

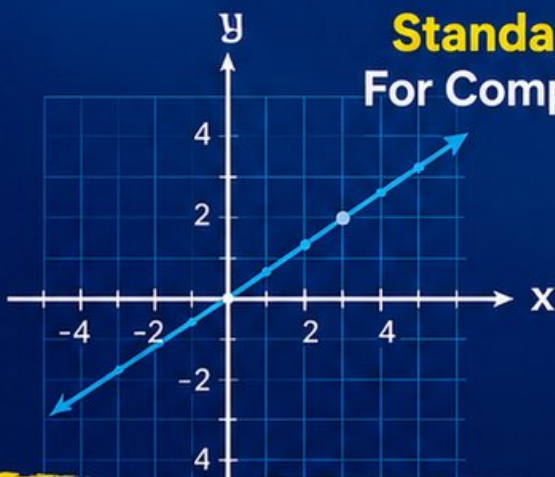
9

New York
NYSTP

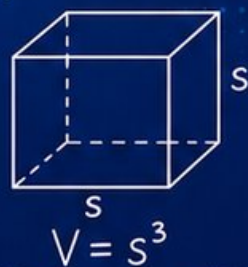
Grade 8

MATH

PRACTICE TESTS

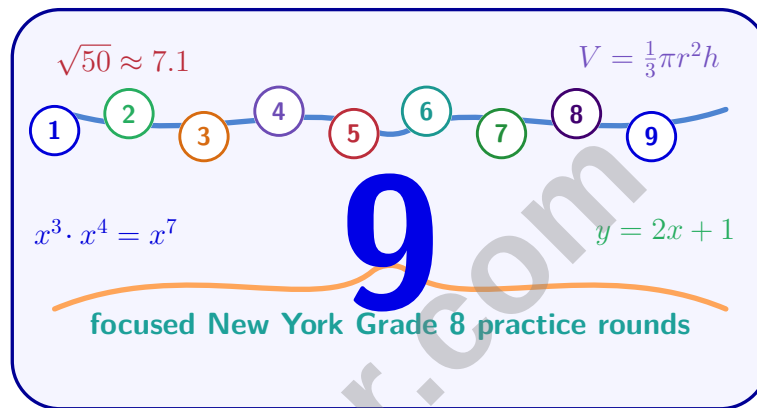
Standards Aligned Problem Solving
For Comprehensive Assessment Programs

$$2x + 3y = 12$$
$$y = mx + b$$

9 PRINTED
TESTS2 ONLINE
TESTSUse these **two additional online practice tests** for extra review after the printed tests in this book.

9 New York NYSTP Grade 8 Math Practice Tests

Focused New York Review for Linear Models, Transformations, Statistics, and Volume



Nine complete 40-question Grade 8 NYSTP 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 York Grade 8 Problem Solver!

Nine focused rounds for sharper NYSTP math thinking

This book gives you nine full Grade 8 NYSTP 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 York 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 nine-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 York 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?

Nine NYSTP tests, 360 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 7–9	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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& answers

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- 1) A basketball is a sphere with diameter 24 cm. What is its approximate volume? (Use $\pi \approx 3.14$.)
- ☐ A. 904.32 cm³ ☐ C. 7234.56 cm³
☐ B. 1809.56 cm³ ☐ D. 14476.44 cm³
- 2) A student claims that reflecting a point across the x -axis and then across the y -axis gives the same result as rotating 180° about the origin. Is this claim correct?
- ☐ A. No, reflections never equal rotations ☐ C. Only if the point is on an axis
☐ B. Yes, both transformations map $(x, y) \rightarrow (-x, -y)$ ☐ D. Only for points in Quadrant I
- 3) Solve for y : $-4y + 7 = 15$
- ☐ A. $y = -8$ ☐ C. $y = 2$
☐ B. $y = 8$ ☐ D. $y = -2$
- 4) Which is the best estimate of $\pi + \sqrt{5}$?
- ☐ A. 4.6 ☐ C. 6.0
☐ B. 7.8 ☐ D. 5.4
- 5) Compare the values: $\sqrt{36}$ and $\sqrt[3]{216}$. Which is larger?
- ☐ A. $\sqrt{36}$ is larger ☐ C. They are equal
☐ B. $\sqrt[3]{216}$ is larger ☐ D. Cannot be determined
- 6) An athlete drinks 8 ounces of water for every 10 minutes of exercise. After 45 minutes of exercise, how many ounces has the athlete drunk?
- ☐ A. 30 ounces ☐ C. 40 ounces
☐ B. 45 ounces ☐ D. 36 ounces



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7) What is the slope of the line that passes through $(5, 2)$ and $(5, 7)$?

☐ A. 0

☐ C. Undefined

☐ B. 1

☐ D. 5

8) Solve: $7 - 4x \leq -5$

☐ A. $x \geq 3$

☐ C. $x \geq -3$

☐ B. $x \leq 3$

☐ D. $x \leq -3$

9) Which point is on the boundary line of $3x - y = 9$ but NOT in the solution region of $3x - y < 9$?

☐ A. $(3, 0)$

☐ C. $(1, 6)$

☐ B. $(0, 9)$

☐ D. $(2, 1)$

10) A taxi charges \$3 per mile plus a \$5 base fare. If m is the number of miles, which expression represents the total charge?

☐ A. $5m + 3$

☐ C. $3m - 5$

☐ B. $3m + 5$

☐ D. $\frac{3m}{5}$

11) Two points are $(2, 5)$ and $(4, 11)$. What is the slope of the line through them?

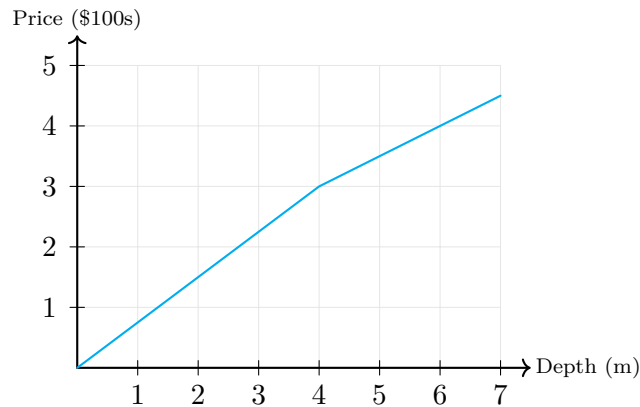
☐ A. 3

☐ C. 6

☐ B. $\frac{1}{3}$

☐ D. -3





12)

The graph shows well-drilling cost vs. depth. Why does the slope change at 4 meters depth?

- ☐ A. The drilling cost stays the same at all depths
- ☐ B. Different rock layers require different rates
- ☐ C. The drilling stops at 4 meters
- ☐ D. Cost actually decreases, shown by a negative slope

13) A quadrilateral is rotated 90 degrees counterclockwise about a point. Which of the following is true about the rotated figure?

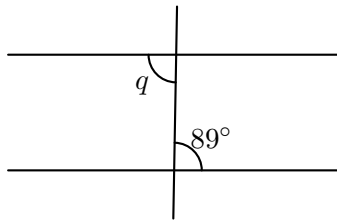
- ☐ A. The angles change
- ☐ B. The side lengths change
- ☐ C. The figure is congruent to the original
- ☐ D. The figure is similar but not congruent



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1) A student claims $(4 \times 10^3) \times (5 \times 10^2) = 20 \times 10^5$. The arithmetic steps are correct, but is the final answer in proper scientific notation?

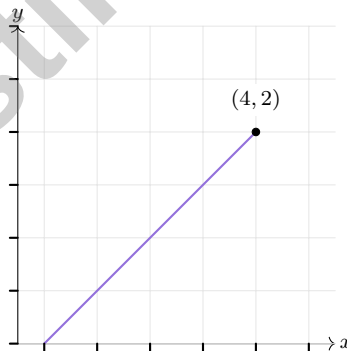
- ☐ A. Yes, it is in proper form.
- ☐ B. No; both coefficient and exponent are wrong.
- ☐ C. No; the exponent should be 10^6 instead.
- ☐ D. No; the coefficient 20 is too large. Should be 2×10^6 .



2)

Two parallel lines are cut by a transversal. Angles q and 89° are alternate interior angles. What is q ?

- ☐ A. 1°
- ☐ B. 89°
- ☐ C. 91°
- ☐ D. 178°



3)

Using the linear model $y = 2.5x - 8$, find the predicted value of y when $x = 4$.

- ☐ A. 10
- ☐ B. 3
- ☐ C. 4
- ☐ D. 2



4) Which data set has a MAD of 2?

☐ A. {1, 2, 3, 4, 5}

☐ B. {2, 4, 6, 10}

☐ C. {5, 7, 9, 11}

☐ D. {1, 3, 5, 9}

5) A die shows 6 faces numbered 1 through 6. What is the probability of rolling an even number?

☐ A. $\frac{1}{6}$

☐ B. $\frac{1}{2}$

☐ C. $\frac{2}{3}$

☐ D. $\frac{1}{3}$

6) In a game, you spin a spinner with 3 colors (red, yellow, green) and flip a coin (heads, tails). The table shows all outcomes. How many outcomes are there?

	Red	Yellow	Green
Heads	(H,R)	(H,Y)	(H,G)
Tails	(T,R)	(T,Y)	(T,G)

☐ A. $3 + 2 = 5$

☐ B. $3 \times 2 = 6$

☐ C. $2^3 = 8$

☐ D. $3^2 = 9$



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1) What is the slope of the line $y = -2x + 5$?

☐ A. -2

☐ C. $-\frac{1}{2}$

☐ B. 2

☐ D. 5

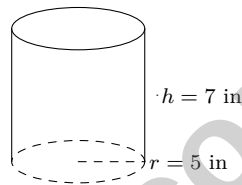
2) A rectangular prism has dimensions $2.5 \text{ feet} \times 1.5 \text{ feet} \times 2 \text{ feet}$. What is the surface area?

☐ A. 6.0 ft^2

☐ C. 23.5 ft^2

☐ B. 12.5 ft^2

☐ D. 28.5 ft^2



3)

A cylinder with radius 5 in and height 7 in is shown. What is its volume? (Use $\pi \approx 3.14$.)

☐ A. 109.9 in^3

☐ C. 549.5 in^3

☐ B. 219.8 in^3

☐ D. 1099 in^3

4) A bonus of $\$2,500$ is invested at 6% compound interest for 3 years. What is the approximate final amount?

☐ A. $\$2,500$

☐ C. $\$3,000$

☐ B. $\$3,500$

☐ D. $\$2,975$



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5) Which equation represents a NONLINEAR function?

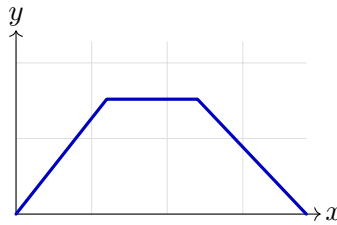
☐ A. $y = 2x + 3$

☐ C. $y = x^2 + 1$

☐ B. $y = -x + 5$

☐ D. $y = \frac{1}{2}x - 7$

6) A graph of a function shows distance from home (in miles) vs. time. The graph rises, then is flat, then falls. Which real-world scenario matches?



☐ A. Drive somewhere, stop, then drive home

☐ C. Stay home, then drive faster

☐ B. Walk faster and faster until stopping

☐ D. Drive home directly from work

7) Hexagon ABCDEF is congruent to hexagon GHIJKL. The perimeter of ABCDEF is 48 cm. What is the perimeter of GHIJKL?

☐ A. 24 cm

☐ C. 96 cm

☐ B. 48 cm

☐ D. Cannot be determined

8) What is the image of the point $(0, -7)$ after a reflection across the line $y = x$?

☐ A. $(0, 7)$

☐ C. $(-7, 0)$

☐ B. $(7, 0)$

☐ D. $(0, -7)$



New York NYSTP 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 York NYSTP practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (8.G.9) Radius $r = 12$ cm. $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 1728 = 7234.56$ cm³.
- 2) **Choice B is correct.** (8.G.1) Reflect (x, y) across x -axis: $(x, -y)$. Then across y -axis: $(-x, -y)$. A 180° rotation also gives $(-x, -y)$.
- 3) **Choice D is correct.** (8.EE.7b) Subtract 7: $-4y = 8$. Divide by -4 : $y = -2$.
- 4) **Choice D is correct.** (8.G.9) $\pi \approx 3.14$ and $\sqrt{5} \approx 2.24$, so $3.14 + 2.24 = 5.38 \approx 5.4$.
- 5) **Choice C is correct.** (8.EE.2) $\sqrt{36} = 6$ and $\sqrt[3]{216} = 6$, so they are equal.
- 6) **Choice D is correct.** (8.EE.5) Unit rate: $\frac{8}{10} = 0.8$ oz per minute. After 45 minutes: $0.8 \times 45 = 36$ ounces.
- 7) **Choice C is correct.** (8.EE.6) Both points have the same x -coordinate, making this a vertical line. Vertical lines have undefined slope.
- 8) **Choice A is correct.** (8.EE.8a) Subtract 7: $-4x \leq -12$. Divide by -4 (FLIP): $x \geq 3$.
- 9) **Choice A is correct.** (8.EE.8c) Boundary points satisfy $3x - y = 9$. For $(3, 0)$, $3(3) - 0 = 9$, so it is on the boundary. Because the inequality is strict, boundary points are not in the solution region.
- 10) **Choice B is correct.** (8.F.1) Base fare is \$5. Charge per mile is \$3. Total charge = $3m + 5$.
- 11) **Choice A is correct.** (8.F.3) Slope = $\frac{11-5}{4-2} = \frac{6}{2} = 3$.
- 12) **Choice B is correct.** (8.F.5) The change in slope (from $3/4$ to $(4.5 - 3)/(7 - 4) = 0.5$ per meter) indicates a change in the rate structure. Option B explains why: different geological layers can cost differently. A is wrong because the slope changes, C is wrong because the line continues, and D is wrong because the slope stays positive.
- 13) **Choice C is correct.** (8.G.1) Rotation is a rigid motion, so it preserves all distances and angles. The rotated figure is congruent to the original.
- 14) **Choice C is correct.** (8.G.3) Reflecting $(1, 1) \rightarrow (1, -1)$, then translating left 1 gives $(0, -1)$. This matches a vertex of H' , and the same rule maps the whole rectangle correctly.
- 15) **The correct answer is 0.00047.** (8.EE.3) Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.
- 16) **Choice A is correct.** (8.G.5) Alternate exterior angles are congruent when lines are parallel.
- 17) **Choice D is correct.** (8.G.5) The sum of interior angles of an n -gon is $(n-2) \times 180^\circ$. For a hexagon, $(6-2) \times 180 = 720^\circ$.
- 18) **Choice C is correct.** (8.SP.1) Relatively balanced distribution above and below a line with many points on or near it indicates moderate to strong correlation.
- 19) **Choice D is correct.** (8.G.7) Account A: $I = 1000 \times 0.04 \times 5 = \200 . Account B: $A = 1000(1.03)^5 \approx 1159.27$, so interest $\approx \$159.27$. Account A earns more interest.
- 20) **Choice D is correct.** (8.EE.1) $\frac{5^6}{5^2} = 5^{6-2} = 5^4 = 625$.
- 21) **Choice C is correct.** (8.EE.4) Divide coefficients: $7.5 \div 2.5 = 3$. Subtract exponents: $10^9 - 5 = 10^4$. Result: 3×10^4 .
- 22) **The correct answer is A, C.** (8.G.6, 8.G.7) A: $6^2 + 8^2 = 36 + 64 = 100 = 10^2$ ✓. C: $8^2 + 15^2 = 64 + 225 = 289 = 17^2$ ✓. B: $49 + 64 = 113 \neq 81$. D: $100 + 225 = 325 \neq 400$. E: $25 + 49 = 74 \neq 81$.
- 23) **Choice A is correct.** (8.EE.8a) Check $(3, 6)$ in both equations: $6 = 2(3) = 6$ ✓ and $6 = 3 + 3 = 6$ ✓. The solution is correct.
- 24) **Choice A is correct.** (8.EE.7) $(x - 4)^2 = x^2 - 8x + 16$, not $x^2 - 16$. The student missed the middle term $-8x$ that comes from $2(x)(-4)$.
- 25) **Choice A is correct.** (8.F.2) The slope of f is 4. For g : $\Delta y / \Delta x = 3/1 = 3$. Since $4 > 3$, f has the greater rate of change.
- 26) **Choice A is correct.** (8.F.4) y -intercept is 4. Slope is $\frac{10-4}{3-0} = \frac{6}{3} = 2$. Equation: $y = 2x + 4$.
- 27) **Choice B is correct.** (8.G.8) Since both points have $y = 5$, the horizontal distance is $|12 - 0| = 12$.
- 28) **Choice B is correct.** (8.NS.2) A residual plot with no clear pattern means residuals are scattered randomly and close to zero. This indicates the linear model explains the data well and assumptions are met.
- 29) **Choice D is correct.** (8.EE.8) Slope = $\frac{20-40}{30-10} = \frac{-20}{20} = -1$ m/h. Using $(30, 20)$ with slope -1 : $0 = 20 - 1(t - 30)$, so $t = 50$.



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 9 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

CONFIDENCE TODAY, SUCCESS TOMORROW!

GRADE

8

Help your child excel in math with **9 full-length Grade 8 practice tests** designed to reflect real test formats and cover all key math standards.

With a wide variety of questions and real-world applications, this book builds the skills and confidence students need to achieve their best!



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



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

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Testinar

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