

8

New Jersey

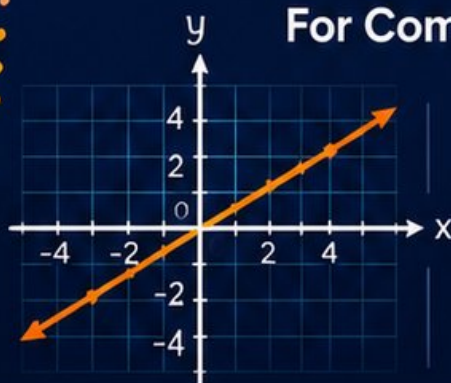
NJSLA

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$
$$C = 2\pi r$$
$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}b^2 h$$



8

 PRINTED TESTS

2

 ONLINE TESTS

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

8 New Jersey NJSLA Grade 8 Math Practice Tests

New Jersey Grade 8 Review for Equations, Functions, and Geometry



Eight complete 40-question Grade 8 NJSLA 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, New Jersey Grade 8 Problem Solver!

Eight focused rounds for sharper NJSLA math thinking

This book gives you eight full Grade 8 NJSLA 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 New Jersey 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

An eight-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.

New Jersey 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?

Eight NJSLA tests, 320 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real and irrational numbers, integer exponents, scientific notation, equations, and careful reading.
Tests 4–6	Slope, systems of equations, functions, inequalities, transformations, congruence, and similarity.
Tests 7–8	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
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) Using the model $y = -2x + 15$, what is the predicted y -value when $x = 5.5$?

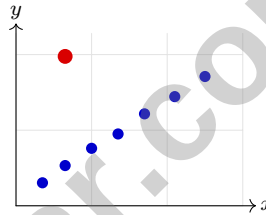
☐ A. 4

☐ C. 10

☐ B. 5

☐ D. 26

2) Two parallel lines are cut by a transversal. If a co-interior angle pair measures $(7a + 5)^\circ$ and $(2a + 85)^\circ$, find the value of a .



3)

A scatter plot shows the time spent studying versus quiz grade. One point is far below the trend line, which could indicate:

☐ A. The trend line is incorrect

☐ C. Studying does not affect quiz grades

☐ B. That student may have been unprepared despite studying, or the data was recorded incorrectly

☐ D. The student did not study enough

4) A student incorrectly states: "In a right triangle, if the hypotenuse is 13 and one leg is 5, the other leg must be $13 - 5 = 8$." What is the correct other leg?

☐ A. 8 (student's answer; incorrect)

☐ C. 18

☐ B. 12 (correct)

☐ D. 9



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- 5) A square pyramid-shaped water tank has a base edge of 2 m and a height of 3 m. What is its volume in cubic meters? (If $1 \text{ m}^3 = 1000 \text{ L}$, what is the capacity in liters?)

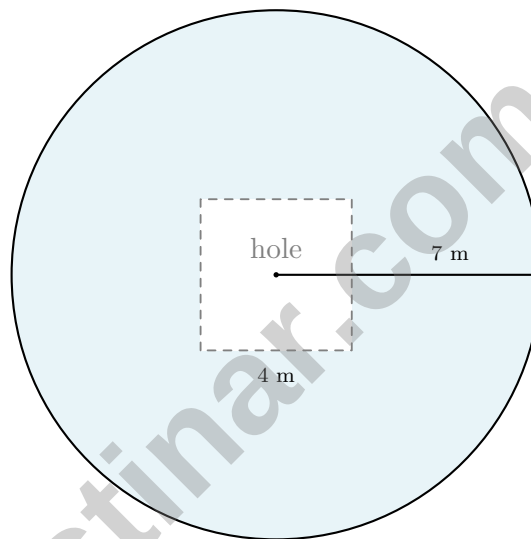
☐ A. $4 \text{ m}^3 / 4000 \text{ L}$

☐ B. $6 \text{ m}^3 / 6000 \text{ L}$

☐ C. $8 \text{ m}^3 / 8000 \text{ L}$

☐ D. $12 \text{ m}^3 / 12000 \text{ L}$

- 6) A composite figure has a circular disk (radius 7 m) with a square hole (side 4 m) cut from the center. Find the remaining area. Use $\pi \approx 3.14$.



☐ A. 137.86 m^2

☐ B. 149.86 m^2

☐ C. 153.86 m^2

☐ D. 169.86 m^2



- 7) Among high-quality products in the table below, what relative frequency are premium-priced?

	Premium	Standard	Total
High Quality	240	80	320
Low Quality	48	112	160
Total	288	192	480

- ☐ A. $\frac{240}{480} = 0.50$
☐ C. $\frac{240}{320} = 0.75$
☐ B. $\frac{240}{288} \approx 0.83$
☐ D. $\frac{240}{480} = 0.60$

- 8) Data set: $\{100, 102, 104, 106, 108\}$ (mean = 104). Calculate MAD.

- ☐ A. 1.6
 ☐ C. 3
☐ B. 2
 ☐ D. 2.4

- 9) A student is asked: "There are 6 routes from city A to city B, and 5 routes from city B to city C. How many different routes from A to C through B are there?" The student writes: $6 + 5 = 11$. What is the correct answer?

- ☐ A. 11 (student is correct)
 ☐ C. 1 (routes are not independent)
☐ B. 30 (use Counting Principle: 6×5)
 ☐ D. $6^5 = 7,776$

- 10) Two scatter plots show the same two variables. Plot A has points tightly clustered around a trend line. Plot B has points widely scattered with no clear line. Which plot shows a stronger correlation? Explain your reasoning.



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- 1) A student arranges 5 cards in a line. The first card can be any of the 5. The second can be any of the remaining, and so on. How many different arrangements are possible?

☐ A. $5^5 = 3,125$

☐ C. $5 \times 4 \times 3 \times 2 \times 1 = 120$

☐ B. $5 + 4 + 3 + 2 + 1 = 15$

☐ D. $\binom{5}{5} = 1$

- 2) The table below shows a relationship. What is the slope of the linear function it represents?

x	-1	1	3	5
y	0	4	8	12

☐ A. 2

☐ C. -1

☐ B. 4

☐ D. $\frac{1}{2}$

- 3) A triangle with vertices at $(1, 0)$, $(3, 0)$, and $(2, 2)$ is reflected across the x -axis. What is the y -coordinate of the image of the vertex originally at $(2, 2)$?

☐ A. 2

☐ C. 0

☐ B. -2

☐ D. 4

- 4) Two parallel lines are cut by a transversal. If one angle is 135° , how many angles of 45° are formed?

☐ A. 2

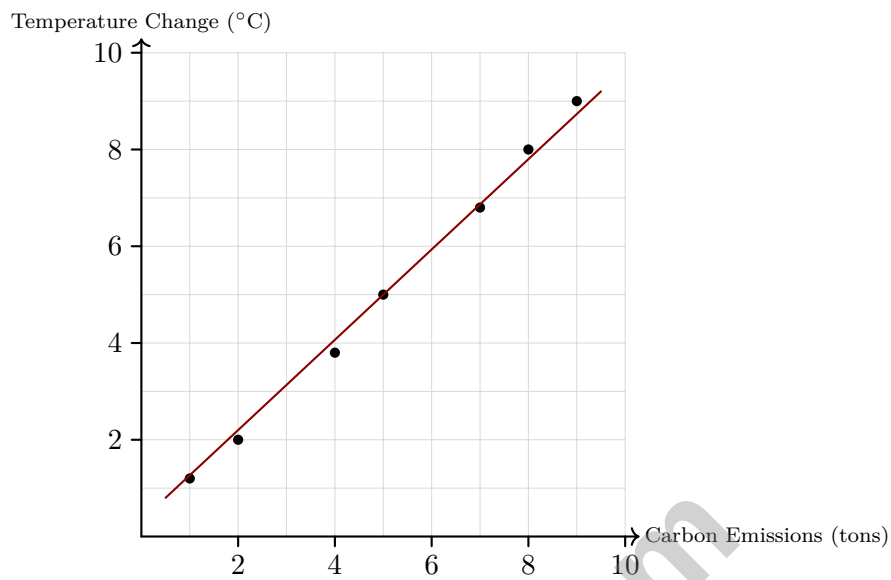
☐ C. 6

☐ B. 4

☐ D. 8



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5)

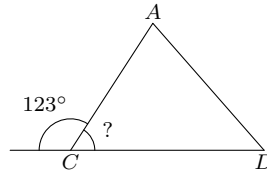
A scientist studies the relationship between carbon emissions and temperature change. The trend line shows a strong positive relationship. Which is the best interpretation?

- ☐ A. As carbon emissions increase, temperature tends to increase on average
- ☐ B. Temperature change has no relationship to emissions
- ☐ C. Higher temperatures cause carbon emissions
- ☐ D. The relationship is random

- 6) Two hikers start from the same point, walking in opposite directions. One walks at 4 mph, the other at 5 mph. After how many hours are they 27 miles apart?

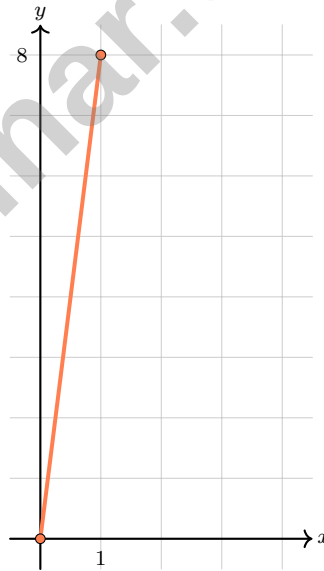


- 1) In the diagram, the exterior angle adjacent to angle ACD is 123° . What is angle ACD ?



- 2) A point P is translated by the vector $(5, -2)$ to get point P' . If you want to undo this translation and return to P , which translation vector should you apply to P' ?

- ☐ A. $(5, -2)$ ☐ C. $(5, 2)$
☐ B. $(-5, 2)$ ☐ D. $(-5, -2)$



3)

What is the slope?

- ☐ A. 1 ☐ C. 8
☐ B. 4 ☐ D. $\frac{1}{8}$



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4) Solve for x : $-2x + 8 = 0$

☐ A. $x = -4$

☐ C. $x = 4$

☐ B. $x = 6$

☐ D. $x = 8$

5) For which system do the two equations represent parallel lines?

☐ A. $y = 2x + 1$ and $y = 2x - 3$

☐ C. $y = 2x + 1$ and $y = x + 3$

☐ B. $y = 2x + 1$ and $y = -\frac{1}{2}x + 1$

☐ D. $y = 2x + 1$ and $y = 2x + 1$

6) Which inequality represents “the product of a number and -2 is greater than 8 ”?

☐ A. $-2x > 8$

☐ C. $-2x < 8$

☐ B. $2x > 8$

☐ D. $x > -4$

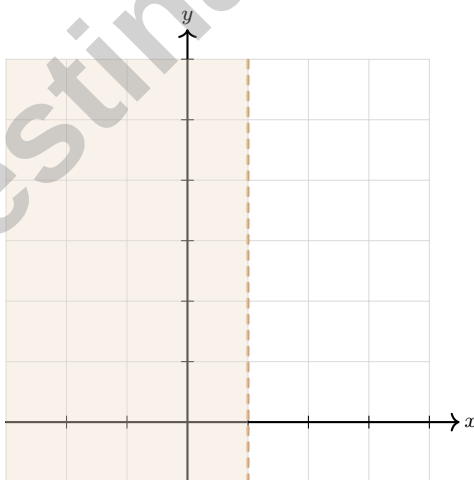
7) Factor completely: $6x^2 + 12x + 6$.

☐ A. $6(x^2 + 2x + 1)$

☐ C. $2(3x^2 + 6x + 3)$

☐ B. $6(x + 1)^2$

☐ D. $3(2x + 2)^2$



8)

The graph shows which inequality?

☐ A. $x < 1$

☐ C. $x \leq 1$

☐ B. $x > 1$

☐ D. $x \geq 1$



New Jersey NJSLA 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 New Jersey NJSLA practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (8.SP.A.3) Substitute $x = 5.5$: $y = -2(5.5) + 15 = -11 + 15 = 4$.
- 2) **The correct answer is 10.** (8.G.A.5) Co-interior angles are supplementary: $(7a + 5) + (2a + 85) = 180$. Thus $9a + 90 = 180$, so $9a = 90$ and $a = 10$.
- 3) **Choice B is correct.** (8.SP.A.2) A point far from the line is an outlier with a large residual. It suggests an unusual circumstance—perhaps the student was ill, didn't study the right material, or a data error occurred.
- 4) **Choice B is correct.** (8.G.B.6, 8.G.B.7) The correct calculation uses the Pythagorean Theorem: $5^2 + b^2 = 13^2$ gives $25 + b^2 = 169$, so $b = 12$. The student's error was subtracting instead of using $a^2 + b^2 = c^2$.
- 5) **Choice A is correct.** (8.G.C.9) $V = \frac{1}{3} \times (2 \times 2) \times 3 = \frac{1}{3} \times 4 \times 3 = 4 \text{ m}^3 = 4000 \text{ L}$.
- 6) **Choice A is correct.** (8.G.C.9) Circle area $= \pi r^2 = 3.14 \times 7^2 = 153.86 \text{ m}^2$. Square area $= 4 \times 4 = 16 \text{ m}^2$. Remaining $= 153.86 - 16 = 137.86 \text{ m}^2$.
- 7) **Choice C is correct.** (8.SP.A.4) Row-conditional frequency: among high-quality products (row total 320), premium count 240. Denominator is row total. This is 0.75 or 75%.
- 8) **Choice D is correct.** (8.G.B.8) Absolute deviations: $|100 - 104| = 4$, $|102 - 104| = 2$, $|104 - 104| = 0$, $|106 - 104| = 2$, $|108 - 104| = 4$. Sum $= 12$. MAD $= 12/5 = 2.4$.
- 9) **Choice B is correct.** (8.NS.A.2) The student made an error by adding. Since each route A-B can combine with any route B-C, we multiply: $6 \times 5 = 30$. This is the Counting Principle for independent choices.
- 10) **The correct answer is Plot A.** (8.SP.A.1) Strength of correlation is judged by how closely points cluster around the trend line. Tight clustering (Plot A) indicates stronger correlation; wide scatter (Plot B) indicates weaker correlation.
- 11) **The correct answer is $\frac{1}{6}$.** (8.G.C.9) Favorable outcomes: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1). That's 6 of 36. $P = \frac{6}{36} = \frac{1}{6}$.
- 12) **Choice D is correct.** (8.NS.A.1) Let $x = 0.4\overline{5} = 0.4555\dots$. Then $10x = 4.\overline{5}$ and $100x = 45.\overline{5}$. Subtracting: $90x = 41$, so $x = \frac{41}{90}$.
- 13) **Choice D is correct.** (8.NS.A.1) By definition, any repeating decimal can be expressed as a fraction $\frac{a}{b}$ of two integers. For example, $0.142857 = \frac{1}{7}$. Terminating decimals also have fractional forms, but the defining property is the repeating pattern, which guarantees rationality.
- 14) **Choice D is correct.** (8.NS.A.2) $7^2 = 49$ and $8^2 = 64$. Since 50 is just above 49, $\sqrt{50} \approx 7.07$, closest to 7.1 (not 7.5).
- 15) **Choice D is correct.** (8.NS.A.2) $\sqrt{9} = 3$, $\sqrt{4} = 2$, and $0.5 = \frac{1}{2}$ are all rational. $\sqrt{8} = 2\sqrt{2}$ is irrational.
- 16) **Choice D is correct.** (8.EE.A.3) A negative exponent moves the decimal left. $4.25 \times 10^{-1} = 0.425$.
- 17) **Choice D is correct.** (8.EE.A.2) $e^3 = 1000$, so $e = \sqrt[3]{1000} = 10$ inches.
- 18) **Choice A is correct.** (8.EE.B.6) Substitute: $-3 = -\frac{3}{4}(4) + b$, so $-3 = -3 + b$, thus $b = 0$.
- 19) **Choice A is correct.** (8.EE.C.7) Subtract 8 from both sides: $2x = 12$. Divide by 2: $x = 6$. Check: $2(6) + 8 = 12 + 8 = 20$ ✓.
- 20) **Choice D is correct.** (8.EE.C) Subtract the second from the first: $(2x + 3y) - (2x - y) = 11 - 3$, so $4y = 8$, giving $y = 2$. Substitute: $2x - 2 = 3$, so $2x = 5$ and $x = \frac{5}{2}$. Solution: $(\frac{5}{2}, 2)$.
- 21) **The correct answer is A,C.** (8.G.A.3) A 180° rotation about the origin transforms $(x, y) \rightarrow (-x, -y)$. Reflecting across the x -axis and then the y -axis also transforms (x, y) to $(-x, -y)$. Both map (1, 1), (3, 2), and (1, 3) to the red image points. B, D, and E do not match the image.
- 22) **Choice A is correct.** (8.EE.C.7) FOIL: $(x + 2)(x + 6) = x^2 + 6x + 2x + 12 = x^2 + 8x + 12$.
- 23) **Choice A is correct.** (8.F.A.2) Both $y = 2x$ and $y = 2x + 5$ have slope $m = 2$. The y -intercepts differ (0 vs 5), but slopes are equal. Student is correct.
- 24) **Choice B is correct.** (8.F.B.4) Initial height is 60 inches (intercept). Melts (decreases) at 4 inches per day (negative slope). Equation: $h = -4d + 60$.
- 25) **Choice D is correct.** (8.EE.A.1) $c^0 = 1$; so $c^0 \cdot c^5 = 1 \cdot c^5 = c^5$.
- 26) **The correct answer is \$600.** (8.EE.B.5) $50 \times 12 = \$600$.



Hi, Persistent Problem Solver!

◇ Some Grade 8 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 8 full Grade 8 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 8 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.

Jay Daie

Your Persistence Coach

PRACTICE TODAY, SUCCEED TOMORROW!

Give your child the confidence and skills they need with **8 full-length Grade 8** Math practice tests that mirror 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.



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!



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More Practice. More Confidence.
Better Results.