, 8 cups of flour is required. This is why the correct answer is 8 cups; it accurately reflects the scaling of the original recipe to accommodate the larger quantity of servings.

6. What is the integral of $(2x)$ with respect to (x) ?

- A. $(x + C)$
- B. $(x^2 + C)$**
- C. $(2x^2 + C)$
- D. $(3x + C)$

To find the integral of $(2x)$ with respect to (x) , we can apply the basic rules of integration. The integral of a function generally involves determining a function whose derivative will give the original function. The integral of (x^n) can be computed using the formula: $\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$ for any $(n \neq -1)$, where (C) is the constant of integration. In this case, we have $(2x)$, which can be thought of as $(2x^1)$. Here, (n) equals 1. Applying the integration formula, we increase the exponent by 1 (from 1 to 2) and divide by the new exponent: $\int 2x \, dx = 2 \cdot \frac{x^{1+1}}{1+1} + C = 2 \cdot \frac{x^2}{2} + C$. The (2) in the numerator and the (2) in the denominator will cancel each other out: $\int 2x \, dx = x^2 + C$.

7. What characterizes exponential growth?

- A. Growth at a constant rate
- B. Growth proportional to the current value**
- C. Growth that increases linearly
- D. Growth that decreases over time

Exponential growth is characterized by growth that is proportional to the current value. This means that as the quantity increases, the rate of growth also increases. For instance, if you have a population of bacteria that doubles every hour, the growth in the next hour will be dependent on the current population size at that moment; more bacteria mean more opportunities for additional bacteria to reproduce, leading to even more significant growth. This concept reflects the mathematical principle of exponential functions, where the growth rate is constant relative to the size of the quantity being measured rather than being fixed over time as seen in linear growth models. In contrast, the other choices represent different patterns of growth that do not align with the nature of exponential increase.

8. What is the square of -8?

- A. 16
- B. 32
- C. 64**
- D. 81

To find the square of -8, you simply multiply -8 by itself. Squaring a number involves taking that number and multiplying it by itself, regardless of whether the number is positive or negative. So, the calculation is: $(-8) \times (-8) = 64$. When you multiply two negative numbers together, the result is a positive number. Therefore, the square of -8 is 64, making it the correct answer. The other choices do not represent the square of -8, as they are products of either the wrong calculations or the wrong values altogether. Understanding how squaring works, particularly with negative numbers, is crucial in solving such questions accurately.

9. What is the quadratic formula used to solve equations of the form $ax^2 + bx + c = 0$?

- A. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$**
- B. $x = -b / (2a)$
- C. $x = b^2 - 4ac$
- D. $x = (b \pm \sqrt{a - c}) / a$

The quadratic formula is a powerful tool for solving quadratic equations, which take the standard form $ax^2 + bx + c = 0$. The formula, expressed as $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$, provides the values of x that satisfy the equation based on the coefficients a , b , and c . The term $b^2 - 4ac$ is known as the discriminant, and it determines the nature of the roots of the quadratic equation. When applying the formula, you can compute the roots by first calculating the discriminant, then using it to find the two possible values of x through the $\pm$ operator. This means that the quadratic formula not only helps in determining the solutions but also enables you to understand the characteristics of the solutions (such as whether they are real or complex) based on the value of the discriminant. The other choices do not represent the quadratic formula accurately for solving quadratic equations. One of the options contains only a simplified component of the formula and does not account for the roots in their full form or other necessary components, thereby failing to provide a method for finding

10. What is the circumference of a circle with a radius of 7 cm (use $\pi \approx 3.14$)?

- A. 43.96 cm
- B. 21.98 cm
- C. 14 cm
- D. 18.28 cm

To determine the circumference of a circle, the formula used is $C = 2\pi r$, where C represents the circumference and r is the radius of the circle. Given that the radius of the circle is 7 cm, we can substitute this value into the formula. First, calculate 2×7 , which equals 14. Then, multiply this result by π , which is approximated as 3.14 in this case: $C = 2 \times 3.14 \times 7$ $C = 14 \times 3.14$ $C = 43.96$ cm. This calculation shows that the circumference of the circle with a radius of 7 cm is indeed 43.96 cm. The method illustrates how multiplying the diameter (which is twice the radius) by the value of π gives the correct measurement of the circle's perimeter.

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:

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

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