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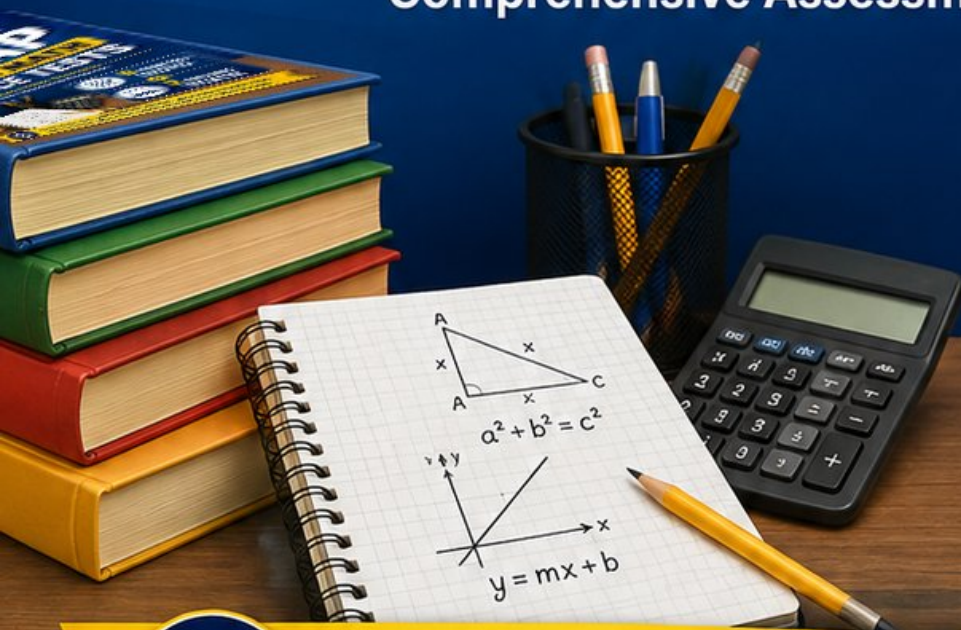
North Carolina

EOG

GRADE 8 MATH

PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



2 ONLINE
TESTS



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

6 North Carolina EOG Grade 8 Math Practice Tests

Targeted Grade 8 Practice with Mixed Topics and Clear Answer Support



Six 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.

Jay Daie and Reza Nazari



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Welcome, North Carolina Grade 8 Problem Solver!

Six focused rounds for sharper EOG math thinking

This book gives you six 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 six-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?

Six EOG tests, 240 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 4–6	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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- 1) A table shows values for x and y . What is the rate of change?

x	0	2	4	6
y	-2	2	6	10

- ☐ A. 2 ☐ C. 4
☐ B. $\frac{1}{2}$ ☐ D. -2
- 2) Which of the following is rational?
- ☐ A. π ☐ C. 0.101001000... (non-repeating)
☐ B. $\sqrt{15}$ ☐ D. $\sqrt{36}$
- 3) Which product is irrational?
- ☐ A. $\sqrt{9} \times \sqrt{4}$ ☐ C. $2 \times \sqrt{3}$
☐ B. $\sqrt{2} \times \sqrt{8}$ ☐ D. $\sqrt{16} \times \sqrt{25}$
- 4) Which is the best estimate of $\sqrt{30}$?
- ☐ A. 4.5 ☐ C. 6.0
☐ B. 15.0 ☐ D. 5.5
- 5) A residual plot has residuals 1, -2, 1, 2, -1, 0. What is the greatest absolute residual?



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6) If \$3,000 earns \$450 in simple interest over 3 years, what is the annual interest rate?

☐ A. 3%

☐ C. 10%

☐ B. 15%

☐ D. 5%

7) Simplify $5^0 \cdot n^7 \cdot n^{-7}$.

☐ A. n^{14}

☐ C. $5n$

☐ B. n

☐ D. 1

8) A cube has a volume of 1000 cubic inches. What is the length of one edge?

☐ A. 9 inches

☐ C. 11 inches

☐ B. 12 inches

☐ D. 10 inches

9) Which of the following equals 3.8×10^2 ?

☐ A. 38

☐ C. 3,800

☐ B. 38,000

☐ D. 380

10) $(2 \times 10^2) \times (3 \times 10^3) \times (5 \times 10^1) = ?$

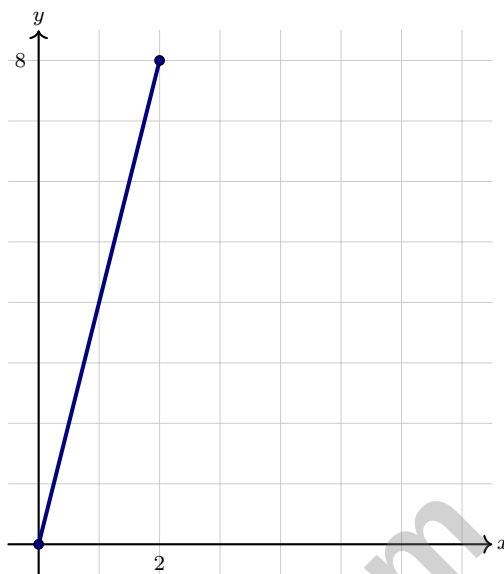
☐ A. 3×10^6

☐ C. 3×10^7

☐ B. 3×10^8

☐ D. 3×10^5





11)

What is the slope of the line?

☐ A. 2☐ B. 16☐ C. 8☐ D. 412) Solve by substitution:
$$\begin{cases} y = -x + 7 \\ 2x + y = 10 \end{cases}$$
☐ A. (2, 5)☐ B. (5, 2)☐ C. (4, 3)☐ D. (3, 4)

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1) The radius of Jupiter is about 7.14×10^7 m. What is this in standard form?

☐ A. 714,000 m

☐ C. 714,000,000 m

☐ B. 7,140,000,000 m

☐ D. 71,400,000 m

2) Triangle P has sides 8, 15, 17. Triangle Q has sides 12, 22.5, 25.5. Are they similar?

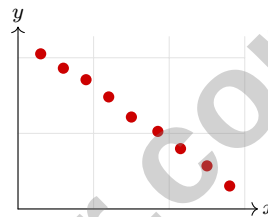
☐ A. No, the sides are not equal

☐ C. Yes, all sides have the same ratio

☐ B. No, the ratios are 1.5, 1.5, 1.5 which is not constant

1.5 to Q 's sides

☐ D. Only if corresponding angles equal 90°



3)

A scatter plot shows the relationship between exercise frequency (days per week) and resting heart rate (bpm). The points form a clear downward trend with minimal scatter around the trend line. A student can infer that:

☐ A. Exercise causes higher heart rates

☐ C. Exercise and heart rate are

☐ B. More exercise is associated with lower resting heart rate

unrelated

☐ D. Heart rate determines exercise frequency



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4) A two-way table tracks 340 customers and purchase behavior:

	Online	In-Store	Total
Loyalty Member	136	119	255
Non-Member	57	28	85
Total	193	147	340

What percentage of online purchases are from non-members?

- ☐ A. $\approx 17\%$
☐ C. $\approx 30\%$
☐ B. $\approx 25\%$
☐ D. $\approx 33\%$

5)

Value	2	4	6
-------	---	---	---

Find the MAD. (Mean = 4)

- ☐ A. $\frac{4}{3}$
☐ C. $\frac{8}{3}$
☐ B. 2
☐ D. 4

6) Two fair coins are tossed. How many total outcomes are in the sample space?

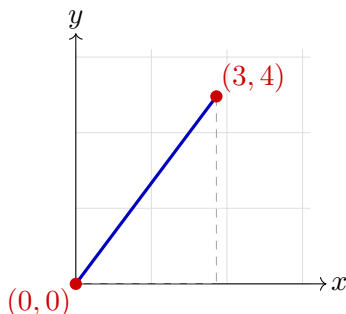
- ☐ A. 2
☐ C. 8
☐ B. 4
☐ D. 3

7) A restaurant offers a choice of 5 main dishes and 3 side dishes. If you order one main and one side, how many different meals can you choose?

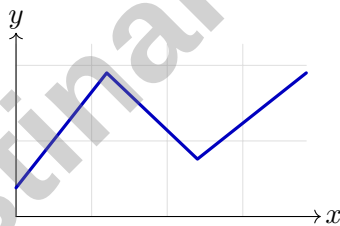
- ☐ A. $5 + 3 = 8$
☐ C. $5^3 = 125$
☐ B. $5 \times 3 = 15$
☐ D. $3 \times 3 = 9$



- 1) Two points on a coordinate plane are located at $(0, 0)$ and $(3, 4)$. What is the distance between these two points?

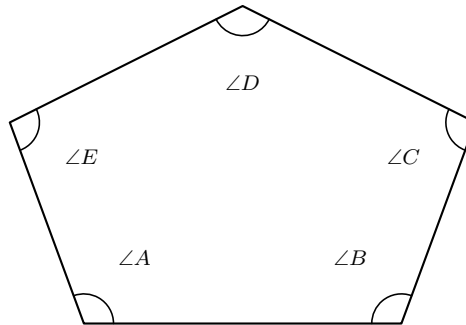


- ☐ A. 5 ☐ C. 12
☐ B. 7 ☐ D. 25
- 2) A function exhibits error: a student says “The graph increases at all points.” But the actual graph increases, then decreases, then increases again. Which statement correctly identifies the student’s error?



- ☐ A. The student only looked at one part of the graph ☐ C. The graph is decreasing everywhere
☐ B. The graph is increasing everywhere ☐ D. The graph is constant everywhere





3)

The figure shows a pentagon with interior angles. If $\angle A = 100^\circ$, $\angle B = 120^\circ$, $\angle C = 110^\circ$, and $\angle D = 130^\circ$, what is $\angle E$?

☐ A. 80°
☐ C. 120°
☐ B. 100°
☐ D. 140°
4) Evaluate $(x + 9)^2$ when $x = 1$.

5) A figure is dilated by a scale factor of 3. How does the length of each side change?

☐ A. Divided by 3

☐ C. Unchanged

☐ B. Multiplied by 3

☐ D. Increased by 3 inches

6) Why is the vertical line test a valid way to determine if a graph is a function?

☐ A. Because vertical lines represent inputs, and if one vertical line intersects the graph more than once, one input has multiple outputs.

☐ C. Because every function is a straight line.

☐ D. Because the y -intercept determines if it is a function.

☐ B. Because functions must have vertical lines in their graphs.


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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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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (NC.8.F.5) Using any two points, e.g., $(0, -2)$ and $(2, 2)$: slope = $\frac{2 - (-2)}{2 - 0} = \frac{4}{2} = 2$.
- 2) **Choice D is correct.** (NC.8.NS.1) $\sqrt{36} = 6$, which is an integer and therefore rational. The others are irrational: π is transcendental, $\sqrt{15}$ is a square root of a non-perfect square, and $0.101001000\dots$ is non-terminating and non-repeating.
- 3) **Choice C is correct.** (NC.8.NS.2) A: $3 \times 2 = 6$ (rational). B: $\sqrt{16} = 4$ (rational). C: $2\sqrt{3}$ is irrational. D: $4 \times 5 = 20$ (rational).
- 4) **Choice D is correct.** (NC.8.NS.1) Since $5.5^2 = 30.25 \approx 30$, we have $\sqrt{30} \approx 5.48$.
- 5) **The correct answer is 2.** (NC.8.SP.3) The largest absolute value among the residuals is 2.
- 6) **Choice D is correct.** (NC.8.G.7) Solve for r : $450 = 3000 \times r \times 3 \Rightarrow r = \frac{450}{9000} = 0.05 = 5\%$.
- 7) **Choice D is correct.** (NC.8.EE.1) $5^0 = 1$; $n^7 \cdot n^{-7} = n^{7-7} = n^0 = 1$. Product: $1 \cdot 1 = 1$.
- 8) **Choice D is correct.** (NC.8.EE.2) $e^3 = 1000$, so $e = \sqrt[3]{1000} = 10$ inches.
- 9) **Choice D is correct.** (NC.8.EE.3) A positive exponent shifts the decimal to the right. Move the decimal 2 places right: $3.8 \times 10^2 = 380$.
- 10) **Choice C is correct.** (NC.8.EE.4) Multiply coefficients: $2 \times 3 \times 5 = 30 = 3 \times 10^1$. Add exponents: $10^{2+3+1} = 10^6$. Combine: $3 \times 10^1 \times 10^6 = 3 \times 10^7$.
- 11) **Choice D is correct.** (NC.8.EE.1) Slope = $\frac{8}{2} = 4$. The line passes through $(0, 0)$ and $(2, 8)$.
- 12) **Choice D is correct.** (NC.8.EE.8) Substitute $y = -x + 7$ into $2x + y = 10$: $2x + (-x + 7) = 10$, so $x + 7 = 10$, giving $x = 3$. Then $y = -3 + 7 = 4$. Solution: $(3, 4)$.
- 13) **Choice B is correct.** (NC.8.F.3) A linear function must be represented by a straight line. This curved graph indicates a nonlinear function (appears to be quadratic).
- 14) **Choice A is correct.** (NC.8.EE.7) Let a = adult tickets and s = student tickets. Then $a + s = 120$ and $15a + 8s = 1520$. Substitute $a = 120 - s$: $15(120 - s) + 8s = 1520$, so $1800 - 7s = 1520$. Then $7s = 280$, so $s = 40$.
- 15) **Choice B is correct.** (NC.8.F.3) The pattern shows outputs increase by 4 for every 2-unit increase in x . From $p(4) = 15$, the next value is $p(6) = 15 + 4 = 19$.
- 16) **Choice C is correct.** (NC.8.G.9) Two triangular bases: $2 \times \frac{1}{2}(6)(5.2) = 31.2 \text{ cm}^2$. Three rectangular sides: $3 \times (6 \times 5) = 90 \text{ cm}^2$. Total $\approx 31.2 + 90 = 121.2 \text{ cm}^2$.
- 17) **Choice A is correct.** (NC.8.G.6) Step 1: Rotate 90° CCW: $(x, y) \rightarrow (-y, x)$. Step 2: Translate 3 units right (add 3 to x-coordinate): $(-y, x) \rightarrow (-y + 3, x)$.
- 18) **The correct answer is $\frac{1}{7}$.** (NC.8.G.7) Total: 15 tokens. $P(\text{black first}) = \frac{6}{15}$; $P(\text{black second} \mid \text{black first}) = \frac{5}{14}$. Product: $\frac{6}{15} \times \frac{5}{14} = \frac{1}{7}$.
- 19) **The correct answer is A,C.** (NC.8.G.9) Correct: (A) Corresponding angles are congruent — definition of similarity. (C) Corresponding sides are proportional — they scale by a constant factor k . Incorrect: (B) Equal length is congruence, not similarity. (D) Congruence requires equality; similarity allows scaling. (E) Scale factor can be any positive number; $k < 1$ is a reduction, still similarity.
- 20) **Choice A is correct.** (NC.8.G.8) Substitute: $-3 = -\frac{3}{4}(4) + b$, so $-3 = -3 + b$, thus $b = 0$.
- 21) **Choice D is correct.** (NC.8.EE.8) Perimeter = $2(\text{length}) + 2(\text{width}) = 2(w + 3) + 2w = 26$.
- 22) **Choice D is correct.** (NC.8.EE.7) "A number increased by 6" is $x + 6$; "at most" means $\leq$. So $x + 6 \leq 15$.
- 23) **Choice A is correct.** (NC.8.EE.8) Dashed horizontal line at $y = 1$ with shading ABOVE (in the positive y direction) means $y > 1$.
- 24) **The correct answer is 210.** (NC.8.NS.1) First digit: 7 choices. Second digit: 6 remaining. Third digit: 5 remaining. Total: $7 \times 6 \times 5 = 210$.
- 25) **Choice B is correct.** (NC.8.G.9) Cylinder: $V_{\text{cyl}} = \pi r^2 h$; Cone: $V_{\text{cone}} = \frac{1}{3}\pi r^2 h = \frac{1}{3}V_{\text{cyl}}$.
- 26) **Choice B is correct.** (NC.8.G.7) $B = 9 \times 4 = 36 \text{ m}^2$. $V = \frac{1}{3} \times 36 \times 6 = 72 \text{ m}^3$.



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Hi, Calm Solver!

◇ This deep and steady book gave you six full Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. A calm mind can see choices more clearly. That matters in Grade 8, where one problem may have several possible entry points. ◇

★ **Remember this:** You practiced building calm by doing full tests. Each completed page is rehearsal for staying steady when the real test feels serious. ★

Calm-Test Moves

- **Pause:** Give your brain one quiet second.
- **Choose:** Pick the first useful step.
- **Continue:** Do not demand perfection immediately.
- **Check:** Use review time wisely.

Grade 8 test-day tip: If you feel rushed, slow your reading for one sentence. Clear reading saves time.

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

Jay Daie

Your Calm-Test Coach

PRACTICE TODAY. ACHIEVE TOMORROW.

6

Give your child the confidence and skills they need with **6 full-length Grade 8 Math** practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, strengthening problem-solving abilities, and achieving 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.



COVERS ALL ESSENTIAL TOPICS

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



6 PRINTED TESTS



2 ONLINE TESTS



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