

New Hampshire

NH SAS

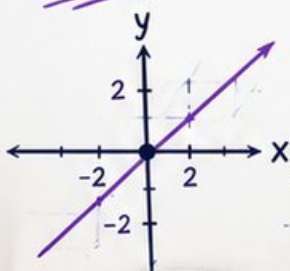
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

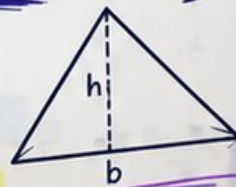
$$y = mx + b$$



**BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!**

Practice
Today
Succeed
Tomorrow!

$$A = \frac{1}{2}bh$$



7 PRINTED
TESTS



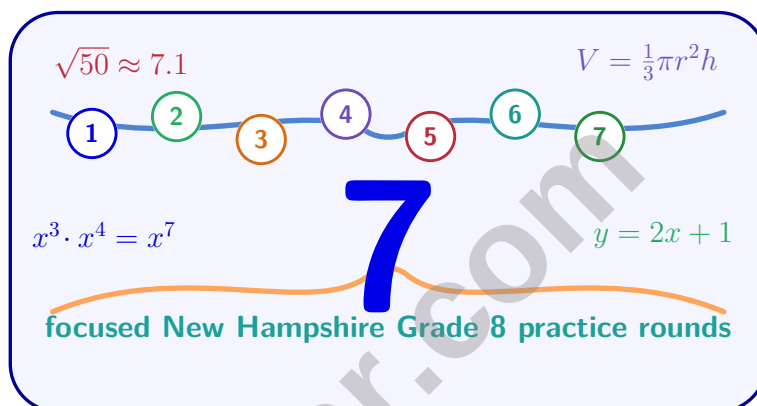
2 ONLINE
TESTS



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

7 New Hampshire NH SAS Grade 8 Math Practice Tests

Seven Grade 8 NH SAS Tests for Focused Standards Review



Seven complete 40-question Grade 8 NH SAS 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 Hampshire Grade 8 Problem Solver!

Seven focused rounds for sharper NH SAS math thinking

This book gives you seven full Grade 8 NH SAS 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 Hampshire 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 seven-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 Hampshire 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?

Seven NH SAS tests, 280 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.
Test 7	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
Answer Pages	Compact keys and explanations that show why each answer works.

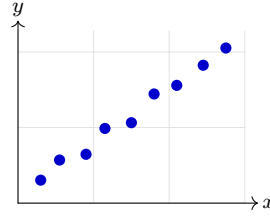
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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1)

In a scatter plot with 50 data points, the line of best fit passes exactly through 12 points. The other 38 points stay fairly close to the line, with 19 points above it and 19 points below it. This distribution suggests:

- ☐ A. Very weak correlation ☐ C. Moderate to strong correlation
☐ B. No correlation ☐ D. Perfect linear relationship

2) A right triangle has legs of $\sqrt{18}$ and $\sqrt{7}$. What is the hypotenuse?

- ☐ A. 5 ☐ C. $\sqrt{11}$
☐ B. $\sqrt{25}$ ☐ D. 25

3) Multiply: $(x + 7)(x - 1)$

- ☐ A. $x^2 + 6x - 7$ ☐ C. $x^2 + 7x - 1$
☐ B. $x^2 - 7$ ☐ D. $x^2 + 8x - 7$

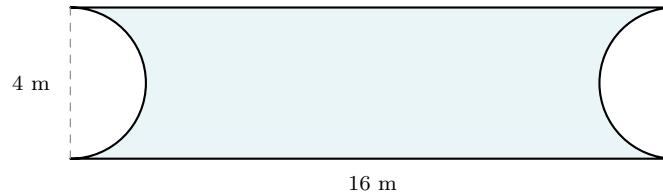
4) The equation $y = 12x + 50$ represents a driver's earnings in dollars, where x is the number of hours worked. What does the slope 12 represent?

- ☐ A. Hourly wage of \$12 ☐ C. Initial debt of \$12
☐ B. Total earnings of \$12 ☐ D. Number of hours worked



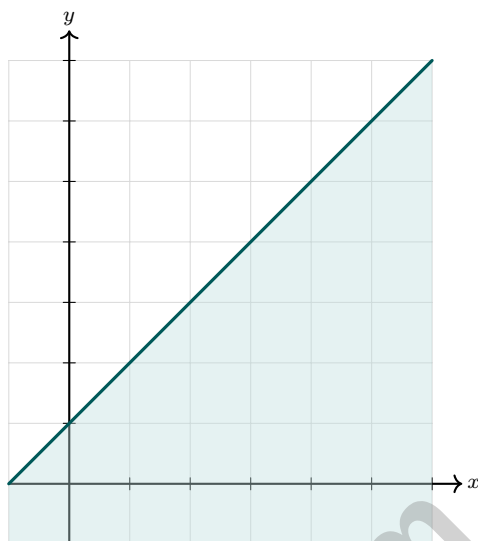
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- 5) A composite figure has a rectangle (16 m by 4 m) with a semicircle (diameter 4 m) removed from each short end. Find the perimeter of the resulting outline.



- ☐ A. 32 m ☐ C. 44.56 m
☐ B. 40 m ☐ D. 52.56 m
- 6) A model car is 12 cm long. The actual car is 4.8 m long. What is the scale factor from the model to the actual car?
- ☐ A. 40 ☐ C. 0.4
☐ B. 4 ☐ D. 0.25
- 7) Two points on a line are (2, 6) and (5, 15). What is the slope?





8)

Which inequality matches the graph?

☐ A. $y > x + 1$

☐ C. $y \leq x + 1$

☐ B. $y < x + 1$

☐ D. $y \geq x + 1$

9) A student claimed that if a cylinder's height is halved while radius is doubled, the volume stays the same. Is the student correct?

☐ A. Yes, volume is unchanged

☐ C. No, volume is quadrupled

☐ B. No, volume is doubled

☐ D. No, volume is halved

10) A regular nonagon (9-sided polygon) has each interior angle equal to:

☐ A. 120°

☐ C. $\approx 140^\circ$

☐ B. $\approx 128.6^\circ$

☐ D. 144°



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17

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1) Three points lie on the same line: $(1, 5)$, $(3, 9)$, and $(x, 13)$. What is the value of x ?

☐ A. 4

☐ C. 6

☐ B. 7

☐ D. 5

2) $(3 \times 10^8) + (5 \times 10^6) = ?$

☐ A. 8×10^{14}

☐ C. 8×10^6

☐ B. 30.5×10^6

☐ D. 3.05×10^8

3) Which point lies on the line $y = 2x - 3$?

☐ A. $(0, 3)$

☐ C. $(1, 1)$

☐ B. $(3, -3)$

☐ D. $(2, 1)$

4) Solve: $3x + 2 \geq -4$

☐ A. $x \geq -2$

☐ C. $x \geq 2$

☐ B. $x \leq -2$

☐ D. $x \leq 2$

5) A right triangle has one leg equal to $\sqrt{15}$ and a hypotenuse equal to $\sqrt{31}$. What is the other leg?

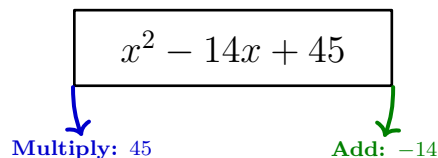
☐ A. $\sqrt{15}$

☐ C. 4

☐ B. $\sqrt{46}$

☐ D. 8

6) Factor $x^2 - 14x + 45$.



☐ A. $(x - 5)(x - 9)$

☐ C. $(x - 10)(x - 4)$

☐ B. $(x - 15)(x + 1)$

☐ D. $(x - 45)(x + 1)$



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- 7) If 5 kilograms of rice cost \$15, what is the unit price (constant of proportionality) in dollars per kilogram?

- 8) A line passes through (2, 9) and (5, 18). Which equation represents this line?

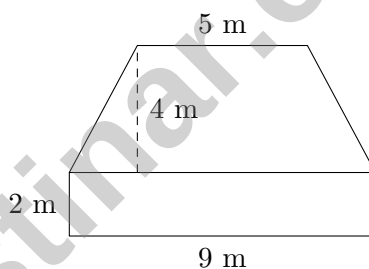
☐ A. $y = 3x + 3$

☐ C. $y = 2x + 5$

☐ B. $y = 3x + 9$

☐ D. $y = x + 7$

- 9) A composite figure has a trapezoid (parallel sides 5 m and 9 m, height 4 m) with a rectangle attached to the longer base (length 9 m, width 2 m). What is the total area?



☐ A. 28 m^2

☐ C. 46 m^2

☐ B. 36 m^2

☐ D. 56 m^2

- 10) To find the number of \$0.50 postage stamps and \$0.37 postage stamps that total \$3.74 with 10 stamps, which approach is best?

☐ A. Guess and check☐ C. Solving a system of equations☐ B. Proportional reasoning☐ D. Trial by tables

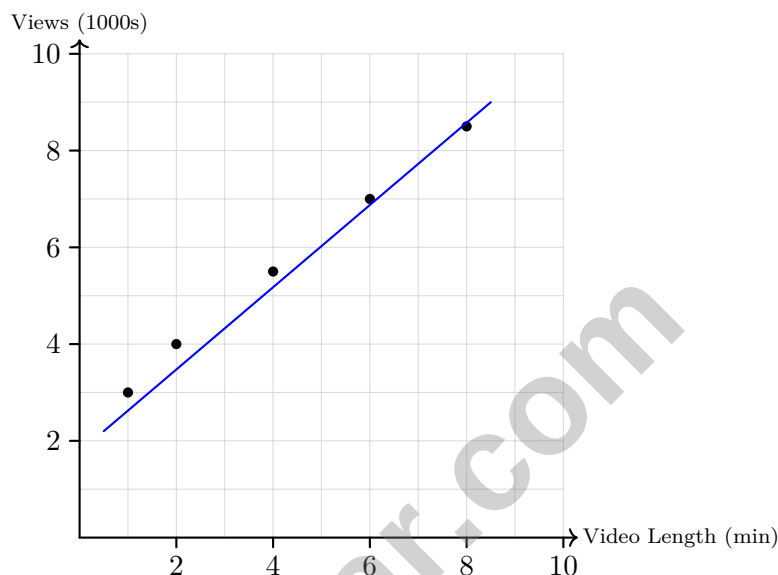
1) Which is the solution to $2(x - 1) \geq 4$?

☐ A. $x \geq 3$

☐ C. $x \geq 1$

☐ B. $x \leq 3$

☐ D. $x \leq 1$



2)

A content creator analyzes video length versus view count. Using the trend line, by how much do views increase per minute of video length?

☐ A. Approximately 0.8 thousand views/min

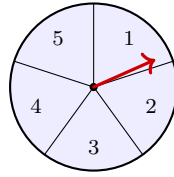
☐ C. Approximately 1.5 thousand views/min

☐ B. Approximately 1.1 thousand views/min

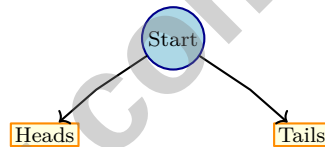
☐ D. Approximately 2 thousand views/min



- 3) A spinner has 5 equal sections labeled 1, 2, 3, 4, 5. You spin it twice. What is the probability of spinning a 3 on the first spin AND a 2 on the second spin?



- ☐ A. $\frac{1}{25}$ ☐ C. $\frac{2}{25}$
☐ B. $\frac{1}{5}$ ☐ D. $\frac{2}{5}$
- 4) A probability experiment involves flipping a coin (heads or tails) and rolling a die (1 through 6). How many different outcomes are possible?



6 die outcomes each

- ☐ A. $2 + 6 = 8$ ☐ C. $6^2 = 36$
☐ B. $2 \times 6 = 12$ ☐ D. $2 + 6 \times 2 = 14$



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New Hampshire NH SAS 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 Hampshire NH SAS practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (8.SP.A.1) Relatively balanced distribution above and below a line with many points on or near it indicates moderate to strong correlation.
- 2) **Choice A is correct.** (8.G.B.6, 8.G.B.7) From $(\sqrt{18})^2 + (\sqrt{7})^2 = c^2$, we get $18 + 7 = 25$, so $c = \sqrt{25} = 5$.
- 3) **Choice A is correct.** (8.EE.C.7) FOIL: $(x + 7)(x - 1) = x^2 - x + 7x - 7 = x^2 + 6x - 7$.
- 4) **Choice A is correct.** (8.F.B.4) In $y = mx + b$, the slope m is the rate of change per unit of x . Here, for each additional hour worked, earnings increase by \$12, so the slope represents the hourly wage.
- 5) **Choice C is correct.** (8.G.B.7) The perimeter includes two straight sides of 16 m and two semicircles that make one full circle with diameter 4 m. So $P = 16 + 16 + 3.14(4) = 44.56$ m.
- 6) **Choice A is correct.** (8.G.A.4) Convert to same units: 4.8 m = 480 cm. Scale factor is $\frac{480}{12} = 40$.
- 7) **The correct answer is 3.** (8.EE.B.6) Slope = $\frac{15-6}{5-2} = 3$.
- 8) **Choice C is correct.** (8.EE.C.8b) SOLID line (includes boundary) and shading BELOW indicate $y \leq x + 1$.
- 9) **Choice B is correct.** (8.G.C.9) Original: $V = \pi r^2 h$. New: $V' = \pi(2r)^2(\frac{h}{2}) = \pi \times 4r^2 \times \frac{h}{2} = 2\pi r^2 h = 2V$.
- 10) **Choice C is correct.** (8.G.A.5) The sum for a nonagon is $(9 - 2) \times 180 = 1260^\circ$. Each angle is $\frac{1260}{9} = 140^\circ$.
- 11) **The correct answer is 9.** (8.EE.C.7) Let b be the brother's age. The equation is $2b - 4 = 14$. Add 4: $2b = 18$. Divide by 2: $b = 9$.
- 12) **Choice B is correct.** (8.SP.A.3) The line goes from $(0, 3.0)$ to $(4, 4.2)$ on the graph (representing \$30,000 to \$42,000). Slope = $\frac{4.2-3.0}{4-0} = \frac{1.2}{4} = 0.3$ (in units of \$10,000), or \$3000/year.
- 13) **Choice C is correct.** (8.F.A.1) Non-vertical straight lines pass the vertical line test and are functions. Every vertical line intersects the graph at most once.
- 14) **Choice A is correct.** (8.F.A.2) $S_1(4) = 80$. S_2 slope: $(56 - 50)/1 = 6$, so $S_2(4) = 50 + 6(4) = 74$. Since $80 > 74$, S_1 has more.
- 15) **Choice B is correct.** (8.F.B.5) The constant segments at $y = 2$ and $y = 5$ stay below and above $y = 4$. The increasing segment must cross $y = 4$ exactly once.
- 16) **The correct answer is -4.** (8.EE.C.8b) Solving gives $x > -4$, so the boundary value is -4.
- 17) **Choice B is correct.** (8.G.A.2) Congruent triangles have equal corresponding angles. Triangle ABC has the same angle measures as triangle XYZ: $45^\circ, 60^\circ, 75^\circ$.
- 18) **Choice B is correct.** (8.G.A.5) Alternate exterior angles are congruent: $7k - 3 = 5k + 17 \implies 2k = 20 \implies k = 10$.
- 19) **Choice B is correct.** (8.G.B.8) Distance = $\sqrt{12^2 + 5^2} = \sqrt{144 + 25} = \sqrt{169} = 13$ nm. (This is a 5-12-13 Pythagorean triple.)
- 20) **Choice D is correct.** (8.G.B.7) If the angles are $4k$ and $11k$, then $4k + 11k = 180$, so $15k = 180$ and $k = 12$. The smaller angle is $4k = 48^\circ$.
- 21) **The correct answer is B,E.** (8.EE.A.4) The product is $(4 \times 5) \times 10^{3+4} = 20 \times 10^7 = 2 \times 10^8$, so choices B and E are equivalent to the original expression. Choice A uses an exponent that is too large, and choices C and D have the wrong value.
- 22) **Choice B is correct.** (8.G.C.9) $B = \left(\frac{1}{2}\right)^2 = \frac{1}{4} \text{ cm}^2$. $V = \frac{1}{3} \times \frac{1}{4} \times \frac{3}{2} = \frac{3}{24} = \frac{1}{8} \text{ cm}^3$.
- 23) **Choice B is correct.** (8.SP.A.4) This is a row-conditional relative frequency. Among cream-adders (50 total), 35 are office workers: $\frac{35}{50} = 0.70 = 70\%$.
- 24) **Choice B is correct.** (8.G.B.8) Mean = 10. Deviations: $|7 - 10| = 3$, $|9 - 10| = 1$, $|11 - 10| = 1$, $|13 - 10| = 3$. Sum = 8. MAD = $8/4 = 2$.
- 25) **Choice C is correct.** (8.G.B.7) Section 2 appears twice out of four equal sections. $P(2) = \frac{2}{4} = \frac{1}{2}$.
- 26) **Choice B is correct.** (8.EE.C.7b) Assign instrument 1 to any of 7 musicians, instrument 2 to any of the remaining 6, instrument 3 to any of the remaining 5: $7 \times 6 \times 5 = 210$. (This is $P(7, 3)$, a permutation because the instruments are distinguishable.)



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Hi, Calm Solver!

◇ This broad and demanding book gave you seven strong Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. A calm mind can see choices more clearly. That matters in Grade 8, where one problem may have several possible entry points. ◇

★ **Remember this:** You practiced building calm by doing full tests. Each completed page is rehearsal for staying steady when the real test feels serious. ★

Calm-Test Moves

- **Pause:** Give your brain one quiet second.
- **Choose:** Pick the first useful step.
- **Continue:** Do not demand perfection immediately.
- **Check:** Use review time wisely.

Grade 8 test-day tip: If you feel rushed, slow your reading for one sentence. Clear reading saves time.

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

Jay Daie

Your Calm-Test Coach

PRACTICE TODAY SUCCEED TOMORROW!

Give your child the confidence and skills they need with **7 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!

GRADE 8

Practice
Today
Succeed
Tomorrow!

Algebra

Geometry

Statistics

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! |



2 EXTRA ONLINE PRACTICE TESTS INCLUDED!

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

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BUILD CONFIDENCE. SHARPEN SKILLS. ACE YOUR EXAM!