

3 Texas STAAR EOC Grade 9 Math Practice Tests

Full-Length Test Prep with Detailed Answer Explanations

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3 Practice Tests

★ Algebra 1 ★

Welcome!

This book contains **3 full-length Algebra 1 practice tests** designed to prepare you for your end-of-course assessment. Each test covers all nine major topics:

📖 Foundations of Algebra 📖 Linear Equations

📖 Functions 📖 Linear Functions & Graphs

📖 Systems of Equations 📖 Polynomials & Factoring

📖 Quadratic Functions 📖 Exponential Functions

📖 Data Analysis & Statistics

Every test includes **detailed answer explanations** so you can learn from each question.

Practice builds confidence. Confidence builds results.

“ Take your time, review each answer explanation, and learn from every mistake. That’s how you grow! ”



How to Use This Book

Your 3-step path to Algebra 1 success


What's Inside


- **3 Full-Length Practice Tests** — each covers all 9 chapters of Algebra 1: real numbers, linear equations & inequalities, functions, graphing, systems of equations, polynomials, quadratics, exponential functions, and data analysis.
- **Detailed Answer Explanations** — every question includes a complete step-by-step solution to help you learn from your mistakes.
- **Formula Reference Sheet** — all the key Algebra 1 formulas and concepts organized in one page for quick access.
- **Test Tracker** — record scores and track improvement across all three tests.


Suggested Study Schedule

1. **Test 1 (Untimed — Diagnostic):** Take the first test without a time limit. This is your baseline. Don't worry about speed—focus on showing your work and trying every question.
2. **Study the gaps:** After scoring Test 1, identify your weakest topics. Spend 5–7 days reviewing those areas before moving to Test 2.
3. **Test 2 (Timed — 120 Minutes):** Take this test with a timer. Practice pacing yourself. Review your answers and compare to Test 1 to see improvement.
4. **Test 3 (Full Test Conditions):** Simulate real test conditions—quiet room, no notes, timed. This is your dress rehearsal.

 **Types of Questions**

 **Multiple Choice:** Four answer options. Work the problem yourself first, then match your answer. Eliminate clearly wrong options to narrow your choices.

 **Short Answer & Constructed Response:** Write your full solution. Show all equations, substitutions, and simplification steps. Partial credit is given for correct work even if the final answer is missing or wrong.

 **Graphing & Data:** Plot points, draw lines, and interpret graphs and scatter plots. Label axes clearly and use a ruler for straight lines.



Tip: After each test, go back and review every question you missed. Read the full explanation and try the problem again on your own. That single habit makes the biggest difference.



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💡 Test-Taking Tips 💡

Five key strategies for Algebra 1 success

Five Strategies for Every Problem

- 1. Read carefully.** Don't skim. Read every word of the problem and identify exactly what is being asked before you start calculating.
- 2. Set up before solving.** Write the equation or expression before diving into arithmetic. Label your variables and identify what you're solving for.
- 3. Show your work.** Write each step clearly—distribute, combine like terms, isolate the variable. This earns partial credit and reduces mistakes.
- 4. Check your answer.** Plug your result back into the original equation or condition. Does it work?
- 5. Re-read the question.** Make sure you answered what was actually asked. Many mistakes come from solving correctly but answering the wrong question.

Common Algebra 1 Mistakes to Watch For

- ⚠️ Sign errors:** When multiplying or dividing an inequality by a negative, flip the sign.
- ⚠️ Distributing negatives:** $-(3x - 5) = -3x + 5$, not $-3x - 5$.
- ⚠️ Slope:** Rise over run, $m = \frac{y_2 - y_1}{x_2 - x_1}$. Don't swap x and y .
- ⚠️ Factoring:** Always check by multiplying your factors back out.
- ⚠️ Quadratic formula:** Don't forget the "2a" in the denominator, not just "a".

 Don't Forget

- Circle keywords in word problems: "how many more," "total," "rate"
- For word problems, define your variable first: "Let $x = \dots$ "
- When graphing, plot at least two points and check a third
- Convert between forms when it helps: slope-intercept \leftrightarrow standard
- For systems, check your solution in both equations



“ The best way to learn algebra is to understand **why** each step works, not just memorize procedures. When you review your mistakes, ask: Where did my thinking go wrong? ”



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What You'll Need

Gather these materials before you begin

Materials Checklist

- ✓ **Sharpened Pencils** — #2 pencils, at least two
- ✓ **Good Eraser** — for clean corrections
- ✓ **Scratch Paper** — for working out problems
- ✓ **Graphing Calculator** — if allowed by your state's test
- ✓ **Ruler / Straightedge** — for graphing
- ✓ **Quiet Space** — no distractions
- ✓ **Focused Mind** — ready to do your best

Typically Allowed

- ✓ Pencils and eraser
- ✓ Scratch paper (provided on official test day)
- ✓ Graphing calculator (varies by state—check your test rules)
- ✓ Ruler or straightedge

Not Allowed

- ✗ Cell phone or any electronic device (other than allowed calculator)
- ✗ Notes, textbooks, or reference sheets (beyond what's provided)
- ✗ Help from others during the test

 **A Note for Parents & Guardians**

Three tests provide a focused, manageable study plan. Space them **one week apart** with study days in between.

How to help:

- Test 1 should be untimed — focus on learning, not speed.
- After each test, review the full solutions together. Ask: “Which topics were hardest? Let’s study those before the next one.”
- Use the Test Tracker page to visualize progress over time.
- For extra support on specific topics, pair this book with our **Algebra 1 Study Guide**.

PREVIEW



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Algebra 1 Reference Sheet

Key formulas and facts you may use during each practice test

★ Properties & Exponents

Commutative: $a + b = b + a$; $ab = ba$

Associative: $(a + b) + c = a + (b + c)$

Distributive: $a(b + c) = ab + ac$

$a^m \cdot a^n = a^{m+n}$ $(a^m)^n = a^{mn}$

$\frac{a^m}{a^n} = a^{m-n}$ $a^0 = 1$

$a^{-n} = \frac{1}{a^n}$ $(ab)^n = a^n b^n$

★ Linear Equations & Inequalities

Slope-intercept: $y = mx + b$

Point-slope: $y - y_1 = m(x - x_1)$

Standard form: $Ax + By = C$

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1}$

Parallel lines: same slope

Perpendicular: $m_1 \cdot m_2 = -1$

★ Functions

A function maps each input to exactly one output.

Vertical line test: passes through at most one point.

Domain: set of all inputs (x -values)

Range: set of all outputs (y -values)

$f(x)$ notation: $f(3)$ means substitute $x = 3$

★ Systems of Equations

Solve by graphing, substitution, or elimination

One solution: lines intersect (consistent)

No solution: lines are parallel

Infinitely many: same line (dependent)

★ Polynomials & Factoring

$(a + b)^2 = a^2 + 2ab + b^2$

$(a - b)^2 = a^2 - 2ab + b^2$

$a^2 - b^2 = (a + b)(a - b)$

To factor $ax^2 + bx + c$: find two numbers that multiply to ac and add to b

★ Quadratic Functions

Standard form: $y = ax^2 + bx + c$

Vertex form: $y = a(x - h)^2 + k$

Vertex: (h, k) ; axis of symmetry: $x = h$

Quadratic formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Discriminant: $b^2 - 4ac$

> 0 : two real solutions $= 0$: one < 0 : none

★ Exponential Functions & Sequences

Growth: $y = a \cdot b^x$ where $b > 1$

Decay: $y = a \cdot b^x$ where $0 < b < 1$

Arithmetic sequence: $a_n = a_1 + (n - 1)d$

Geometric sequence: $a_n = a_1 \cdot r^{n-1}$

★ Data & Statistics

Line of best fit: approximates scatter plot trend

Correlation: positive, negative, or none

Correlation \neq causation

Residual = actual - predicted

Good fit: residuals small, randomly scattered

★ Square Roots & Radicals

Perfect squares: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144

$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$ $\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

Simplify: $\sqrt{50} = \sqrt{25 \cdot 2} = 5\sqrt{2}$

My Test Tracker

Record your scores and track your progress

Name: _____

Start Date: _____

Test 1 (Untimed – Diagnostic)

Date: _____

Score: _____ / _____

Percent: _____

Topics to review: _____

Test 2 (Timed – 120 Minutes)

Date: _____

Score: _____ / _____

Percent: _____

Improved on: _____

Still need work: _____

Test 3 (Timed – Full Test Conditions)

Date: _____

Score: _____ / _____

Percent: _____

Total improvement since Test 1: _____

 Score Progress


Shade each bar to your score after each test.

 Final Reflection

The most important thing I learned: _____

The topic where I improved the most: _____

What I want to keep working on: _____



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PRACTICE TEST

1

Practice Test 1

 10 Questions

Before You Start

- ✓ *Read each question carefully before choosing your answer.*
- ✓ *Show your work on scratch paper when you need to.*
- ✓ *Skip hard questions and come back to them later.*
- ✓ *Check your answers when you're done.*
- ✓ *Take your time — there's no rush!*

★ *You've Got This!* ★

Do your best and show what you know!



1. What is the multiplicative inverse (reciprocal) of $\frac{3}{8}$?

Your Answer:

2. Which equation defines y as a function of x ?

(A) $x = 5$

(B) $y = |x|$

(C) $x = y^2$

(D) $y^2 = x + 4$

3. Solve $\frac{2x+1}{3} = \frac{x-2}{2}$.

(A) $x = -8$

(B) $x = -4$

(C) $x = -2$

(D) $x = 8$

4. Write the equation of the line through $(1, 7)$ parallel to $y = -5x + 2$.

Your Answer:

5. What is the simplified form of $2(x + 1)(x - 3)$?

(A) $2x^2 - 4x - 6$

(B) $2x^2 + 4x - 6$

(C) $2x^2 - 2x - 6$

(D) $2x^2 - 6$



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6. The table below shows values of $f(x) = 3 \cdot 2^x$.

x	-1	0	1	2	3
$f(x)$	1.5	3	6	12	24

Between which two consecutive integers of x does $f(x) = 20$?

- (A) Between $x = 0$ and $x = 1$ (B) Between $x = 1$ and $x = 2$
(C) Between $x = 2$ and $x = 3$ (D) Between $x = 3$ and $x = 4$

7. What is the y -intercept of $f(x) = 3x^2 - 7x + 2$?

Your Answer:

8. A model predicts $y = 68$ at a certain point. The actual value is 72. What is the residual?

Your Answer:

9. A store sells pencils for \$0.50 and erasers for \$0.25. You buy 15 items totaling \$5.00. How many pencils did you buy?

- (A) 3 (B) 5
(C) 8 (D) 10

10. A faucet drips at a rate of 2 drops per minute. If each drop is approximately 0.05 mL, how many milliliters drip in 1 hour?

Your Answer:



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Answer Key & Explanations



Answer Key

First try each test on your own, then check your work here.

Practice Test 1 – Answer Key

1

 $\frac{3}{10}$

2

B

3

A

4

 $y = -5x + 12$

5

A

6

C

7

(0, 2)

8

4

9

B

10

6

Time to Learn!

Review the explanations below, especially for the questions you missed.

Understanding why each answer is correct builds stronger problem-solving skills.

Tip: Circle any questions you got wrong, then read their explanation carefully.

Practice Test 1 – Detailed Explanations

1

The multiplicative inverse of $\frac{a}{b}$ is $\frac{b}{a}$, because $\frac{a}{b} \times \frac{b}{a} = 1$. So the reciprocal of $\frac{3}{8}$ is $\frac{8}{3}$.

2

For $y = |x|$, every input x produces exactly one output y . Choice A is a vertical line (every y shares the same x). Choices C and D can produce two y -values for a single x -value, violating the function rule.



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3 Cross-multiply: $2(2x + 1) = 3(x - 2)$, giving $4x + 2 = 3x - 6$. Subtract $3x$ and 2 : $x = -8$.

4 Parallel means same slope: $m = -5$. Point-slope: $y - 7 = -5(x - 1)$, so $y = -5x + 5 + 7 = -5x + 12$.

5 First multiply the binomials using FOIL: $(x + 1)(x - 3) = x^2 - 3x + x - 3 = x^2 - 2x - 3$. Then multiply by 2 : $2(x^2 - 2x - 3) = 2x^2 - 4x - 6$.

6 From the table, $f(2) = 12$ and $f(3) = 24$. Since $12 < 20 < 24$, the value $f(x) = 20$ occurs between $x = 2$ and $x = 3$.

7 The y -intercept occurs when $x = 0$. Substituting, $f(0) = 3(0)^2 - 7(0) + 2 = 2$. The y -intercept is $(0, 2)$.

8 Residual = actual - predicted = $72 - 68 = 4$. A positive residual means the actual value is 4 above the prediction.

9 Let $p + e = 15$ and $0.50p + 0.25e = 5.00$. Substitute $e = 15 - p$: $0.50p + 0.25(15 - p) = 5$. Simplify: $0.50p + 3.75 - 0.25p = 5$, so $0.25p = 1.25$ and $p = 5$.

10 Find the rate in mL per minute: $2 \times 0.05 = 0.1$ mL/min. Convert to one hour: $0.1 \times 60 = 6$ mL. The units guide each step: drops become mL, then minutes become hours.



Well done checking your answers!

Keep practicing to strengthen your skills.

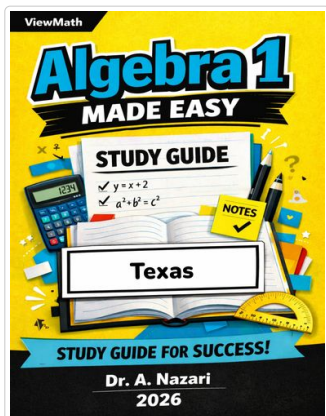


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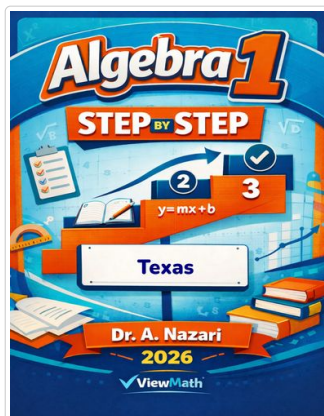
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Study Guide



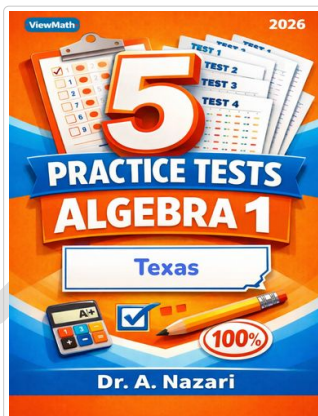
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Step-by-Step



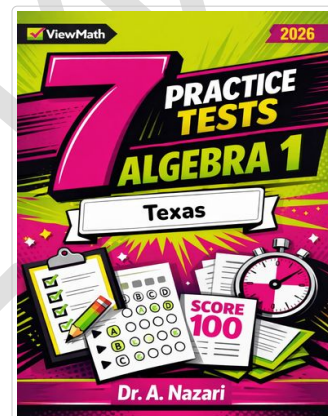
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5 Practice Tests



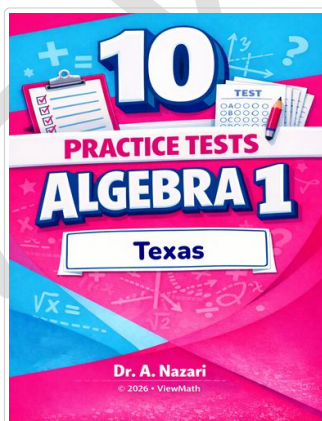
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7 Practice Tests



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10 Practice Tests



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