

NEW YORK NYSTP

GRADE 8 MATH

PRACTICE TESTS

5

PRINTED
TESTS



2

 ONLINE
TESTS

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



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



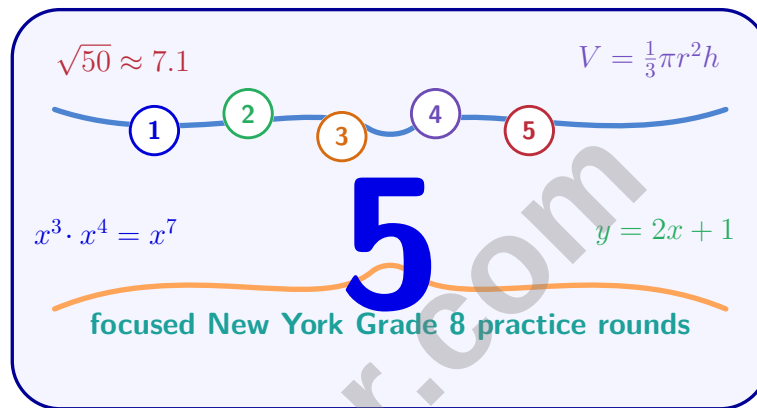
$$a^2 + b^2 = c^2$$



$$y = mx + b$$

5 New York NYSTP Grade 8 Math Practice Tests

Five NYSTP Rounds for Graphing, Geometry, and Review



Five 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!

Five focused rounds for sharper NYSTP math thinking

This book gives you five 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 five-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?

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

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–5	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) Convert the repeating decimal $0.6\overline{54}$ to a fraction.

☐ A. $\frac{6}{54}$
☐ B. $\frac{654}{1000}$

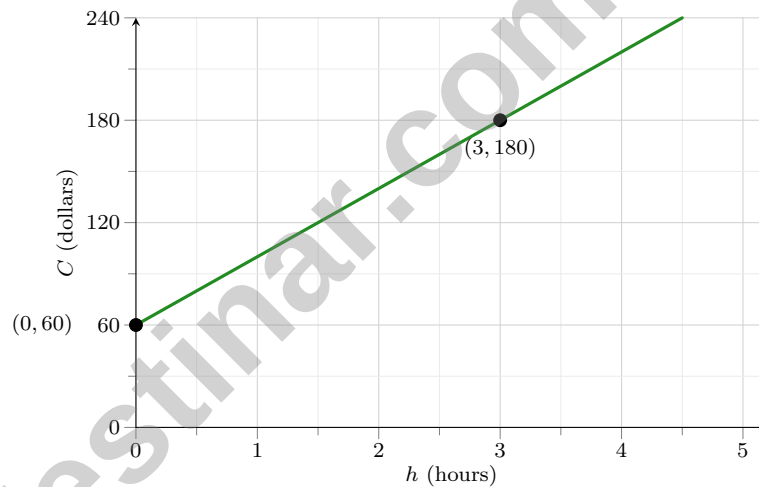
☐ C. $\frac{654}{999}$
☐ D. $\frac{648}{990} = \frac{36}{55}$

2) Factor $x^2 + 3x - 10$.

☐ A. $(x + 5)(x - 2)$
☐ B. $(x - 5)(x + 2)$

☐ C. $(x + 10)(x - 1)$
☐ D. $(x - 10)(x - 1)$

3) A plumber charges \$60 for a service call plus \$40 per hour of labor. The graph below represents the total cost C for h hours. Which equation matches the graph?



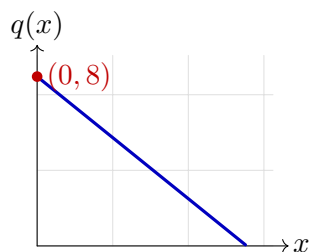
☐ A. $C = 40h + 60$
☐ B. $C = 60h + 40$

☐ C. $C = 100h$
☐ D. $C = 40h - 60$



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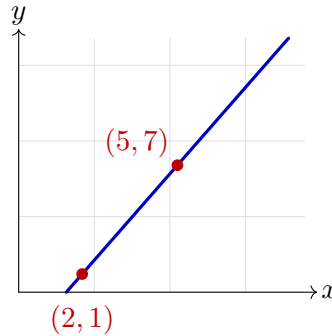
- 4) Two linear functions: $p(x) = -x + 10$ (verbal: “starts at 10, decreases by 1 each step”). Function q shown in graph through $(0, 8)$ with slope -1.5 . Which has more negative slope?



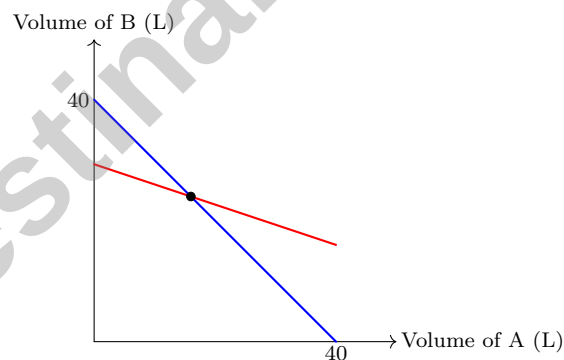
- ☐ A. Function p ☐ C. Equal negative slopes
☐ B. Function q ☐ D. Not comparable
- 5) Solve the system $\begin{cases} y = 2x \\ x + y = 9 \end{cases}$ by substitution.



- 6) A graph shows a line passing through $(2, 1)$ and $(5, 7)$. If the line continues, which point would it pass through?



- ☐ A. $(8, 13)$ ☐ C. $(8, 11)$
☐ B. $(8, 12)$ ☐ D. $(7, 10)$
- 7) 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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1) Which number is equivalent to 2.9×10^1 ?

☐ A. 2.9

☐ C. 290

☐ B. 2,900

☐ D. 29

2) Solve for x : $x^3 = 343$

3) Which trinomial is equivalent to $(x - 8)(x + 3)$?

☐ A. $x^2 - 24$

☐ C. $x^2 + 11x - 24$

☐ B. $x^2 - 5x - 24$

☐ D. $x^2 - 24x + 3$

4) A taxi charges \$3 to get in the car plus \$0.50 per mile driven. If d represents the distance in miles and C represents the cost in dollars, which equation models this situation?

☐ A. $C = 0.50d + 3$

☐ C. $C = 3.50d$

☐ B. $C = 3d + 0.50$

☐ D. $C = 0.50d - 3$

5) $S(m) = 500 + 25m$ and table $(0, \$600)$, $(3, \$675)$, $(6, \$750)$. Which starts with more money?

m	0	3	6
Table function	\$600	\$675	\$750

☐ A. S

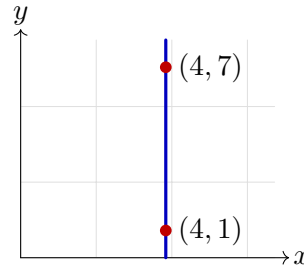
☐ C. Both same.

☐ B. Table function

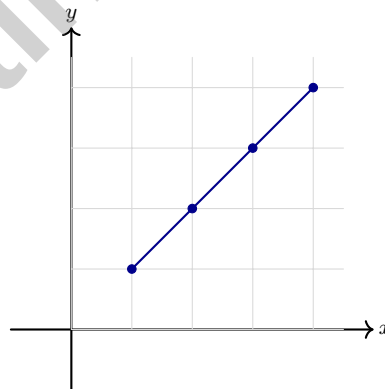
☐ D. Cannot be determined.



- 6) A graph shows a line with an undefined slope passing through $(4, 1)$ and $(4, 7)$. Which description fits?



- ☐ A. The line is horizontal
- ☐ B. The line is slanted at 45°
- ☐ C. The line has zero slope
- ☐ D. The line is vertical
- 7) A grandmother is 42 years old. Her grandson is 10 years old. In how many years will the grandmother be exactly 3 times as old as her grandson?
- ☐ A. 6 years
- ☐ B. 8 years
- ☐ C. 10 years
- ☐ D. 12 years
- 8) The graph shows function h . Which of the following is true?



- ☐ A. $h(2) = 3$
- ☐ B. $h(1) = 1$
- ☐ C. $h(3) = 2$
- ☐ D. $h(4) = 3$



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1) A right triangle has legs of $\sqrt{24}$ and 1. What is the hypotenuse in simplified form?

☐ A. $\sqrt{24}$

☐ C. $\sqrt{23}$

☐ B. 5

☐ D. 25

2) A household budget for monthly net income of \$4,000 is divided as follows: Housing 35%, Food 20%, Transportation 15%, Utilities 10%, Savings 10%, Other 10%. How much is allocated to housing?



Monthly net income: \$4,000

☐ A. \$400

☐ C. \$1,400

☐ B. \$800

☐ D. \$2,000

3) Simplify $\frac{(k^2)^3 \cdot k^{-1}}{k^5}$.

☐ A. k^{-5}

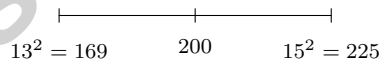
☐ C. k^{10}

☐ B. k^2

☐ D. $k^0 = 1$

4) Which is a reasonable approximation for $\sqrt{200}$?

$$\sqrt{200} \approx ?$$



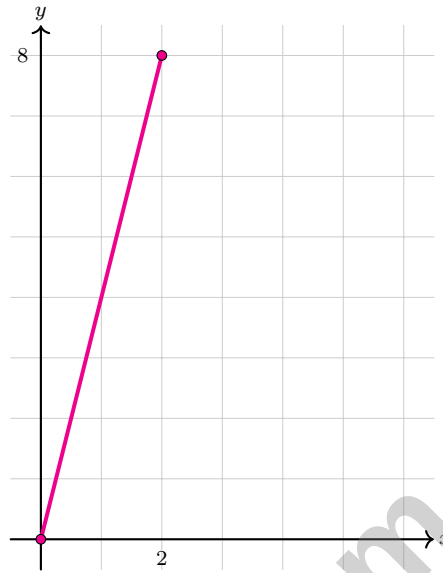
☐ A. 12

☐ C. 16

☐ B. 18

☐ D. 14





5)

Which equation represents this line?

☐ A. $y = 2x$

☐ C. $y = 6x$

☐ B. $y = 8x$

☐ D. $y = 4x$

6) The area model represents $(x + 5)^2$:

	x	5
x	x^2	$5x$
5	$5x$	25

What is the sum of all areas?

☐ A. $x^2 + 10x + 25$

☐ C. $x^2 + 5x + 5$

☐ B. $x^2 + 25$

☐ D. $2x^2 + 10x$



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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 D is correct.** (8.G.1c) Let $x = 0.6\overline{54} = 0.65454\dots$. Then $10x = 6.\overline{54}$ and $1000x = 654.\overline{54}$. Subtracting: $990x = 648$, so $x = \frac{648}{990} = \frac{36}{55}$.
- 2) **Choice A is correct.** (8.EE.7) Find two numbers that multiply to -10 and add to 3 : 5 and -2 . Check: $5 \cdot (-2) = -10$ and $5 - 2 = 3$.
- 3) **Choice A is correct.** (8.F.4) Service call fee \$60 (intercept). Hourly rate \$40 (slope). Slope check: $\frac{180-60}{3-0} = \frac{120}{3} = 40$. Equation: $C = 40h + 60$.
- 4) **Choice B is correct.** (8.F.2) Slope of p : -1 . Slope of q : -1.5 . Since $-1.5 < -1$, function q is more negative.
- 5) **The correct answer is (3, 6).** (8.EE.8a) Substitute $y = 2x$ into $x + y = 9$: $x + 2x = 9$, so $3x = 9$, giving $x = 3$. Then $y = 2(3) = 6$.
- 6) **Choice A is correct.** (8.EE.8) Slope $= \frac{7-1}{5-2} = \frac{6}{3} = 2$. From $(5, 7)$ with slope 2: at $x = 8$, $y = 7 + 2(3) = 13$. Point is $(8, 13)$.
- 7) **Choice C is correct.** (8.EE.8c) 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 $b = 24$.
- 8) **The correct answer is 1.** (8.F.1) A relation is a function when each input has exactly one output.
- 9) **The correct answer is 2.** (8.F.3) The change in y is 4 when x increases by 2, so the slope is $4 \div 2 = 2$.
- 10) **Choice C is correct.** (8.F.1) Since $3 \geq 2$, use the second rule: $f(3) = 5$.
- 11) **Choice B is correct.** (8.SP.3) The line passes through $(0, 1)$ and $(6, 6)$. Slope $= \frac{6-1}{6-0} = \frac{5}{6}$.
- 12) **Choice A is correct.** (8.F.5) Steep rise early (fast growth), then level off (approaching maximum) matches plant growth. B is linear, C is linear decrease, D accelerates (not levels off).
- 13) **Choice B is correct.** (8.G.1) Add 3 to each x -coordinate and subtract 2 from each y -coordinate: $(1+3, 1-2) = (4, -1)$, $(4+3, 1-2) = (7, -1)$, $(2+3, 3-2) = (5, 1)$.
- 14) **Choice A is correct.** (8.G.3) The points $(0, 2) \rightarrow (0, -2)$ and $(2, 4) \rightarrow (2, -4)$. This is the reflection rule $(x, y) \rightarrow (x, -y)$.
- 15) **Choice C is correct.** (8.G.5) Since a and b are corresponding angles with parallel lines, $b = a = 52^\circ$. If c is supplementary to b , then $c = 180 - 52 = 128^\circ$.
- 16) **Choice A is correct.** (8.G.6, 8.G.7) From $1^2 + (\sqrt{3})^2 = c^2$, we get $1 + 3 = 4$, so $c = \sqrt{4} = 2$ (the 30-60-90 triangle leg ratios).
- 17) **Choice B is correct.** (8.G.8) Distance $= \sqrt{12^2 + 5^2} = \sqrt{144 + 25} = \sqrt{169} = 13$ nm. (This is a 5-12-13 Pythagorean triple.)
- 18) **Choice C is correct.** (8.G.7) Co-interior angles sum to 180° : $(m - 15) + (m + 35) = 180 \Rightarrow 2m + 20 = 180 \Rightarrow 2m = 160 \Rightarrow m = 80^\circ$.
- 19) **The correct answer is 260.** (8.G.7) Rectangle $= 20 \times 12 = 240$ m². Triangle $= \frac{1}{2} \times 8 \times 5 = 20$ m². Total $= 240 + 20 = 260$ m².
- 20) **Choice C is correct.** (8.G.9) $V = \frac{1}{3} \times B \times h \Rightarrow 245 = \frac{1}{3} \times 49 \times h \Rightarrow h = \frac{245 \times 3}{49} = \frac{735}{49} = 15$ cm.
- 21) **The correct answer is A, D.** (8.EE.5) Line 1: $k = \frac{6}{4} = 1.5$, so $y = 1.5x$ (\$1.50/lb). Line 2: $k = \frac{12}{6} = 2$, so $y = 2x$ (\$2.00/lb). A is correct (Line 1 equation and price). D is correct (Line 2 has greater slope: $2 > 1.5$). C is wrong (Line 2 is steeper, not Line 1). B is correct but not a correct pair; E is subjective (worse deal, not better). Answer: A and D.
- 22) **Choice D is correct.** (8.G.5) For a 12-sided polygon: $(12 - 2) \times 180 = 10 \times 180 = 1800^\circ$.
- 23) **Choice D is correct.** (8.SP.1) Taller people generally wear larger shoe sizes, forming a clear upward trend. The relationship is positive (both increase together) and reasonably strong.
- 24) **Choice A is correct.** (8.SP.3) A is true: the column-conditional frequency of Math among Debate is $\frac{36}{144} = 0.25$. B uses the grand total instead of the Math row total. C uses the wrong denominator, and D uses the wrong cell count.
- 25) **Choice B is correct.** (8.G.8) Class Q has larger MAD, indicating varied performance. Students need differentiated instruction because understanding ranges widely. Class P's small MAD suggests consistent mastery.



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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 5 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 **5 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 |
| ✓ Measurement & Data | ✓ And More! |

5
PRINTED
TESTS



2 ONLINE
TESTS



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