

# 5

## North Carolina

# EOG

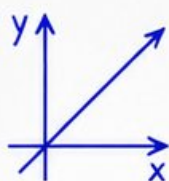
GRADE

# 7

MATH

# PRACTICE TESTS

Standards Aligned  
**Problem Solving**  
For Comprehensive  
Assessment Programs



$$y = mx + b$$

$$\frac{2}{3} + \frac{1}{6} = \frac{5}{6}$$



$$V = \pi r^2 h$$



**5** PRINTED TESTS



**2** ONLINE TESTS

USE THESE TWO  
ADDITIONAL ONLINE  
PRACTICE TESTS  
FOR EXTRA REVIEW AFTER  
THE PRINTED TESTS  
IN THIS BOOK.



Build  
Confidence



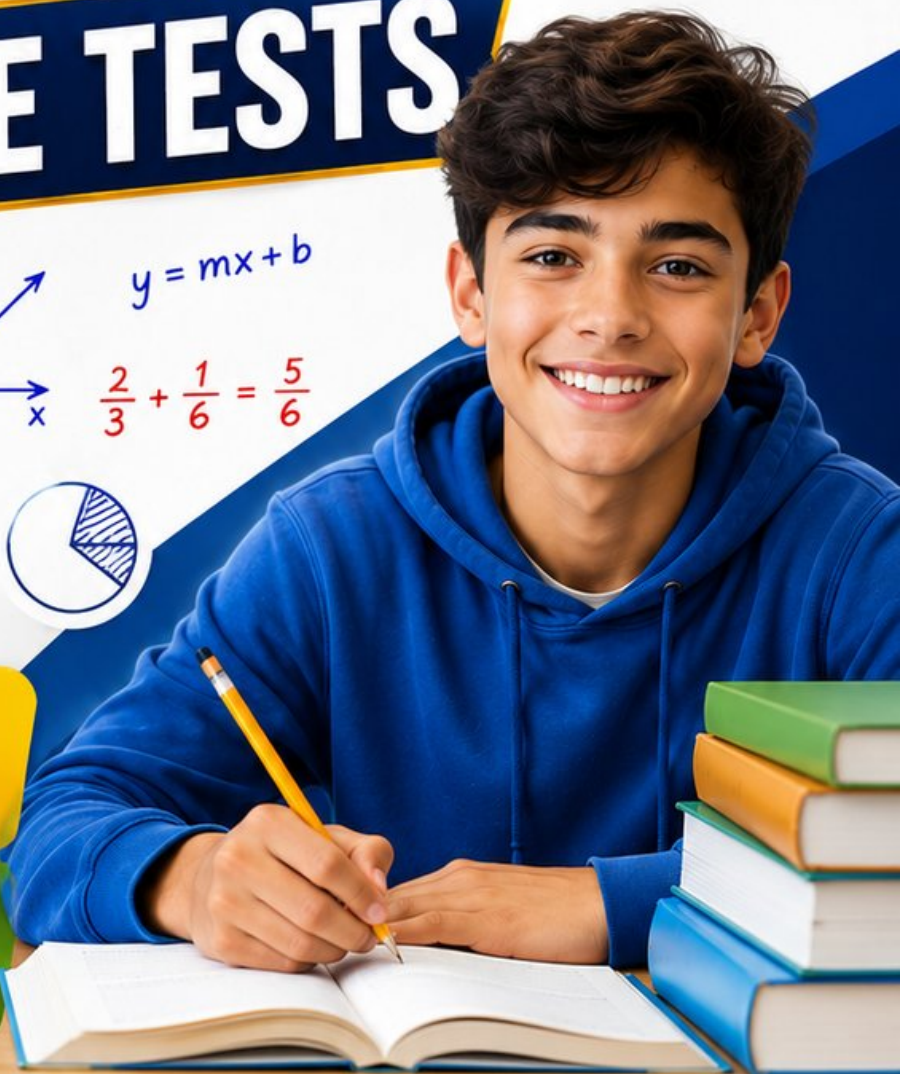
Strengthen  
Math Skills



Detailed Answers  
& Explanations

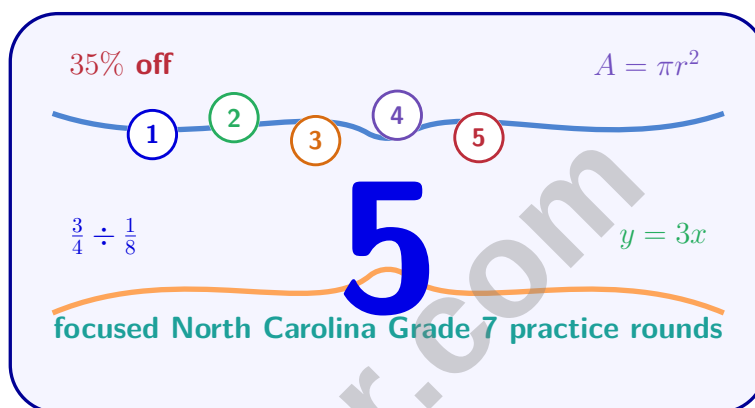


Improve Test  
Performance



# 5 North Carolina EOG Grade 7 Math Practice Tests

*Grade 7 Skill Review with Practice Tests, Keys, and Explanations*



Five complete 40-question Grade 7 EOG practice rounds with proportional relationships, percents, rational numbers, expressions, equations, geometry, statistics, probability, answer keys, and clear explanations for every item.

**Jay Daie and Reza Nazari**



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# Welcome, North Carolina Grade 7 Problem Solver!

Five focused rounds for sharper EOG math thinking

This book gives you five full Grade 7 EOG math practice tests. Each round is built to help you notice structure, compare quantities, use proportional reasoning, handle rational numbers, 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 five-session plan for confident Grade 7 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 a proportion, equation, diagram, number line, 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?

Five EOG tests, 200 questions, and a focused review path

| Part         | What You Will Practice                                                                                             |
|--------------|--------------------------------------------------------------------------------------------------------------------|
| Tests 1–2    | Proportional relationships, unit rates, percents, rational-number operations, and careful reading.                 |
| Tests 3–5    | Expressions, equations, inequalities, scale drawings, geometry, data, probability, and multi-step problem solving. |
| Answer Pages | Compact keys and explanations that show why each answer works.                                                     |

The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.



Scan me!  
For more practice  
& answers

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- 1) An account earns interest compounded annually. If the balance grows from \$1,000 to \$1,440 in 2 years, what is the annual interest rate?

| Year | Multiplier  | Balance |
|------|-------------|---------|
| 0    | —           | \$1,000 |
| 1    | $(1 + r)$   | ?       |
| 2    | $(1 + r)^2$ | \$1,440 |

- ☐ A. 20% ☐ C. 44%
- ☐ B. 22% ☐ D. 50%
- 2) A robot starts at position 0 on a number line. It moves left 8 units, then right 3 units. What is its final position?
- ☐ A. -11 ☐ C. 5
- ☐ B. -5 ☐ D. 11
- 3) Find the missing number:  $-9 + ? = 4$ .
- ☐ A. -13 ☐ C. 5
- ☐ B. -5 ☐ D. 13
- 4) A scale model of a statue uses the ratio 1 : 50. If the model is 3 feet tall, what is the height of the actual statue?
- ☐ A. 50 feet ☐ C. 150 feet
- ☐ B. 100 feet ☐ D. 200 feet
- 5) If 12 is 15% of a number, what is the number?
- ☐ A. 60 ☐ C. 80
- ☐ B. 72 ☐ D. 100



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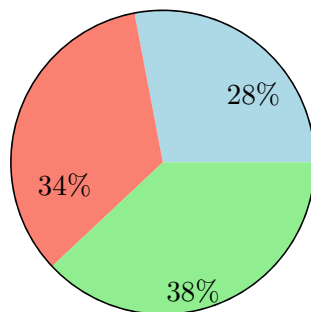
6) Evaluate  $3x - 2y$  when  $x = 4$  and  $y = -3$ .

☐ A. 6

☐ C. 18

☐ B. 14

☐ D. 20



7)

The circle graph shows student lunch preferences at a middle school. Blue is hot lunch (28%), salmon is packed lunch (34%), and green is purchased from vending (38%). If 750 students eat lunch daily, how many buy from vending?

☐ A. 210

☐ C. 285

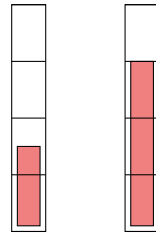
☐ B. 255

☐ D. 570

8) A worker is paid \$18 per hour. What are the earnings for 40 hours?



MorningAfternoon



-5°C      0°C

9)

The morning temperature was  $-5^{\circ}\text{C}$ . By afternoon, it rose to  $0^{\circ}\text{C}$ . What was the change in temperature?

☐ A.  $-5^{\circ}\text{C}$ ☐ C.  $0^{\circ}\text{C}$ ☐ B.  $5^{\circ}\text{C}$ ☐ D.  $-10^{\circ}\text{C}$ 

10) Which of the following is NOT in proper scientific notation?

☐ A.  $3.8 \times 10^5$ ☐ C.  $12.4 \times 10^2$ ☐ B.  $9.2 \times 10^{-3}$ ☐ D.  $7.01 \times 10^8$ 11) Simplify:  $\frac{\frac{4}{5}}{\frac{2}{3}}$ ☐ A.  $\frac{10}{12}$ ☐ C.  $\frac{10}{6}$ ☐ B.  $\frac{8}{15}$ ☐ D.  $\frac{6}{5}$ 

12) A store offers a 32% discount on a pair of jeans originally priced at \$75. What is the sale price?



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- 1) A museum exhibit displays a model dinosaur skeleton. The actual dinosaur was 18 meters long. If the model is 1.5 meters long, what is the ratio of model length to actual length?

☐ A. 1 : 18                                      ☐ C. 12 : 1  
☐ B. 1.5 : 18 (equivalent to the above)    ☐ D. 1 : 12

- 2) Three samples show proportions of  $\frac{15}{50}$ ,  $\frac{12}{40}$ , and  $\frac{18}{72}$  of students who prefer science. Which two samples have the same proportion?

☐ A. First and second                                      ☐ C. First and third  
☐ B. Second and third                                      ☐ D. None have the same proportion

- 3) What is the greatest common factor of  $20x$  and 30?

**Sale Analysis**

| Item   | Original | Sale Price |
|--------|----------|------------|
| Widget | \$20     | \$16       |
| Gadget | \$30     | \$24       |

4)

A store applies consistent discount rates. Based on the table, what is the discount percent for both items?

☐ A. 10%                                                              ☐ C. 25%  
☐ B. 33%                                                              ☐ D. 20%



- 5) The table shows a proportional relationship. What is the constant of proportionality?

| $x$ | $y$ |
|-----|-----|
| 9   | 3   |
| 18  | 6   |
| 27  | 9   |

- ☐ A.  $k = 3$ 
☐ C.  $k = 9$   
☐ B.  $k = 6$ 
☐ D.  $k = \frac{1}{3}$
- 6) Simplify  $m^6 \cdot m^3 \div m^4$ . What is the exponent on  $m$ ?

7)

| Trial          | 1   | 2   | 3   | 4   | 5   |
|----------------|-----|-----|-----|-----|-----|
| Successes      | 22  | 28  | 25  | 27  | 23  |
| Trials per Run | 100 | 100 | 100 | 100 | 100 |

Five separate simulations each perform 100 trials and record the number of successes. What is the average estimated probability across all five simulations?

- ☐ A. 0.23
 ☐ C. 0.27  
☐ B. 0.25
 ☐ D. 0.30
- 8) A rectangular prism has length 10 cm, width 4 cm, and height 3 cm. What is the surface area?

- ☐ A.  $120 \text{ cm}^2$ 
☐ C.  $180 \text{ cm}^2$   
☐ B.  $164 \text{ cm}^2$ 
☐ D.  $240 \text{ cm}^2$



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1) Solve for  $x$ :  $-5(x + 2) = 20$

☐ A.  $x = -6$

☐ C.  $x = 2$

☐ B.  $x = -4$

☐ D.  $x = 6$

2) Which inequality represents “twice a number is at most 30”?

☐ A.  $2x > 30$

☐ C.  $x \leq 30$

☐ B.  $2x \leq 30$

☐ D.  $2x < 30$

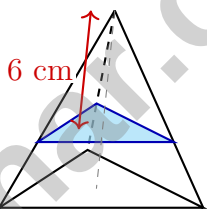
3) A blueprint uses a scale of  $\frac{1}{4}$  inch : 1 foot. A door in the blueprint is  $\frac{3}{4}$  inch tall. What is the actual height of the door?

☐ A. 1 foot

☐ C. 3 feet

☐ B. 2 feet

☐ D. 4 feet



4) parallel triangular slice

A triangular pyramid is sliced by a plane parallel to the base, creating a triangular cross-section. If the original pyramid has height 9 cm and the plane is 6 cm below the apex, what is the linear scale factor of the cross-section to the base?

☐ A.  $\frac{1}{3}$

☐ C.  $\frac{2}{9}$

☐ B.  $\frac{3}{4}$

☐ D.  $\frac{2}{3}$



- 5) Olivia compares two budgets. Budget A: 40% expenses, 30% savings, 30% investments. Budget B: 45% expenses, 35% savings, 20% investments. How much more does Budget A allocate to investments than Budget B?

☐ A. 5% ☐ C. 15%  
☐ B. 20% ☐ D. 10%

- 6) Simplify:  $-4 - (-6)$

☐ A. -10 ☐ C. 2  
☐ B. -2 ☐ D. 10

- 7) Rewrite  $x \div \frac{4}{7} = 10$  using multiplication (reciprocal form).

☐ A.  $x \times \frac{4}{7} = 10$  ☐ C.  $x \times 10 = \frac{4}{7}$   
☐ B.  $x \times \frac{7}{4} = 10$  ☐ D.  $10 \div x = \frac{4}{7}$

- 8) A recipe calls for  $\frac{9}{10}$  cup of flour. What is this as a decimal?

☐ A. 0.09 cup ☐ C. 0.19 cup  
☐ B. 0.9 cup ☐ D. 1.9 cups

- 9) A manufacturing plant's baseline productivity is 200 items/hour. It increases by 15 items, decreases by 8 items, then increases by 12 items. What is the new rate?

☐ A. 225 items/hour ☐ C. 207 items/hour  
☐ B. 219 items/hour ☐ D. 235 items/hour



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& answers

**North Carolina EOG Grade 7 Practice Test Answer Keys****How to use this section with a Grade 7 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.** (7.RP.3)  $1000(1+r)^2 = 1440 \Rightarrow (1+r)^2 = 1.44 \Rightarrow 1+r = 1.20 \Rightarrow r = 0.20 = 20\%$ .
- 2) **Choice B is correct.** (7.NS.1-7.NS.3) Moving left 8 units:  $0-8 = -8$ . Moving right 3 units:  $-8-(-3) = -8+3 = -5$ . Or:  $-8+3 = -5$ .
- 3) **Choice D is correct.** (7.NS.1b) If  $-9+x = 4$ , then  $x = 4 - (-9) = 4+9 = 13$ . Check:  $-9+13 = 4$  ✓.
- 4) **Choice C is correct.** (7.RP.1-7.RP.3) Multiply model height by scale factor:  $3 \times 50 = 150$  feet.
- 5) **Choice C is correct.** (7.RP.3) If  $12 = 0.15 \times n$ , then  $n = \frac{12}{0.15} = 80$ .
- 6) **Choice C is correct.** (7.EE.1-7.EE.2) Substitute:  $3(4) - 2(-3) = 12 + 6 = 18$ .
- 7) **Choice C is correct.** (7.SP.1-7.SP.4) 38% of 750 =  $0.38 \times 750 = 285$  students.
- 8) **The correct answer is \$720.** (7.RP.1-7.RP.3) Use  $18 \times 40 = 720$  dollars.
- 9) **Choice B is correct.** (7.NS.1-7.NS.3) Change:  $0 - (-5) = 0 + 5 = 5^\circ\text{C}$  (an increase of 5 degrees).
- 10) **Choice C is correct.** (7.NS.1-7.NS.3) Proper scientific notation requires  $1 \leq a < 10$ . The coefficient 12.4 violates this rule.
- 11) **Choice D is correct.** (7.RP.1-7.RP.3)  $\frac{\frac{4}{5}}{\frac{2}{3}} = \frac{4}{5} \times \frac{3}{2} = \frac{12}{10} = \frac{6}{5}$ .
- 12) **The correct answer is \$51.** (7.RP.3) Discount amount =  $0.32 \times 75 = \$24$ . Sale price =  $75 - 24 = \$51$ .
- 13) **Choice D is correct.** (7.RP.1-7.RP.3) The equation is  $\text{Cost} = 15 + 0.10t$ . The constant \$15 (fixed fee) means not proportional.
- 14) **The correct answer is \$81.** (7.RP.3)  $I = 600 \times 0.045 \times 3 = \$81$ .
- 15) **Choice D is correct.** (7.RP.1-7.RP.3) The unit-rate point (1, 0.9) shows 0.9 grams per serving.
- 16) **Choice C is correct.** (7.RP.3) Increase:  $\frac{15}{100} \times 5000 = 750$ . New revenue:  $5000 + 750 = \$5750$ .
- 17) **Choice D is correct.** (7.RP.3) Surplus =  $\$2,000 - \$1,700 = \$300$ .
- 18) **Choice D is correct.** (7.NS.1-7.NS.3)  $120 - 45 + 30 = 75 + 30 = 105$ .
- 19) **Choice B is correct.** (7.NS.1-7.NS.3) Descent of 336 m is  $-336$ . Rate:  $(-336) \div 12 = -28$  m/s. Negative indicates downward motion.
- 20) **Choice C is correct.** (7.NS.2d) Divide  $3 \div 11 = 0.272727\ldots = 0.\overline{27}$ . The denominator 11 produces a repeating 2-digit block.
- 21) **The correct answer is A, C.** (7.SP.1-7.SP.4) Sample 1:  $\frac{48}{200} = 0.24$ ; Sample 2:  $\frac{36}{150} = 0.24$ ; Sample 3:  $\frac{60}{250} = 0.24$ . All are equal, so A is correct. These proportions can be used to estimate the full population (C). B is false (all equal), D is misleading, and E contradicts the actual data.
- 22) **Choice A is correct.** (7.NS.1-7.NS.3) Total butter =  $12 \times \frac{3}{16} = \frac{36}{16} = \frac{9}{4} = 2\frac{1}{4}$  pounds.
- 23) **Choice B is correct.** (7.NS.1-7.NS.3) Perfect squares:  $81 = 9^2$ ,  $121 = 11^2$ ,  $169 = 13^2$ . The number 72 is not a perfect square since no whole number times itself equals 72.
- 24) **Choice B is correct.** (7.EE.1-7.EE.2)  $30(1-0.1)$  clearly displays the factored structure: the scale factor  $(1-0.1) = 0.9$  multiplied by the original price. This factored form emphasizes why a 10% discount leaves 90%.
- 25) **Choice A is correct.** (7.SP.5-7.SP.8) In a uniform random selection, each of the 28 students has equal probability:  $P(\text{student selected}) = \frac{1}{28}$ .
- 26) **Choice B is correct.** (7.NS.2) Loss of \$3 per day for 5 days:  $(-3) \times 5 = -15$ . The total change is  $-\$15$ .
- 27) **Choice D is correct.** (7.RP.3) Total cost =  $500 + (75 \times 20) = 500 + 1500 = \$2,000$ .
- 28) **Choice B is correct.** (7.SP.1-7.SP.4) Each leaf combines with its stem: stem 3 + leaf 2 = 32, stem 3 + leaf 5 = 35, etc.
- 29) **Choice B is correct.** (7.G.4-7.G.6) Square:  $8 \times 8 = 64 \text{ cm}^2$ . Semicircle (radius 4):  $\frac{1}{2} \times 3.14 \times 16 = 25.12 \text{ cm}^2$ . Total:  $64 + 25.12 = 89.12 \text{ cm}^2$ .
- 30) **Choice C is correct.** (7.RP.1-7.RP.3) Ratio 2 : 9. If water = 18, then  $\frac{2}{9} = \frac{x}{18}$ , so  $x = 2 \times 2 = 4$  cups salt.



## Hi, Persistent Problem Solver!

◇ Some Grade 7 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 5 full Grade 7 practice tests, and that repeated effort matters. ★

### Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

**Grade 7 test-day tip:** When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

If you want to share something or ask a question, please email me at [jay@testinar.com](mailto:jay@testinar.com).

**Jay Daie**

Your Persistence Coach

# PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **5** full-length Math practice tests and **2** online tests to help Grade 7 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.



## THIS BOOK INCLUDES:

**5** Full-Length Printed Tests

**2** Online Practice Tests

 Detailed Answers & Explanations



## MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

## WHAT YOU'LL GAIN



### Build Confidence

Practice regularly to feel prepared and test-ready.



### Strengthen Math Skills

Develop key math concepts and problem solving abilities.



### Improve Understanding

Learn with clear explanations and step-by-step solutions.



### Test Confidence

Familiarize with test formats and improve accuracy and speed.



### Boost Performance

Apply your knowledge and achieve your best score!

## TOPICS COVERED

- ✓ Ratios & Proportions
- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Geometry
- ✓ Percents & Decimals
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ Algebraic Thinking
- ✓ And More!



## 2 ONLINE TESTS

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



## 2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

Don't lose it—your extra practice and success start here!



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