

North Carolina

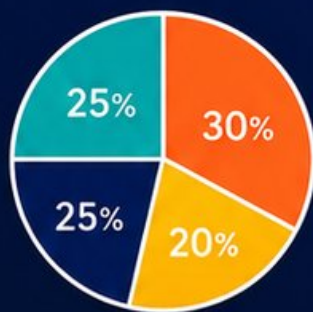
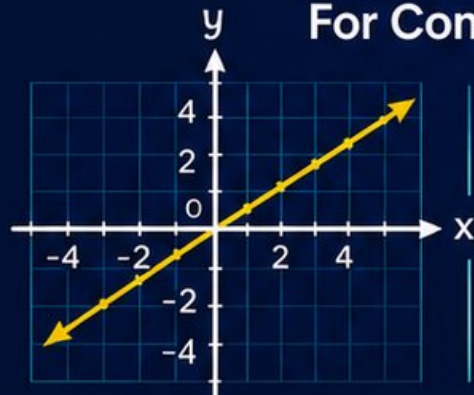
EOG

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

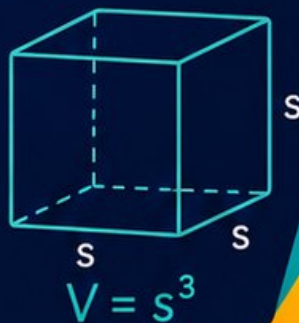


$$y = mx + b$$

$$2x - 3y = 6$$

$$\sqrt{x^2 + y^2}$$

$$A = bh$$



4 PRINTED TESTS



2 ONLINE TESTS



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



4 North Carolina EOG Grade 8 Math Practice Tests

Targeted EOG Review for Algebra, Geometry, and Data Confidence



Four 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!

Four focused rounds for sharper EOG math thinking

This book gives you four 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 four-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?

Four EOG tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

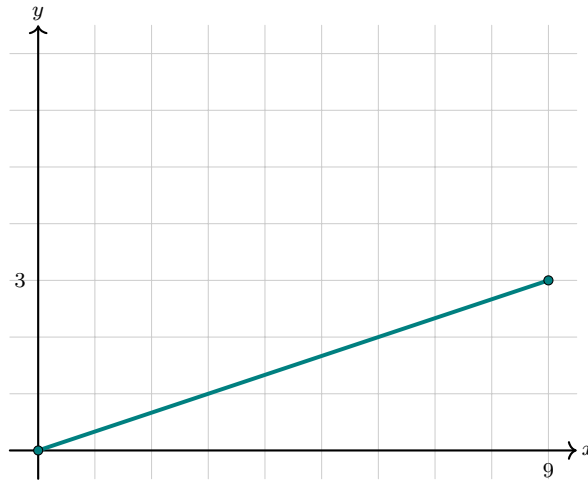
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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& answers

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1)

The graph shows a proportional relationship. Find the equation.

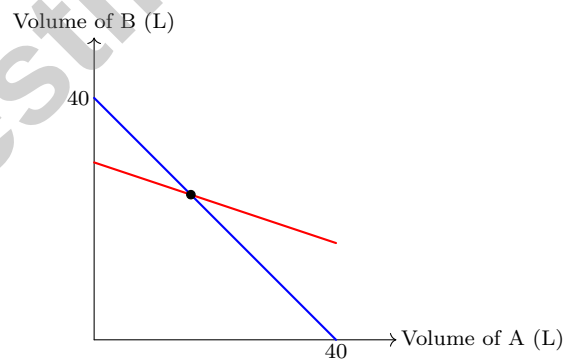
☐ A. $y = 9x$

☐ C. $y = \frac{1}{3}x$

☐ B. $y = 3x$

☐ D. $y = x + 3$

- 2) A juice bar mixes two juices. Juice A is 25% apple. Juice B is 75% apple. The shop wants 40 liters of a 55% apple blend. The graph below shows the relationship between volumes of A and B.



Which point represents the solution?

☐ A. (10, 30)

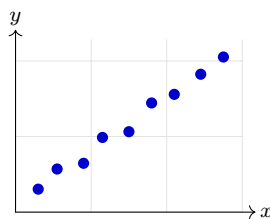
☐ C. (16, 24)

☐ B. (20, 20)

☐ D. (30, 10)



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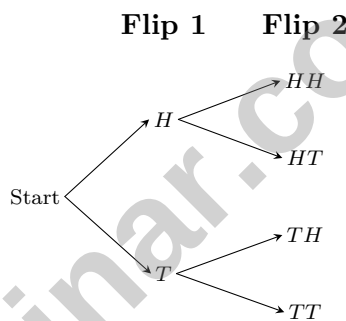
3)

A scatter plot displays the relationship between temperature (in degrees Celsius) and ice cream sales (in dollars) for 12 weeks. The points show a clear upward trend from left to right. Which statement correctly describes the correlation?

☐ A. Negative correlation

☐ C. No correlation

☐ B. Positive correlation

☐ D. Random scatter with no pattern


4)

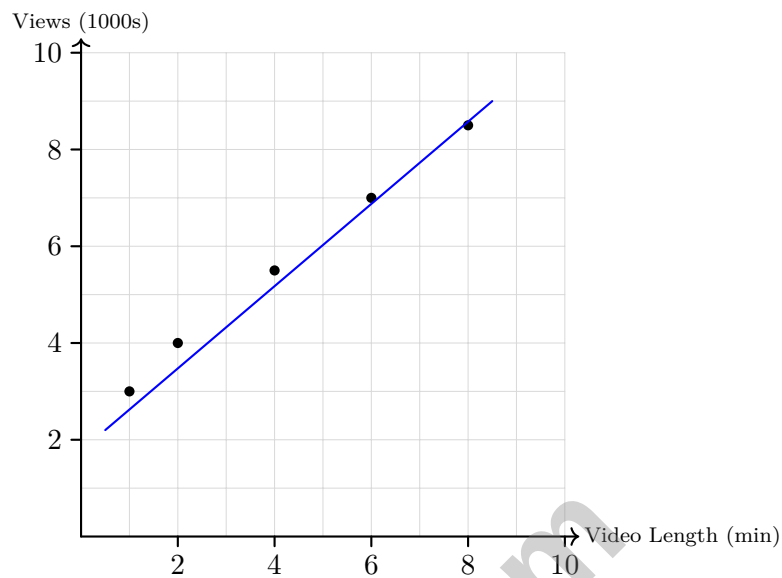
A tree diagram shows all possible outcomes when a coin is flipped twice. According to the diagram, how many total outcomes are there?

☐ A. 2

☐ C. 4

☐ B. 6

☐ D. 3

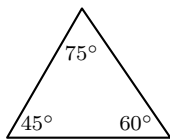



5)

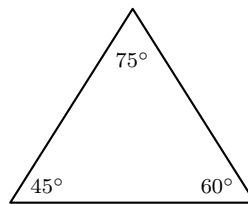
A content creator analyzes video length versus view count. Using the trend line, by how much do views increase per minute of video length?

- ☐ A. Approximately 0.8 thousand views/min
 ☐ C. Approximately 1.5 thousand views/min
☐ B. Approximately 1.1 thousand views/min
 ☐ D. Approximately 2 thousand views/min

6) Two triangles both have angles measuring 45° , 60° , and 75° . Are these triangles necessarily similar?



Triangle 1

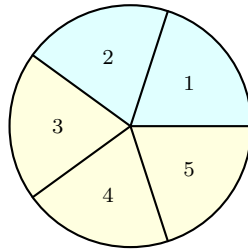


Triangle 2

- ☐ A. No, the sides must also be proportional
 ☐ C. Yes, angles alone determine similarity (AAA)
☐ B. No, only two angles are given
 ☐ D. Only if the triangles are congruent



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1)

A spinner has 5 equal sections numbered 1–5. Two sections (1 and 2) are shaded. If you spin once, what is the probability of landing on a shaded section?

- ☐ A. $\frac{1}{5}$
☐ B. $\frac{2}{5}$

- ☐ C. $\frac{3}{5}$
☐ D. $\frac{4}{5}$

2) A line has a slope of $-\frac{1}{2}$ and passes through (4, 6). What is the y -coordinate when $x = 8$?

- ☐ A. 4
☐ B. 8

- ☐ C. 6
☐ D. 2

3) In 6 years, a father will be three times as old as his son. Right now, the father is 30 years older than his son. How old is the son now?

- ☐ A. 9
☐ B. 12

- ☐ C. 15
☐ D. 18

4) A rental company charges based on hours rented. The cost function is shown in the table. What is $C(5)$?

Hours	1	2	4	5
Cost	\$15	\$25	\$45	\$55

- ☐ A. \$45
☐ B. \$50

- ☐ C. \$55
☐ D. \$60



5) A line passes through $(2, 10)$ and has slope 3. What is the y -intercept?

☐ A. 3

☐ C. 10

☐ B. 4

☐ D. 6

6) A student's test score shows: starts at 60, increases to 90 by question 5, then stays at 90 for questions 6-10, where 90 is the maximum possible score. Which is true?

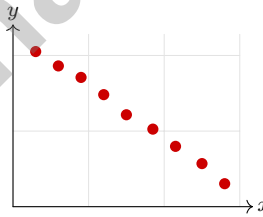
☐ A. The student answered 30 consecutive questions correctly

☐ C. The student's score increased from question 5 to 10

☐ B. The rate of improvement was constant throughout

☐ D. The student improved in the first half but was already at the ceiling in the second half

7) Point $M(-3, 2)$ is reflected across the line $y = x$. What are the coordinates of M' ?

☐ A. $(2, -3)$
☐ C. $(-3, -2)$
☐ B. $(-2, 3)$
☐ D. $(3, -2)$


8)

A scatter plot of price versus quantity sold shows a downward trend that is clearly linear. A line of best fit passes through most of the points with only small deviations. Which term best describes the strength of this association?

☐ A. Weak negative correlation

☐ C. Strong negative correlation

☐ B. Moderate negative correlation

☐ D. No correlation


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1) If a square has a side length of 9 cm, what is its area?

☐ A. 36 cm²

☐ C. 81 cm²

☐ B. 72 cm²

☐ D. 90 cm²

2) A recipe calls for 3 cups of flour per batch of cookies. How many batches can be made with 12 cups of flour? (Assume a proportional relationship.)

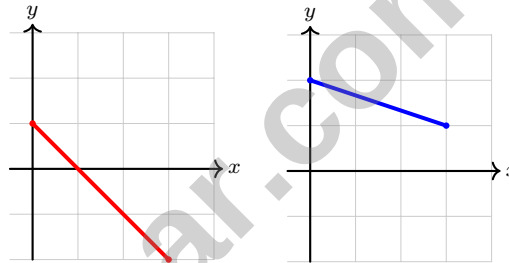
☐ A. 2 batches

☐ C. 4 batches

☐ B. 3 batches

☐ D. 6 batches

3) Which graph best represents a line with slope $-\frac{1}{3}$?



☐ A. Red line (left)

☐ C. Both have slope $-\frac{1}{3}$

☐ B. Neither has slope $-\frac{1}{3}$

☐ D. Blue line (right)

4) A farmer's market charges \$2 for apples and \$3 for oranges. On Saturday, the vendor sold 120 pieces of fruit for \$310. How many apples were sold?

☐ A. 40

☐ C. 50

☐ B. 60

☐ D. 80



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5) The table shows values of $f(x) = 3x - 2$. What is $f(5)$?

x	1	2	3	5
$f(x)$	1	4	7	?

☐ A. 13

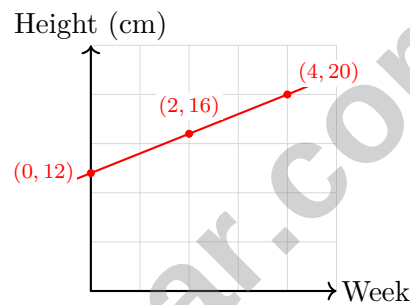
☐ C. 12

☐ B. 15

☐ D. 17

6) A plant grows according to the table:

Week	0	2	4
Height (cm)	12	16	20



What is the rate of change of the plant's height per week?

☐ A. 1 cm/week

☐ C. 4 cm/week

☐ B. 2 cm/week

☐ D. 12 cm/week



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 C is correct.** (NC.8.EE.1) Slope $k = \frac{3}{9} = \frac{1}{3}$. Equation: $y = \frac{1}{3}x$.
- 2) **Choice C is correct.** (NC.8.EE.7) Let a = liters of Juice A and b = liters of Juice B. Then $a + b = 40$ and $0.25a + 0.75b = 0.55(40) = 22$. Substitute $b = 40 - a$: $0.25a + 0.75(40 - a) = 22$, so $30 - 0.50a = 22$. Thus $a = 16$ and $b = 24$.
- 3) **Choice B is correct.** (NC.8.SP.1) An upward trend means both variables increase together, indicating positive correlation. As temperature rises (moving right), ice cream sales rise (moving up).
- 4) **Choice C is correct.** (NC.8.G.7) The tree diagram shows 4 final branches, one for each outcome: HH, HT, TH, TT.
- 5) **Choice A is correct.** (NC.8.SP.3) Slope $\approx \frac{9-2.2}{8.5-0.5} = \frac{6.8}{8} = 0.85$ thousand/min.
- 6) **Choice C is correct.** (NC.8.G.9) If two triangles have all three corresponding angles congruent, they are similar by AAA (Angle-Angle-Angle). Here, both triangles have the same three angles, so they must be similar regardless of side lengths.
- 7) **The correct answer is 3.** (NC.8.F.5) Slope $= \frac{14-5}{2-(-1)} = \frac{9}{3} = 3$.
- 8) **Choice D is correct.** (NC.8.NS.1) The sum of a rational and an irrational number is always irrational. For example, $2 + \sqrt{3}$ is irrational. Similarly, $b - a$ is irrational, but products can vary.
- 9) **Choice A is correct.** (NC.8.NS.2) Decompose using subtraction: circle minus rectangle. Circle area $= \pi r^2 = 3.14 \times 4^2 = 50.24 \text{ m}^2$. Rectangle area $= 8 \times 3 = 24 \text{ m}^2$. Remaining $= 50.24 - 24 = 26.24 \text{ m}^2$.
- 10) **Choice D is correct.** (NC.8.NS.1) Let $x = 0.\bar{6}$. Then $10x = 6.\bar{6}$. Subtracting: $9x = 6$, so $x = \frac{6}{9} = \frac{2}{3}$.
- 11) **Choice D is correct.** (NC.8.NS.2) $5^2 = 25$ and $6^2 = 36$. The midpoint is $(5.5)^2 = 30.25$. Since $30 < 30.25$, we have $\sqrt{30} < 5.5$, so it rounds to 5.
- 12) **Choice D is correct.** (NC.8.NS.1) $\sqrt{3} \approx 1.73$, so $2 + \sqrt{3} \approx 3.73$, which lies between 3 and 4.
- 13) **Choice D is correct.** (NC.8.G.7) At 0% APR during the promo period, no interest accrues. Balance after 18 months is still \$1,200.
- 14) **Choice D is correct.** (NC.8.EE.3) Move the decimal 9 places left: $2.0 \times 10^{-9} = 0.000000002 \text{ m}$.
- 15) **Choice C is correct.** (NC.8.G.9) $SA = 2\pi r^2 + 2\pi rh = 2(3.14)(2.5)^2 + 2(3.14)(2.5)(4) = 39.25 + 62.8 = 102.05 \text{ m}^2$.
- 16) **Choice C is correct.** (NC.8.G.6) A 180° rotation about the origin maps $(x, y) \rightarrow (-x, -y)$. The pre-image at $(1, 1)$ maps to $(-1, -1)$ in the image, confirming the rotation.
- 17) **Choice D is correct.** (NC.8.G.8) The y -intercept is the constant term b in $y = mx + b$, which is 4.
- 18) **Choice A is correct.** (NC.8.EE.8) Subtract $5x$ and 2: $x = 7$.
- 19) **The correct answer is 5.** (NC.8.F.5) Slope: $\frac{17-9}{3-1} = \frac{8}{2} = 4$. Using $(1, 9)$: $9 = 4(1) + b \Rightarrow b = 5$.
- 20) **The correct answer is A,C.** (NC.8.F.3) From the table, $g(1) = 5$ and $g(3) = 13$, so A and C are true. The other listed values are incorrect, and the function increases by 4, not 5, for each unit increase in x .
- 21) **Choice C is correct.** (NC.8.EE.7) Solving $2x - 3 < 5$ gives $2x < 8$, so $x < 4$. Of the listed choices, only $x = 3$ satisfies the inequality.
- 22) **Choice B is correct.** (NC.8.EE.8) Substitute: $4(3) - 3(3) = 12 - 9 = 3$. Test: $3 \geq 3$ TRUE. The point is on the boundary and included in the solution because of $\geq$.
- 23) **Choice B is correct.** (NC.8.G.9) Radius $r = 5 \text{ cm}$. $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 125 = 523.33 \text{ cm}^3$.
- 24) **Choice A is correct.** (NC.8.SP.3) Substitute $x = 5.5$: $y = -2(5.5) + 15 = -11 + 15 = 4$.
- 25) **Choice D is correct.** (NC.8.EE.1) $(b^3)^2 = b^6$; then $b^6 \cdot b^4 = b^{10}$; then $\frac{b^{10}}{b^5} = b^5$.
- 26) **Choice C is correct.** (NC.8.EE.4) Divide coefficients: $5 \div 2.5 = 2$. Subtract exponents: $10^{-2-(-5)} = 10^3$. Result: 2×10^3 .
- 27) **The correct answer is 3 line segments.** (NC.8.F.5) The first 2 hours show an upward-sloping line. The next hour is a horizontal line (zero slope). The final hour is an upward-sloping line with a steeper slope than the first segment because the person is running faster. Together, these form a piecewise linear function.



Hi, Future Algebra Thinker!

◇ Grade 8 practice builds a bridge to high school mathematics through exponents, linear systems, functions, transformations, geometry, and data models. This carefully paced book gave you four steady Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** Every time you solved for an unknown or explained a relationship, you were building skills that future math will use again. ★

Bridge Skills

- **Use Variables:** Let letters stand for unknown values.
- **Balance Equations:** Keep both sides fair.
- **Read Graphs:** Connect points to meaning.
- **Compare Rates:** Look for constant relationships.

Grade 8 test-day tip: When you see a variable, say what it represents. That keeps algebra connected to the problem.

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

Jay Daie

Your Algebra Bridge Coach

PRACTICE TODAY, ACHIEVE TOMORROW!

Give your child the confidence and skills they need with **4 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!

4



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
- ✓ 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!



4 PRINTED TESTS

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2 ONLINE TESTS



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