

6 New York NYSTP

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



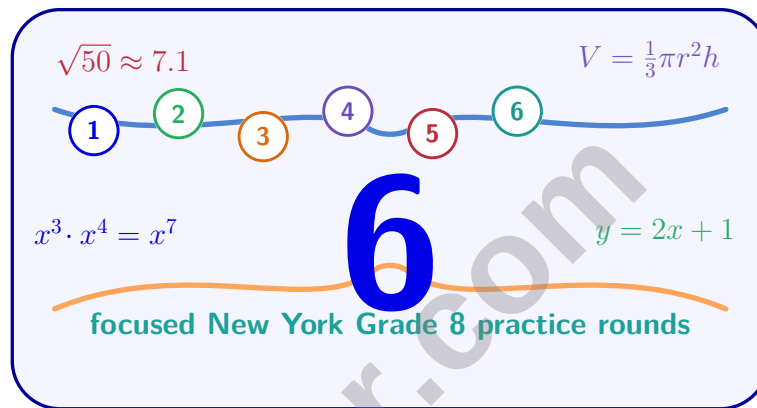
2 ONLINE
TESTS



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

6 New York NYSTP Grade 8 Math Practice Tests

Grade 8 Math Review for Algebra Readiness, Geometry, and Data Analysis



Six 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!

Six focused rounds for sharper NYSTP math thinking

This book gives you six 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 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.

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?

Six NYSTP 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.



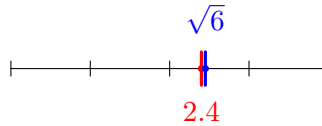
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Perfect Squares: $2^2 = 4$, $3^2 = 9$

Compare to $\sqrt{6}$ and 2.4



1)

Is $\sqrt{6}$ greater than 2.4 or less than 2.4?

☐ A. Cannot compare

☐ C. Equal to

☐ B. Less than

☐ D. Greater than

2) Which shows an error in classification?

☐ A. $\sqrt{36} = 6$ is classified as rational

☐ C. $0.\overline{27}$ is classified as irrational

☐ B. π is classified as irrational

☐ D. $\sqrt{50}$ is classified as irrational

3) A scatter plot shows the number of hours a student studies versus their test score. The trend line has equation $y = 5x + 60$. If a student studies for 6 hours, what is the predicted test score?

4) A jar contains 4 white tokens, 6 black tokens, and 5 red tokens. Two tokens are drawn without replacement. What is the probability that both tokens are black? Express your answer as a fraction in simplest form.



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5) Which order is correct from smallest to largest?

☐ A. $\sqrt{2}, \sqrt{5}, \sqrt{3}$

☐ B. $\sqrt{5}, \sqrt{3}, \sqrt{2}$

☐ C. $\sqrt{3}, \sqrt{2}, \sqrt{5}$

☐ D. $\sqrt{2}, \sqrt{3}, \sqrt{5}$

6) A person receives a year-end bonus of \$1,500. She is deciding between: (1) spending it, (2) investing at 6% for 5 years, or (3) using it to pay down debt at 12% APR. Ranking by financial benefit, which is best?

☐ A. Spend it☐ B. Invest at 6%☐ C. Pay down debt at 12%☐ D. Split equally among all three

7) Simplify $\frac{(b^3)^2 \cdot b^4}{b^5}$.

☐ A. b^{-5}

☐ B. b^9

☐ C. b^{15}

☐ D. b^5

8) A student claims that $\sqrt{49} + \sqrt{64} = \sqrt{113}$. Is this correct?

☐ A. Yes, because $49 + 64 = 113$ ☐ B. Yes, but only if we simplify the radicals first☐ C. No, because square roots cannot be added☐ D. No, because $\sqrt{49} + \sqrt{64} = 15$

9) A student incorrectly wrote 56,200 in scientific notation as 56.2×10^3 . What is the correct form?

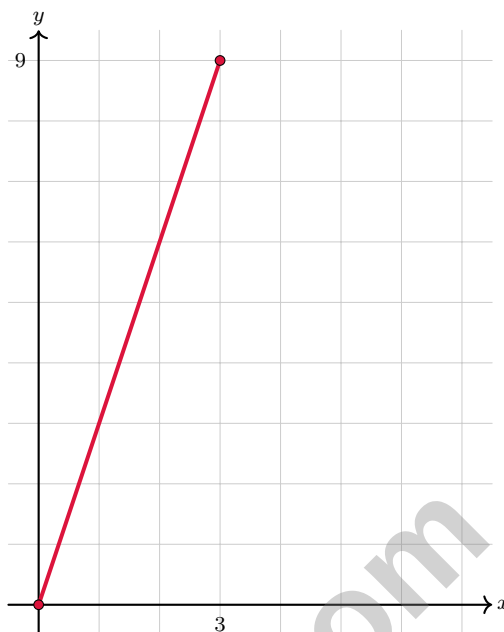
☐ A. 562×10^2

☐ B. 5.62×10^3

☐ C. 56.2×10^3

☐ D. 5.62×10^4





10)

What is the slope?

☐ A. 2☐ B. $\frac{9}{2}$ ☐ C. $\frac{1}{3}$ ☐ D. 3

11) An area model for $(x + 6)(x - 2)$ shows four rectangular regions. What is their total area?

	x	6
x	x^2	$6x$
-2	$-2x$	-12

☐ A. $x^2 + 4x - 12$ ☐ B. $x^2 - 12$ ☐ C. $x^2 + 8x - 12$ ☐ D. $x^2 + 6x - 2$ 

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1) The table below shows a relation. Is it a function?

x	y
1	3
2	6
3	9
4	12

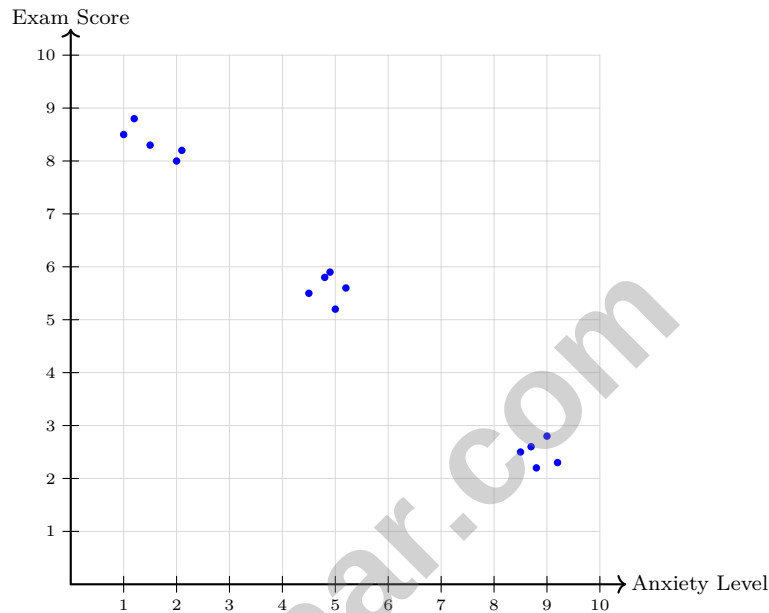
- ☐ A. No, because the outputs are larger than inputs.
- ☐ B. Yes, each input has exactly one output.
- ☐ C. No, because y values increase by 3.
- ☐ D. Yes, because all values are positive.
- 2) A parallelogram has base 6 in and height 4 in. It is dilated by a scale factor of 2.5. What is the new height?

- ☐ A. 4 in
- ☐ B. 10 in
- ☐ C. 15 in
- ☐ D. 6.5 in



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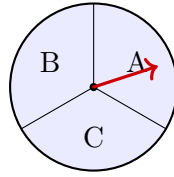
- 3) A researcher plots the relationship between student test anxiety and exam performance for 50 students. The scatter plot shows points forming a clear cluster: anxious students (high anxiety scores) cluster at lower exam scores, while calm students (low anxiety scores) cluster at higher exam scores. What is the shape of this cluster pattern?



- ☐ A. Random scatter
- ☐ B. Vertical line
- ☐ C. Horizontal band with no direction
- ☐ D. Diagonal cluster showing negative correlation

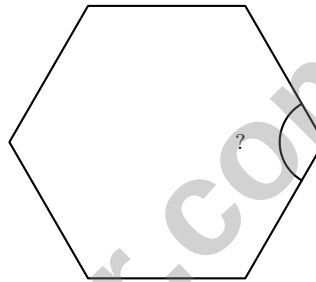


- 1) A fair spinner with sections A, B, C (each $\frac{1}{3}$ probability) is spun three times. What is the probability of getting C on all three spins?



- ☐ A. $\frac{1}{9}$
☐ B. $\frac{1}{27}$

- ☐ C. $\frac{3}{27}$
☐ D. $\frac{1}{3}$



2)

A regular hexagon is shown with one interior angle marked. What is the measure of the marked interior angle?

- ☐ A. 100°
☐ B. 110°

- ☐ C. 120°
☐ D. 130°

- 3) Which statement about the graph of a function is true?

- ☐ A. A function can cross the y -axis twice
☐ B. A function must cross the x -axis exactly once
☐ C. A function can have multiple x -intercepts but only one y -intercept
☐ D. A function must cross both axes exactly once



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& answers

- 4) The distance from $(0,0)$ to a point on the coordinate plane is $\sqrt{50}$ units. Which coordinates could this point have?

☐ A. $(5, 5)$

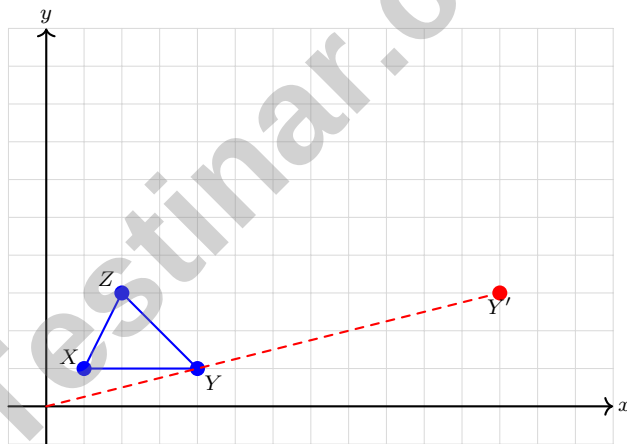
☐ C. $(5, 2)$

☐ B. $(7, 2)$

☐ D. $(3, 4)$

- 5) Find $(1.2 \times 10^6) + (8 \times 10^5)$ in scientific notation.

- 6) Triangle XYZ has vertices at $X(1, 1)$, $Y(4, 1)$, and $Z(2, 3)$. If dilated by scale factor 3 from the origin, where is the vertex that corresponds to Y ?



☐ A. $(12, 3)$

☐ C. $(7, 4)$

☐ B. $(4, 1)$

☐ D. $(3, 3)$



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

- Choice D is correct.** **(8.NS.2)** $(2.4)^2 = 5.76 < 6$, so $2.4 < \sqrt{6}$. Therefore $\sqrt{6}$ is greater than 2.4.
- Choice C is correct.** **(8.NS.1)** The repeating decimal $0.\overline{27} = 0.272727\ldots = \frac{27}{99} = \frac{3}{11}$ is rational, not irrational. All repeating decimals are rational. The other classifications are correct.
- The correct answer is 90.** **(8.NS.2)** Substitute $x = 6$: $y = 5(6) + 60 = 30 + 60 = 90$.
- The correct answer is $\frac{1}{7}$.** **(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: $\frac{6}{15} \times \frac{5}{14} = \frac{1}{7}$.
- Choice D is correct.** **(8.G.9)** $\sqrt{2} \approx 1.41$, $\sqrt{3} \approx 1.73$, $\sqrt{5} \approx 2.24$, so the order is increasing.
- Choice C is correct.** **(8.G.7)** Avoiding 12% interest is better than earning 6% return. For the same \$1,500 over 5 years, paying down 12% debt avoids about \$900 of simple interest, while a 6% investment earns about \$450 of simple interest.
- Choice D is correct.** **(8.EE.1)** $(b^3)^2 = b^6$; then $b^6 \cdot b^4 = b^{10}$; then $\frac{b^{10}}{b^5} = b^5$.
- Choice D is correct.** **(8.EE.2)** $\sqrt{49} = 7$ and $\sqrt{64} = 8$, so $7 + 8 = 15 \neq \sqrt{113} \approx 10.63$. You cannot add the radicands before taking the root.
- Choice D is correct.** **(8.EE.3)** The student's coefficient 56.2 is outside $[1, 10]$. Correct form requires moving the decimal one more place: 5.62×10^4 .
- Choice D is correct.** **(8.EE.5)** Slope = $\frac{9-0}{3-0} = \frac{9}{3} = 3$. The rise is 9 and the run is 3, so the slope is 3.
- Choice A is correct.** **(8.EE.7)** Sum of regions: $x^2 + 6x - 2x - 12 = x^2 + 4x - 12$.
- Choice A is correct.** **(8.F.2)** $T_{\text{oven}}(10) = 15(10) + 70 = 220$ degrees. Slope of freezer: $(-15 - (-5))/2 = -5$, so $T_{\text{freeze}}(10) = -5 - 5(10) = -55$ degrees. Oven at 220 is much warmer.
- Choice A is correct.** **(8.F.4)** When $x = 0$: $y = 4(0) - 2 = -2$. When $x = 1$: $y = 4(1) - 2 = 2$. When $x = 2$: $y = 4(2) - 2 = 6$. This matches option A.
- Choice A is correct.** **(8.EE.8)** Using slope = $\frac{\Delta y}{\Delta x}$: $-\frac{1}{2} = \frac{y-6}{8-4}$. So $-\frac{1}{2} = \frac{y-6}{4}$, giving $y - 6 = -2$, thus $y = 4$.
- Choice D is correct.** **(8.EE.8c)** Let d = dimes and q = quarters. Then $d + q = 32$ and $10d + 25q = 530$ in cents. Substitute $d = 32 - q$: $10(32 - q) + 25q = 530$, so $320 + 15q = 530$. Thus $q = 14$ and $d = 18$.
- Choice C is correct.** **(8.F.1)** At $x = 2$, the function passes through point C which is at $(2, 3)$, so $f(2) = 3$.
- Choice D is correct.** **(8.G.9)** The rectangular prism has surface area $2(16 + 12 + 12) = 80 \text{ cm}^2$. The cube has surface area $6(2^2) = 24 \text{ cm}^2$. The shared 2×2 face is counted twice, so subtract $2(4)$. The composite surface area is $80 + 24 - 8 = 96 \text{ cm}^2$.
- The correct answer is A, C.** **(8.G.1)** 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.
- Choice C is correct.** **(8.G.1)** Using $(x, y) \rightarrow (-y, x)$: $(2, 0) \rightarrow (0, 2)$, $(2, 1) \rightarrow (-1, 2)$, matching the End figure.
- Choice D is correct.** **(8.EE.6)** Using $y = mx + b$: $3 = -1(1) + b$, so $3 = -1 + b$, thus $b = 4$.
- Choice D is correct.** **(8.EE.7b)** After distributing $2(3x + 1) = 6x + 2$, you have $6x + 2 = 20$. The next step is to isolate the variable term by subtracting 2: $6x = 18$, then divide by 6 to get $x = 3$.
- The correct answer is 210.** **(8.EE.7b)** First digit: 7 choices. Second digit: 6 remaining. Third digit: 5 remaining. Total: $7 \times 6 \times 5 = 210$.
- Choice A is correct.** **(8.EE.8a)** Subtract 6: $-2x \geq -8$. Divide by -2 (FLIP): $x \leq 4$.
- Choice A is correct.** **(8.EE.8c)** A DASHED line means the boundary is NOT included, changing the meaning to $x < -1$. The solid line is essential for including the boundary in $\leq$ or $\geq$ inequalities.
- Choice B is correct.** **(8.F.3)** The differences between consecutive y -values are $1 - 0 = 1$, $4 - 1 = 3$, $9 - 4 = 5$, which are not constant, indicating a nonlinear (quadratic) 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 deep and steady book gave you six full 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.

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! |



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