

3

North Carolina

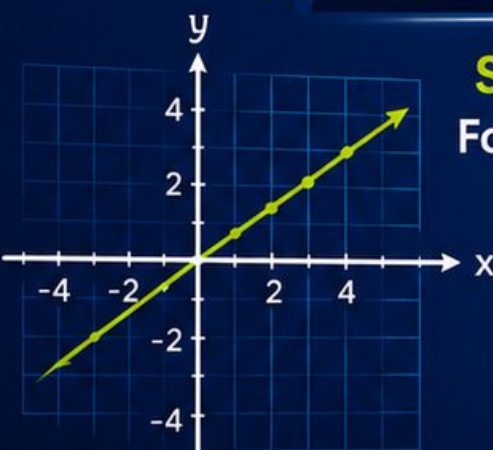
EOG

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3 PRINTED TESTS



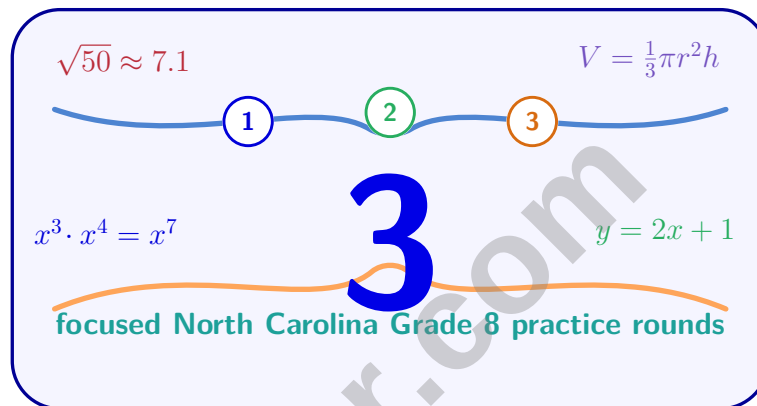
2 ONLINE TESTS



Use these **two additional online practice tests** for extra review after the printed tests in this book.

3 North Carolina EOG Grade 8 Math Practice Tests

Three Grade 8 EOG Rounds for Confident Review



Three complete 40-question Grade 8 EOG practice rounds with real numbers, exponents, scientific notation, equations, functions, transformations, geometry, data analysis, probability, answer keys, and clear explanations for every item.

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Welcome, North Carolina Grade 8 Problem Solver!

Three focused rounds for sharper EOG math thinking

This book gives you three full Grade 8 EOG math practice tests. Each round is built to help you recognize structure, reason with real numbers and exponents, analyze linear relationships, connect equations with graphs, and explain your thinking with care.

Your North Carolina Practice Promise

I will read every question carefully, choose a strategy that fits, write enough work to prove my answer, and use corrections as training for the next test.

Read

Model

Verify

How to Use This Book

A three-session plan for confident Grade 8 review

1. **Warm up with the review pages.** Notice the big ideas before starting the tests.
2. **Complete one test at a time.** Treat each 40-question round like a real practice session.
3. **Show your reasoning.** Jot an exponent rule, equation, graph, transformation, diagram, or quick estimate when it helps.
4. **Correct actively.** Rework missed items before reading the explanation.
5. **Choose the next target.** After each test, name one skill and one habit to improve.

North Carolina review rhythm: Work a test, score it, study your misses, then come back ready for the next round with one clear goal.



What Is Inside?

Three EOG tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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Table of Contents



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1) Which is larger: $\sqrt{11}$ or 3.5?

☐ A. They are equal

☐ C. $\sqrt{11}$

☐ B. Cannot be determined

☐ D. 3.5

2) A cube has a total surface area of 96 cm^2 . What is the length of one edge?

☐ A. 2 cm

☐ C. 6 cm

☐ B. 4 cm

☐ D. 8 cm

3) Triangle PQR has angles measuring 45° , 60° , and 75° . If triangle PQR is reflected across the y -axis, what are the angle measures in the reflected triangle?

☐ A. 45° , 50° , 85°

☐ C. 30° , 60° , 90°

☐ B. 45° , 60° , 75°

☐ D. 50° , 65° , 65°

4) A student finds the slope of the line through (1, 3) and (4, 9) and gets the answer $\frac{3}{6} = \frac{1}{2}$. What is the student's error?

☐ A. Did not simplify the fraction correctly

☐ C. Subtracted in the wrong order in the numerator

☐ B. Forgot to use the slope formula

☐ D. Used the formula $\frac{x_2 - x_1}{y_2 - y_1}$ instead of $\frac{y_2 - y_1}{x_2 - x_1}$

5) Solve for x : $\frac{x}{3} + 5 = 9$

☐ A. $x = 12$

☐ C. $x = 8$

☐ B. $x = 36$

☐ D. $x = 14$



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6) Solve: $-\frac{1}{2}x + 3 \geq 5$

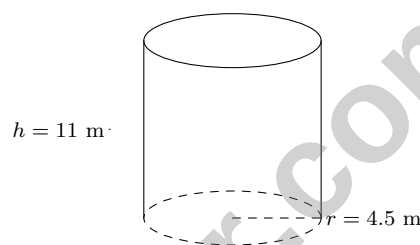
☐ A. $x \geq -4$

☐ C. $x \geq 4$

☐ B. $x \leq 4$

☐ D. $x \leq -4$

7) Write 4.7×10^{-4} in decimal (standard) form.



8)

A cylinder with radius 4.5 m and height 11 m is shown. Approximately, what is its volume? (Use $\pi \approx 3.14$.)

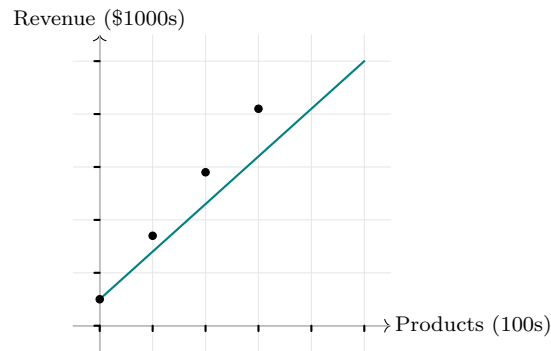
☐ A. 280.35 m^3

☐ C. 699.44 m^3

☐ B. 560.7 m^3

☐ D. 1401.56 m^3





9)

A company's revenue model is $R = 12x + 500$, where R is revenue and x is the number of products sold. If revenue is \$8,900, how many products were sold?

☐ A. 525☐ C. 675☐ B. 700☐ D. 725

10) Using the quotient rule, explain why $x^0 = 1$ (for $x \neq 0$).

Step 1	Step 2	Step 3
$\frac{x^5}{x^5}$	$= x^{5-5}$	$= x^0 = ?$

Since $\frac{x^5}{x^5} = 1$, what must x^0 equal?

☐ A. Because the exponent is 0, so the result is 0.☐ C. Because when exponents are equal, the quotient is 0.☐ B. Because the quotient rule says so.☐ D. 1 (any nonzero number divided by itself equals 1)

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1) For a dashed boundary line, the inequality must use which symbol(s)?

☐ A. $\leq$ only

☐ C. $<$ or $>$

☐ B. $\geq$ only

☐ D. $\leq$ or $\geq$

$0.\overline{789}$

Non-repeating digits: 1

Repeating-block digits: 2

Denominator form: $\frac{?}{990}$

2)

What goes in the numerator when converting $0.\overline{789}$?

☐ A. $7 + 89 = 96$

☐ C. 89

☐ B. 789

☐ D. $789 - 7 = 782$

3) Simplify and estimate $\sqrt{5} \times \sqrt{20}$.

☐ A. Exactly 5

☐ C. Approximately 7.1

☐ B. Approximately 11.2

☐ D. Exactly 10

4) If $g(x) = x^2 + 2$ and $g(x) = 11$, find the possible values of x .



- 5) An online retailer offers a \$500 item at \$45/month for 12 months with financing. What is the implicit interest charge?
- ☐ A. \$640 ☐ C. \$540
☐ B. \$45 ☐ D. \$40
- 6) Convert 3.9×10^0 to standard form.
- ☐ A. 0.39 ☐ C. 39
☐ B. 390 ☐ D. 3.9
- 7) An aquarium is a rectangular prism with dimensions 4 feet (length) $\times$ 2 feet (width) $\times$ 2.5 feet (height). The bottom and four sides are glass, but the top is open (no glass). How much glass (in square feet) is needed to build the aquarium?
- ☐ A. 32 sq. ft. ☐ C. 38 sq. ft.
☐ B. 36 sq. ft. ☐ D. 48 sq. ft.
- 8) If a figure is rotated 360° about the origin, what happens to the figure?
- ☐ A. It is reduced in size by one-fourth ☐ D. It returns to its original position
☐ B. It is reflected across the origin and orientation
☐ C. It moves to a different quadrant
- 9) Which pair of equations represents perpendicular lines?
- ☐ A. $y = 3x + 1$ and $y = 3x - 5$ ☐ C. $y = 4x - 2$ and $y = 4x + 6$
☐ B. $y = -\frac{3}{5}x + 2$ and $y = \frac{3}{5}x - 1$ ☐ D. $y = 2x + 4$ and $y = -\frac{1}{2}x + 1$



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- 1) A decorative shape consists of a circle (radius 5 cm) with four congruent right triangles arranged around it (each with legs 3 cm and 4 cm). What is the total area? Use $\pi \approx 3.14$.
- ☐ A. 66.5 cm^2 ☐ C. 102.5 cm^2
☐ B. 90.5 cm^2 ☐ D. 147.5 cm^2
- 2) Which of the following is the BEST description of what a small residual means?
- ☐ A. The data point is far from the trend line ☐ C. The slope of the line is steep
☐ B. The data point is very close to the trend line ☐ D. There is no correlation in the data
- 3) Triangle ABC is similar to Triangle DEF . Side $AB = 4 \text{ cm}$, $BC = 5 \text{ cm}$, $CA = 6 \text{ cm}$. The perimeter of DEF is 45 cm. Find the length of EF .
- ☐ A. 15 cm ☐ C. 22.5 cm
☐ B. 18 cm ☐ D. 10 cm
- 4) A business profit function is $P(x) = 50x - 200$, where x is the number of units sold. What is the profit when 10 units are sold?
- ☐ A. \$300 ☐ C. \$200
☐ B. \$250 ☐ D. \$500
- 5) A piggy bank has nickels and dimes totaling \$2.75. There are twice as many dimes as nickels. How many nickels are in the bank?

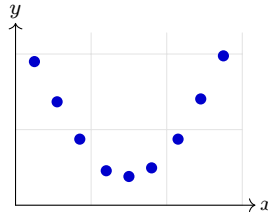


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6) Which of the following numbers is irrational?

- ☐ A. $\frac{3}{5}$
☐ B. $0.\overline{6}$

- ☐ C. $\sqrt{7}$
☐ D. $\sqrt{25}$



7)

A scatter plot shows a U-shaped curve: points start high, decrease to a low point in the middle, then increase again. Is this relationship linear or nonlinear? Explain.

8) Two fair coins are flipped. What is the probability of getting exactly one heads? Write your answer as a fraction.

9) Convert $0.\overline{7}$ to a fraction. Which step is incorrect?

- ☐ A. Let $x = 0.\overline{7}$.
☐ B. $10x = 7.\overline{7}$.
☐ C. $10x - x = 7.\overline{7} - 0.\overline{7} = 7$ is wrong; should be 0.7 .
☐ D. $9x = 7$, so $x = \frac{7}{9}$.



North Carolina EOG Grade 8 Practice Test Answer Keys**How to use this section with a Grade 8 student:**

1. check the answer first and circle any item that needs another look
2. retry the problem with fresh work before reading the explanation
3. write one short lesson learned from each missed or guessed item

A strong review routine turns every correction into a sharper plan for the next North Carolina EOG practice test.



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& answers

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- Choice D is correct.** (NC.8.NS.2) $(3.5)^2 = 12.25 > 11$, so $3.5 > \sqrt{11}$. Therefore 3.5 is larger.
- Choice B is correct.** (NC.8.G.9) $6s^2 = 96$, so $s^2 = 16$, giving $s = 4$ cm. Check: $6(4)^2 = 6(16) = 96$ ✓.
- Choice B is correct.** (NC.8.G.6) Reflections preserve angle measures. The reflected triangle has the same angles as the original (rigid transformation).
- Choice D is correct.** (NC.8.G.8) The correct slope is $\frac{9-3}{4-1} = \frac{6}{3} = 2$. The student computed $\frac{4-1}{9-3} = \frac{3}{6} = \frac{1}{2}$, reversing the roles of Δx and Δy .
- Choice A is correct.** (NC.8.EE.8) Subtract 5: $\frac{x}{3} = 4$. Multiply by 3: $x = 12$.
- Choice D is correct.** (NC.8.EE.7) Subtract 3: $-\frac{1}{2}x \geq 2$. Multiply by -2 (FLIP): $x \leq -4$.
- The correct answer is 0.00047.** (NC.8.EE.3) Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.
- Choice C is correct.** (NC.8.G.9) $V = \pi r^2 h = 3.14 \times 20.25 \times 11 = 3.14 \times 222.75 = 699.44$ m³.
- Choice B is correct.** (NC.8.SP.3) Set $R = 8900$: $8900 = 12x + 500 \Rightarrow 12x = 8400 \Rightarrow x = 700$.
- Choice D is correct.** (NC.8.EE.1) The quotient rule shows: $\frac{x^5}{x^5} = x^{5-5} = x^0$. Since $\frac{x^5}{x^5} = 1$, we have $x^0 = 1$.
- Choice D is correct.** (NC.8.EE.4) Add first: $(9 + 3.6) \times 10^5 = 12.6 \times 10^5 = 1.26 \times 10^6$. Then divide: $\frac{1.26 \times 10^6}{4 \times 10^2} = 0.315 \times 10^4 = 3.15 \times 10^3$.
- Choice D is correct.** (NC.8.EE.8) The first two systems are lines with different equations but the same form (both are $x = 2$ or $y = 4$, not two distinct lines). Option C has parallel lines (same slope, different intercepts). Option D has different slopes, so the lines intersect at exactly one point.
- Choice C is correct.** (NC.8.EE.8) FOIL: $(x + 3)(x - 5) = x^2 - 5x + 3x - 15 = x^2 - 2x - 15$.
- Choice A is correct.** (NC.8.EE.8) Substitute: $2(1) - 4 = -2$. Test: $-1 \geq -2$ TRUE. The point is in the solution region.
- Choice C is correct.** (NC.8.F.1) A point has one x -value with one y -value, so it passes the vertical line test. A vertical line is not a function (fails VLT). Circles and ellipses fail the VLT.
- Choice C is correct.** (NC.8.F.2) Slope of p : $\frac{3}{2} = 1.5$. From table q : $(5 - 2)/(2 - 0) = 3/2 = 1.5$. Both have slope 1.5.
- Choice B is correct.** (NC.8.F.3) $y = \frac{3}{4}x + 2$ perfectly matches the linear form $y = mx + b$ with $m = \frac{3}{4}$ and $b = 2$. Fractional slopes do not make a function nonlinear.
- The correct answer is A, C.** (NC.8.NS.1) $\sqrt{169} = 13$ is rational (perfect square). The repeating decimal $0.777\ldots = \frac{7}{9}$ is rational. The other values are irrational: $\sqrt{170}$ (non-perfect square), 2π (irrational multiple of π), and $\sqrt{2} + 1$ (irrational plus rational is irrational).
- The correct answer is $\frac{37}{300}$.** (NC.8.NS.1) Set $x = 0.12\bar{3} = 0.12333\ldots$. Then $100x = 12.\bar{3}$ and $1000x = 123.\bar{3}$. Subtracting: $900x = 111$, so $x = \frac{111}{900} = \frac{37}{300}$.
- The correct answer is 4.2.** (NC.8.NS.1) $\sqrt{8} = 2\sqrt{2} \approx 2.83$ and $\sqrt{2} \approx 1.41$, so $2.83 + 1.41 = 4.24 \approx 4.2$.
- Choice B is correct.** (NC.8.G.9) Congruent figures have equal perimeters. Since ABCDEF is congruent to GHIJKL, and the perimeter of ABCDEF is 48 cm, the perimeter of GHIJKL is also 48 cm.
- Choice D is correct.** (NC.8.G.5) A 78° angle and its supplement is $180 - 78 = 102^\circ$. At the first intersection, there are 2 angles of 102° (vertical to each other). At the second intersection with the parallel line, there are also 2 angles of 102° (corresponding to those above). Total: 4 angles of 102° .
- Choice A is correct.** (NC.8.G.6, NC.8.G.7) From $15^2 + 20^2 = 225 + 400 = 625$, we get $c = 25$. The difference is $25 - 15 = 10$ (scaled 3-4-5 triple).
- Choice A is correct.** (NC.8.G.8) $\sqrt{5^2 + 5^2} = \sqrt{25 + 25} = \sqrt{50}$. Check others: (7, 2) gives $\sqrt{53}$; (5, 2) gives $\sqrt{29}$; (3, 4) gives 5.
- Choice B is correct.** (NC.8.G.5) Corresponding angles are congruent when a transversal cuts parallel lines. So $v = 68^\circ$.
- Choice B is correct.** (NC.8.G.7) $V = \frac{1}{3} \times B \times h = \frac{1}{3} \times 9\sqrt{3} \times 8 = 24\sqrt{3} \approx 41.57$ cm³, rounded to ≈ 42 cm³.



Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

If you want to share something or ask a question, please email me at jay@testinar.com.

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for success on test day!



WHAT'S INSIDE?



Standards-Aligned Practice

Questions designed to cover essential Grade 8 math standards.



Variety of Question Types

Multiple-choice, short answer, and more to build well-rounded skills.



Real-World Applications

Engaging problems that connect math to everyday life.



Step-by-Step Progress

Track improvement and build confidence with every test.



Build Skills & Boost Confidence

Strengthen understanding and feel prepared for test day.

COVERS ALL ESSENTIAL TOPICS

- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Ratios & Proportional Relationships
- ✓ Linear Equations
- ✓ Functions
- ✓ Geometry
- ✓ Measurement & Data
- ✓ Statistics & Probability
- ✓ Pythagorean Theorem
- ✓ Volume & Surface Area
- ✓ Transformations
- ✓ Inequalities
- ✓ Data Analysis & Graphing
- ✓ And More!



2 Extra Online Practice Tests Included!

Use these two additional online practice tests for extra review after the printed tests.

testinar.com/math8

PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better **Results.**