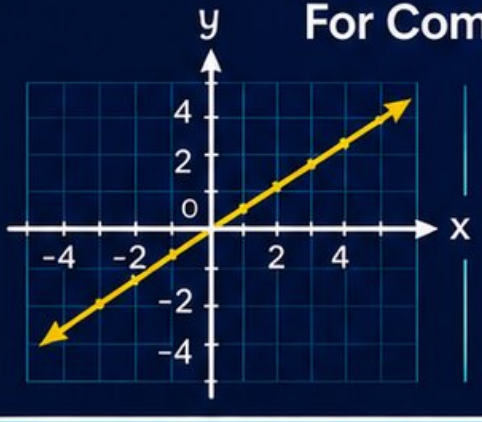
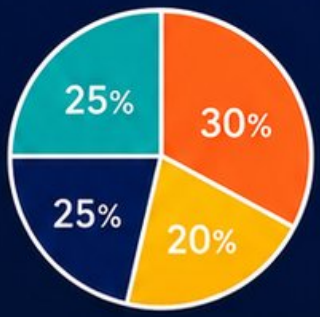
4 New York NYSTP GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



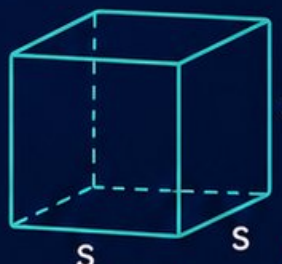


$y = mx + b$

$2x - 3y = 6$

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

$A = bh$



$V = s^3$

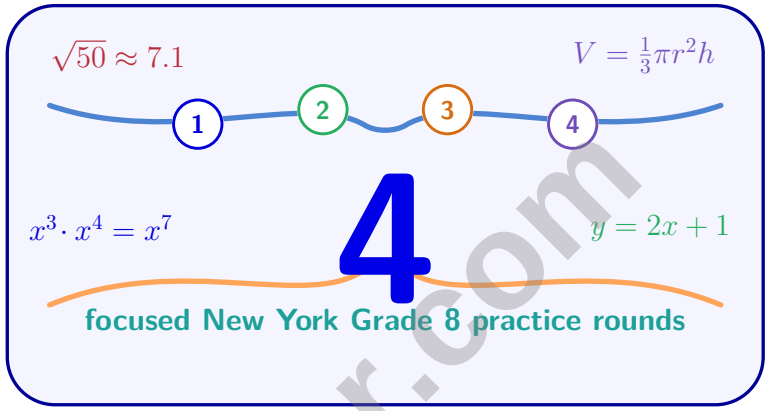
4 PRINTED TESTS

2 ONLINE TESTS

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

4 New York NYSTP Grade 8 Math Practice Tests

Four Standards-Aligned NYSTP Tests with Review and Explanations



Four 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!

Four focused rounds for sharper NYSTP math thinking

This book gives you four 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.

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.

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?

Four NYSTP 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.

Table of Contents

1) Multiply: $(3x + 4)(2x - 1)$

☐ A. $5x^2 + 5x - 4$
☐ B. $6x^2 + 11x - 4$
☐ C. $6x^2 + 5x - 4$
☐ D. $6x^2 - 3x - 4$

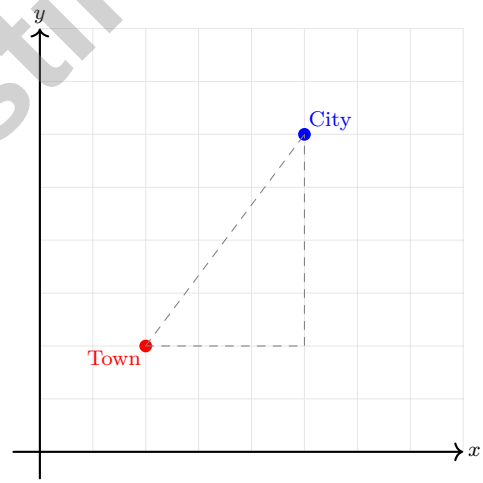
2) A coffee shop has fixed costs of \$400 per day and variable costs of \$2 per cup sold. If cups sell for \$5 each, about how many cups must be sold to break even?

☐ A. 100 cups
☐ B. 120 cups
☐ C. 134 cups
☐ D. 160 cups

3) Graphical comparison: Two lines cross the y-axis at $(0, 1)$ and $(0, -4)$ respectively. Both have positive slope. Which statement is true?

☐ A. First line is always above second
☐ B. Lines intersect in Quadrant I
☐ C. Second line never crosses y-axis
☐ D. Both can be true or false depending on slopes

4) On a map, a town is located at $(2, 2)$ and a city is located at $(5, 6)$. If each grid unit represents 2 kilometers, what is the straight-line distance between the town and city?



☐ A. 5 km
☐ B. 10 km
☐ C. 20 km
☐ D. 2.5 km

5) Two students sketch different trend lines through the same scatter plot. Student A's line has a gentler slope, while Student B's line has a steeper slope. What could explain this difference?

☐ A. One student made a calculation error
☐ B. The students used different data sets
☐ C. Only one line can ever be correct
☐ D. Sketching a trend line by eye allows for reasonable variation

6) A line segment from $(0, 0)$ to $(4, 4)$ is dilated by scale factor 0.5 from the origin. Where does it map to?

☐ A. From $(0, 0)$ to $(2, 2)$
☐ B. From $(0, 0)$ to $(8, 8)$
☐ C. From $(2, 2)$ to $(4, 4)$
☐ D. Remains the same

7) Which number lies between 3 and 4?

☐ A. $\sqrt{8}$
☐ B. $\sqrt{25}$
☐ C. $\sqrt{20}$
☐ D. $\sqrt{13}$

8) How many ways can you arrange 3 different books chosen from a shelf of 7 books?

☐ A. $7^3 = 343$
☐ B. $7 + 6 + 5 = 18$
☐ C. $7 \times 6 \times 5 = 210$
☐ D. $\binom{7}{3} = 35$

9) Which value is irrational?

☐ A. $\sqrt{16}$
☐ B. $\sqrt{9}$
☐ C. $\sqrt{7}$
☐ D. $\sqrt{25}$

10) Which is the best estimate of $\pi - \sqrt{2}$?

☐ A. 0.8
☐ B. 1.2
☐ C. 1.7
☐ D. 2.4

11) A college savings plan earns 7% compound interest annually. If \$5,000 is invested for 10 years, approximately how much will be accumulated?

☐ A. \$8,500
☐ B. \$13,800
☐ C. \$11,500
☐ D. \$9,835

12) Points $(-1, 5)$ and $(2, 14)$ lie on a line. Find the slope.

13) Convert $0.5\overline{3}$ to a fraction in simplest form.

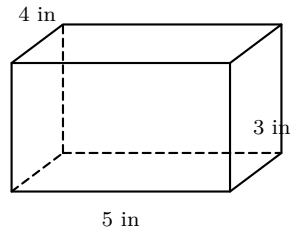
☐ A. $\frac{53}{100}$
☐ B. $\frac{5}{30}$
☐ C. $\frac{16}{33}$
☐ D. $\frac{48}{90} = \frac{8}{15}$

14) The population of a country is 3.2×10^7. What is this population in standard form?

☐ A. 3,200,000
☐ B. 3,200,000,000
☐ C. 320,000,000
☐ D. 32,000,000

15) A balloon starts at 300 meters and descends at 2 meters per second. What is the slope of the height model?

1)



A rectangular prism has dimensions 5 inches × 4 inches × 3 inches. If you wrap a ribbon around only the four vertical sides (not the top or bottom), how much area is covered?

☐ A. 12 in^2
☐ B. 24 in^2
☐ C. 54 in^2
☐ D. 94 in^2

2) A table shows the relationship between hours worked and pay earned.

Hours	2	4	6	8
Pay ($)	18	36	54	72

What is the rate of change (slope) of pay with respect to hours worked?

☐ A. $8 per hour
☐ B. $12 per hour
☐ C. $10 per hour
☐ D. $9 per hour

3) A recipe calls for 2 parts flour to 1 part sugar. If a baker uses 9 cups total of these two ingredients, how many cups of flour are needed?

☐ A. 3 cups
☐ B. 4.5 cups
☐ C. 6 cups
☐ D. 7 cups

4) The table shows a function. Find $f(0)$.

x	-1	0	1	2
$f(x)$	2	3	4	5

☐ A. 3
☐ B. 2
☐ C. 4
☐ D. 0

5) A town's population P (in thousands) at year t (years since 2010) follows this data:

Year since 2010 (t)	0	3	6	9
Population (P, thousands)	45	51	57	63

What is the rate of change of the population per year?

☐ A. 2 thousand per year
☐ B. 3 thousand per year
☐ C. 6 thousand per year
☐ D. 9 thousand per year

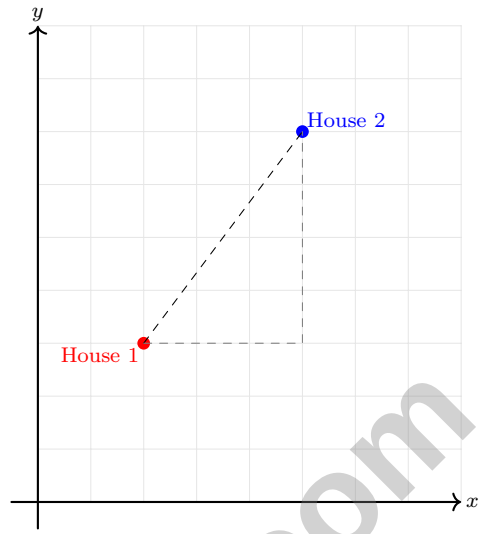
6) A data set with 10 values has MAD = 0, and all values are 100. If one value changes from 100 to 120, what is the new MAD?

☐ A. 0
☐ B. 2
☐ C. 3.6
☐ D. Cannot be determined

7) A student says the probability of rolling a 1 or 2 on a die is $\frac{1}{3}$, so the probability of rolling 3, 4, 5, or 6 is also $\frac{1}{3}$. What is the error?

☐ A. The student forgot to multiply by 2.
☐ B. The student did not use the complement correctly.
☐ C. There is no error; both probabilities are $\frac{1}{3}$.
☐ D. The student should add $\frac{1}{6}$ instead.

1) On a coordinate grid, two houses are located at $(2, 3)$ and $(5, 7)$. A straight path connects them. What is the length of the path?



☐ A. 5 units
☐ B. 7 units
☐ C. $\sqrt{29}$ units
☐ D. 12 units

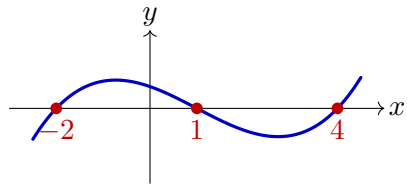
2) What are the two factors of the constant term -12 that will correctly factor x^2+x-12?

☐ A. 3 and -4
☐ B. -3 and 4
☐ C. 6 and -2
☐ D. 12 and -1

3) Comparison of graphs: Line A passes through origin with slope 2. Line B crosses y-axis at -3 with slope 1. At $x = 4$, which is higher?

☐ A. Line A
☐ B. Line B
☐ C. Both equal
☐ D. Cannot determine

4) A graph of a function crosses the x-axis at $x = -2$, $x = 1$, and $x = 4$. How many sign intervals do these intercepts create?



5) A stock price drops from \$45 to \$30 over 10 days. What is the slope (rate of change per day)?

☐ A. −\$1.50 per day
☐ B. −\$3 per day
☐ C. \$1.50 per day
☐ D. \$0.50 per day

6) A water tank holds 200 gallons at 15% salinity. To reduce salinity to 10%, how much fresh water (0% salinity) should be added?

☐ A. 50 gal
☐ B. 150 gal
☐ C. 100 gal
☐ D. 200 gal

7) 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
☐ B. 15
☐ C. 12
☐ D. 17

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.

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

1) **Choice C is correct.** 8.EE.7 FOIL: $(3x+4)(2x-1) = 6x^2 - 3x + 8x - 4 = 6x^2 + 5x - 4$.

2) **Choice C is correct.** 8.EE.8c Let n = cups sold. Cost is $400 + 2n$ and revenue is $5n$. Break-even occurs when $5n = 400 + 2n$, so $3n = 400$ and $n = 133\frac{1}{3}$. The shop must sell about 134 cups to cover the cost.

3) **Choice D is correct.** 8.F.2 First line starts at $(0, 1)$ (higher). If slopes are close, first stays above. If second has much steeper slope, it can overtake first in Q1. Answer depends on specific slopes.

4) **Choice B is correct.** 8.G.8 Distance in units: $\sqrt{(5-2)^2 + (6-2)^2} = \sqrt{9+16} = 5$ units. In kilometers: $5 \times 2 = 10$ km.

5) **Choice D is correct.** 8.NS.2 When sketching trend lines by hand, slight differences in slope are natural and acceptable, as long as both lines reasonably balance data on both sides and follow the overall trend.

6) **Choice A is correct.** 8.G.1 Both endpoints scale by 0.5: $(0, 0) \to (0, 0)$ and $(4, 4) \to (2, 2)$. The segment from origin to $(2, 2)$ is half the original length and direction.

7) **Choice D is correct.** 8.NS.1 Since $3^2 = 9$ and $4^2 = 16$, any square root between $\sqrt{9}$ and $\sqrt{16}$ lies between 3 and 4. Because 13 is between 9 and 16, $\sqrt{13}$ is between 3 and 4. Also, $\sqrt{8} \approx 2.83$, $\sqrt{13} \approx 3.61$, $\sqrt{20} \approx 4.47$, and $\sqrt{25} = 5$, so only $\sqrt{13}$ is in the interval from 3 to 4.

8) **Choice C is correct.** 8.EE.7b Select the 1st book (7 choices), 2nd (6 remaining), 3rd (5 remaining). Total: $7 \times 6 \times 5 = 210$. (This is $P(7, 3) = \frac{7!}{4!}$)

9) **Choice C is correct.** 8.NS.2 $\sqrt{16} = 4$, $\sqrt{9} = 3$, and $\sqrt{25} = 5$ are all rational. Only $\sqrt{7}$ cannot be expressed as a ratio of integers.

10) **Choice C is correct.** 8.G.9 $\pi \approx 3.14$ and $\sqrt{2} \approx 1.41$, so $3.14 - 1.41 \approx 1.73$.

11) **Choice D is correct.** 8.G.7 $A = 5000(1.07)^{10} \approx 5000 \times 1.967 = \$9{,}835$.

12) **The correct answer is 3 .** 8.EE.8 Slope $= \dfrac{14-5}{2-(-1)} = \dfrac{9}{3} = 3$.

13) **Choice D is correct.** 8.G.1c Let $x = 0.5\overline{3} = 0.5333\ldots$. Then $10x = 5.\overline{3}$ and $100x = 53.\overline{3}$. Subtracting: $90x = 48$, so $x = \frac{48}{90} = \frac{8}{15}$.

14) **Choice D is correct.** 8.EE.3 Move the decimal 7 places right: $3.2 \times 10^7 = 32{,}000{,}000$.

15) **The correct answer is -2 .** 8.F.4 A descent means the rate of change is negative, so the slope is -2.

16) **Choice B is correct.** 8.G.9 Cube SA = 24 m^2, rectangular prism SA = 40 m^2. Subtract the two shared faces: $24 + 40 - 2(4) = 56$ m^2.

17) **Choice D is correct.** 8.G.1 Both translation and rotation are rigid transformations that preserve the shape. The figure remains a hexagon with 6 sides.

18) **The correct answer is A,B.** 8.F.1 Verify each value: $f(1) = 3$ and $f(3) = 7$, so A and B are correct. Also, $f(2) = 5$, $f(0) = 1$, and $f(4) = 9$, so C, D, and E are false.

19) **Choice D is correct.** 8.EE.6 The slope is the rate of change: $\dfrac{\Delta y}{\Delta x} = \dfrac{3}{1} = 3$ (each increase of 1 in x gives 3 more in y).

20) **Choice A is correct.** 8.EE.7b Multiply both sides by 5: $3x - 2 = 10$. Add 2: $3x = 12$. Divide by 3: $x = 4$.

21) **Choice C is correct.** 8.EE.8a When dividing (or multiplying) both sides of an inequality by a negative number, the inequality symbol must flip to preserve the truth of the statement. For example, if $2 > 1$ (true), multiplying by -1 gives $-2 > -1$ (false), so we flip to get $-2 < -1$ (true).

22) **Choice A is correct.** 8.EE.8c The DASHED line and shading ABOVE indicate a strict inequality with y greater: $y > -3x$.

23) **Choice C is correct.** 8.G.9 $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 729 = 3052.08$ ft^3.

24) **Choice D is correct.** 8.EE.1 Quotient rule subtracts exponents: $\dfrac{m^9}{m^3} = m^{9-3} = m^6$. (A) is product, (B) is power of power, (C) is power of product.

Hi, Number Sense Builder!

◇ Grade 8 mathematics connects numbers, algebra, geometry, and data. It helps you model linear change, compare functions, estimate irrational values, measure distance, and explain patterns. ◇

⋆ **Remember this:** You practiced listening to that story. When the answer makes sense in the situation, your math becomes much stronger. This version gave you 4 opportunities to rehearse test-day habits. ⋆

Number Sense Checks

- **Too Big?:** Compare with an estimate.
- **Too Small?:** Use the context to judge.
- **Right Sign?:** Positive and negative values matter.
- **Right Unit?:** A number needs meaning.

Grade 8 test-day tip: Before choosing an answer, ask whether it fits the story of the problem.

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

Jay Daie

Your Number-Sense Friend

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!

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!

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+

2 ONLINE TESTS

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