

Algebra 2 Honors 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

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1. In an arithmetic sequence with $a_1 = 7$ and $d = -2$, what is a_3 ?
 - A. 3
 - B. 5
 - C. -1
 - D. 9

2. Find the sum of the arithmetic sequence 3, 5, ..., 23.
 - A. 121
 - B. 132
 - C. 143
 - D. 156

3. What is the term for a polynomial that is the sum or difference of terms with variables raised to positive integer powers and coefficients that may be real or complex?
 - A. Monomial
 - B. Polynomial
 - C. Binomial
 - D. Trinomial

4. Which term is a symbol used to indicate a root, read as the n th root of x ?
 - A. Power
 - B. Radical
 - C. Vertex
 - D. Volume

5. The number of square units needed to cover a surface.
 - A. Area
 - B. Perimeter
 - C. Radius
 - D. Volume

6. Let $f(x) = 2x + 1$ and $g(x) = x^2$. Compute $(f \circ g)(-2)$ and $(g \circ f)(-2)$.
- A. $(f \circ g)(-2) = 9$; $(g \circ f)(-2) = 9$
 - B. $(f \circ g)(-2) = 9$; $(g \circ f)(-2) = 4$
 - C. $(f \circ g)(-2) = 4$; $(g \circ f)(-2) = 9$
 - D. $(f \circ g)(-2) = 4$; $(g \circ f)(-2) = 4$
7. For parabola $y = 3x^2 + 6x + 7$, what is the x-coordinate of the vertex?
- A. -2
 - B. 0
 - C. 1
 - D. -1
8. Having the same or constant ratio.
- A. Constant
 - B. Proportional
 - C. Uniform
 - D. Equivalent
9. Which term describes a value that is close to its exact value?
- A. Approximate
 - B. Exact
 - C. Integer
 - D. Fraction
10. The set $\{\dots\}$ shown, containing negative numbers, zero, and positive numbers, is an example of which number system?
- A. Integers
 - B. Natural numbers
 - C. Whole numbers
 - D. Rational numbers

Answers

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

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Explanations

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1. In an arithmetic sequence with $a_1 = 7$ and $d = -2$, what is a_3 ?

- A. 3**
- B. 5
- C. -1
- D. 9

In an arithmetic sequence, each term differs from the previous one by the constant difference. The n th term is a_1 plus $(n-1)$ times the common difference. Here, $a_1 = 7$ and $d = -2$, so $a_3 = a_1 + (3-1)d = 7 + 2(-2) = 3$. A quick check: $a_2 = 7 + (2-1)(-2) = 5$, and $a_3 = a_2 + d = 5 + (-2) = 3$. So the third term equals 3.

2. Find the sum of the arithmetic sequence 3, 5, ..., 23.

- A. 121
- B. 132
- C. 143**
- D. 156

For an arithmetic sequence, the sum of the first n terms is $S_n = n/2$ times (first term plus last term). Here the first term is 3 and the last term is 23, with common difference 2. First find how many terms there are: $a_n = a_1 + (n-1)d \rightarrow 23 = 3 + (n-1) \cdot 2 \rightarrow 23 = 3 + 2n - 2 \rightarrow 23 = 2n + 1 \rightarrow n = 11$. Now compute the sum: $S_{11} = 11/2 \times (3 + 23) = 11/2 \times 26 = 11 \times 13 = 143$. The sum is 143, which is the correct value.

3. What is the term for a polynomial that is the sum or difference of terms with variables raised to positive integer powers and coefficients that may be real or complex?

- A. Monomial
- B. Polynomial**
- C. Binomial
- D. Trinomial

Polynomial illustrates the idea: it's an expression formed by adding or subtracting monomials, where each monomial has a coefficient and variables raised to nonnegative integer powers. This matches the description of a sum or difference of such terms, with coefficients that can be real or complex. A monomial is just one term, a binomial has two terms, and a trinomial has three terms, so the broader classification is the polynomial.

4. Which term is a symbol used to indicate a root, read as the nth root of x?

- A. Power
- B. Radical**
- C. Vertex
- D. Volume

Radical. The radical sign (the $\sqrt{\quad}$ symbol) is the symbol used to indicate a root, and when an index is shown, like a small n, it reads as the nth root of x (for example, $\sqrt[3]{x}$ is the cube root). The square root is the special case with no index, simply \sqrt{x} . Taking a root is the inverse operation of raising to a power, so $x^{(1/n)}$ corresponds to the nth root of x. For contrast, a power is about exponents, a vertex is a specific point (like a turning point or corner), and volume measures how much space a 3D object occupies.

5. The number of square units needed to cover a surface.

- A. Area**
- B. Perimeter
- C. Radius
- D. Volume

Area is the measure of the two-dimensional space inside a boundary, and it's expressed in square units because it describes flat surface coverage. When you're figuring out how much material is needed to cover a surface, you're asking for how much area that surface has, not how long its edge is or how much 3D space it contains. Perimeter measures the distance around the edge (a length), radius is a distance from the center to the edge, and volume describes the amount of space inside a solid (cubic units). For a rectangle, area equals length times width; for a circle, area equals pi times radius squared. So the number of square units needed to cover a surface corresponds to the area.

6. Let $f(x) = 2x + 1$ and $g(x) = x^2$. Compute $(f \circ g)(-2)$ and $(g \circ f)(-2)$.

- A. $(f \circ g)(-2) = 9$; $(g \circ f)(-2) = 9$**
- B. $(f \circ g)(-2) = 9$; $(g \circ f)(-2) = 4$
- C. $(f \circ g)(-2) = 4$; $(g \circ f)(-2) = 9$
- D. $(f \circ g)(-2) = 4$; $(g \circ f)(-2) = 4$

Composition means you apply the inner function first, then the outer one. For the first composition at -2: find $g(-2) = (-2)^2 = 4$, then $f(4) = 2 \cdot 4 + 1 = 9$. So $(f \circ g)(-2) = 9$. For the second composition at -2: find $f(-2) = 2(-2) + 1 = -3$, then $g(-3) = (-3)^2 = 9$. So $(g \circ f)(-2) = 9$. Both expressions evaluate to 9, so the results are 9 and 9.

7. For parabola $y = 3x^2 + 6x + 7$, what is the x-coordinate of the vertex?

- A. -2
- B. 0
- C. 1
- D. -1**

For a parabola in standard form $y = ax^2 + bx + c$, the x-coordinate of the vertex occurs where the derivative is zero, which leads to the formula $x = -b/(2a)$. This is the point where the parabola changes direction, its axis of symmetry. Here, $a = 3$ and $b = 6$. Plugging into the formula gives $x = -6 / (2 \cdot 3) = -6 / 6 = -1$. So the x-coordinate of the vertex is -1. If you want the full vertex, you can substitute $x = -1$ back into the equation: $y = 3(-1)^2 + 6(-1) + 7 = 3 - 6 + 7 = 4$, so the vertex is (-1, 4).

8. Having the same or constant ratio.

- A. Constant
- B. Proportional**
- C. Uniform
- D. Equivalent

The concept being tested is the idea of a proportional relationship, where two quantities change together in such a way that their ratio stays the same. If one quantity is proportional to the other, you can write it as $y = kx$, with k being a constant, so the ratio y/x equals k for any value of x . This constant ratio is what defines proportionality, making it the best description for "having the same or constant ratio." Other terms don't capture that two quantities maintain a fixed relationship: a constant refers to a fixed value of a single quantity, uniform means the same throughout, and equivalent means equal in value, which isn't necessarily about a constant ratio between two variables.

9. Which term describes a value that is close to its exact value?

- A. Approximate**
- B. Exact
- C. Integer
- D. Fraction

Approximation is when you use a value that is close to the true, exact amount. In math and measurement, the exact value is the precise one, but we often replace it with a rounded or simpler number that is good enough for our purposes. For instance, using 3.14 as a stand-in for pi gives a value close to pi, but not exact. The words "integer" and "fraction" describe the form of a number, not how near it is to the true value, and "exact" means precisely the true value. So the best word for a value that is close to the exact value is approximate.

10. The set {...} shown, containing negative numbers, zero, and positive numbers, is an example of which number system?

A. Integers

B. Natural numbers

C. Whole numbers

D. Rational numbers

The set shown includes negative numbers, zero, and positive numbers, so it matches all integers: every whole number is included with its negative counterpart, plus zero. Natural numbers are positive (sometimes starting at 1) and don't have negatives or zero in some conventions. Whole numbers include zero and positives but no negatives. Rational numbers cover fractions as well as integers, so while every integer is rational, the set shown is more specifically the integers.

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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://algebra2honors.examzify.com>

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

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