

6 New Hampshire NH SAS

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



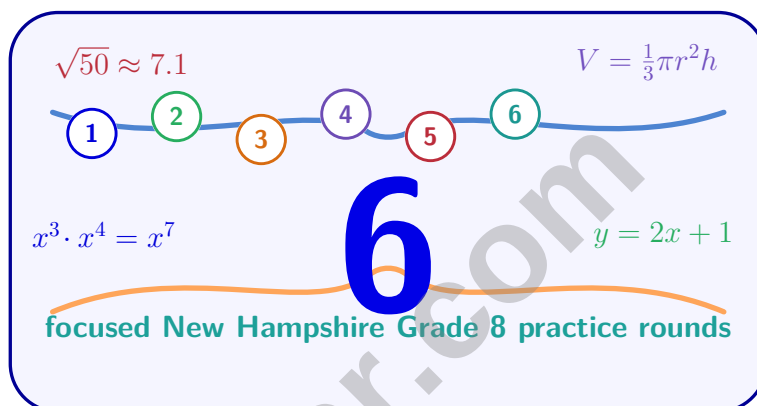
2 ONLINE
TESTS



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

6 New Hampshire NH SAS Grade 8 Math Practice Tests

Grade 8 State-Test Prep for Functions, Equations, Geometry, and Data



Six 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!

Six focused rounds for sharper NH SAS math thinking

This book gives you six 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 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 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?

Six NH SAS 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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1) Compute $\frac{(9 \times 10^5) + (3.6 \times 10^5)}{4 \times 10^2}$. Express in scientific notation.

☐ A. 3.15×10^2

☐ C. 12.6×10^3

☐ B. 3.15×10^4

☐ D. 3.15×10^3

Numbers

Rational

Irrational

$\frac{1}{2}, 0.5$

$\sqrt{2}, \pi$

2)

Which number should be placed in the Rational section?

☐ A. $\sqrt{13}$

☐ C. $-\frac{9}{2}$

☐ B. $2 + \sqrt{5}$

☐ D. $\sqrt{\pi}$

3) If $a < \sqrt{n} < a + 1$ where a is a positive integer, then which statement is true?

☐ A. $n = a^2$

☐ C. $a^2 < n < (a + 1)^2$

☐ B. $n = (a + 1)^2$

☐ D. n is rational

4) Which order is correct from smallest to largest?

☐ A. $\sqrt{2}, \sqrt{5}, \sqrt{3}$

☐ C. $\sqrt{3}, \sqrt{2}, \sqrt{5}$

☐ B. $\sqrt{5}, \sqrt{3}, \sqrt{2}$

☐ D. $\sqrt{2}, \sqrt{3}, \sqrt{5}$

5) A payday loan charges \$15 for every \$100 borrowed for 2 weeks. What is the APR equivalent?

☐ A. 15%

☐ C. 390%

☐ B. 30%

☐ D. 780%



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

☐ A. k^{-5}

☐ B. k^2

☐ C. k^{10}

☐ D. $k^0 = 1$

7) Which of the following equals 2?

☐ A. $\sqrt[3]{4}$

☐ B. $\sqrt[3]{9}$

☐ C. $\sqrt{16}$

☐ D. $\sqrt{4}$

8) Which is the smallest number?

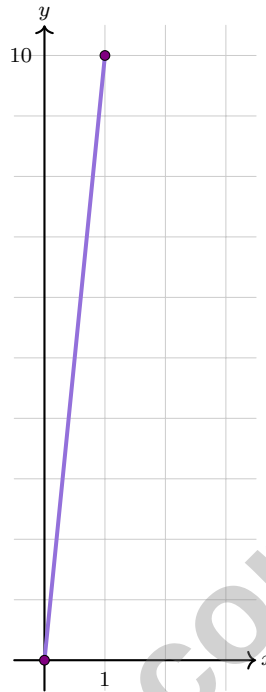
☐ A. 1.5×10^{-2}

☐ B. 1.5×10^0

☐ C. 1.5×10^{-4}

☐ D. 1.5×10^2





9)

The constant of proportionality is:

☐ A. 1☐ C. 10☐ B. 5☐ D. 20

10) For which values of m do the lines $y = mx + 3$ and $y = -2x + 6$ intersect at exactly one point?

☐ A. $m \neq -2$ ☐ C. $m = 3$ only☐ B. $m = -2$ only☐ D. All values of m 

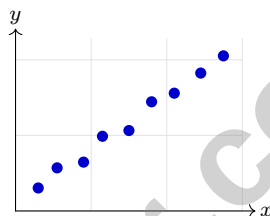
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- 1) The decimal expansion of a rational number is:

- ☐ A. Always irrational
 ☐ C. Always non-terminating
- ☐ B. Cannot be written as a fraction
 ☐ D. Either terminating or repeating

- 2) Triangle P has sides 8, 15, 17. Triangle Q has sides 12, 22.5, 25.5. Are they similar?

- ☐ A. No, the sides are not equal
☐ B. No, the ratios are 1.5, 1.5, 1.5 which is not constant
☐ C. Yes, all sides have the same ratio 1.5 to Q 's sides
☐ D. Only if corresponding angles equal 90°



- 3)

A scatter plot displays the relationship between temperature (in degrees Celsius) and ice cream sales (in dollars) for 12 weeks. The points show a clear upward trend from left to right. Which statement correctly describes the correlation?

- ☐ A. Negative correlation ☐ C. No correlation
- ☐ B. Positive correlation ☐ D. Random scatter with no pattern

- 4) A food truck's two-way table shows 500 orders:

	Dine-In	Takeout	Total
Vegetarian	75	125	200
Meat	100	200	300
Total	175	325	500

What is the marginal relative frequency for takeout orders?

- ☐ A. 0.35
- ☐ B. 0.50
- ☐ C. 0.60
- ☐ D. 0.65

- 5) A right triangle has a hypotenuse of 13 units and one leg of 5 units. Find the length of the other leg.

- 6) Two parallel lines are cut by a transversal. One angle measures 73° . Write and solve an equation to find the measure of its co-interior angle.

7)

Height (cm)	160	165	170	175
-------------	-----	-----	-----	-----

Four students have heights shown. The mean is 167.5 cm. What is the MAD?

- ☐ A. 3.75 ☐ C. 6.25
☐ B. 5 ☐ D. 7.5
- 8) A die shows 6 faces numbered 1 through 6. What is the probability of rolling an even number?
- ☐ A. $\frac{1}{6}$ ☐ C. $\frac{2}{3}$
☐ B. $\frac{1}{2}$ ☐ D. $\frac{1}{3}$

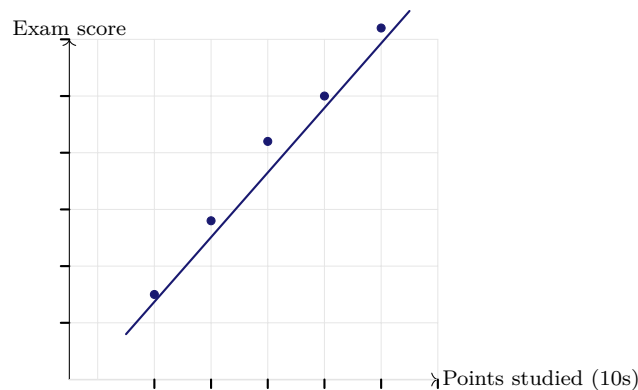


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- 1) A right triangle has legs of length 6 and 8. What is the length of the hypotenuse?
- ☐ A. 10 ☐ C. 11
☐ B. 12 ☐ D. 14
- 2) An electrician charges \$50 for a service call and \$35 per hour. A customer's bill comes to \$225. How many hours did the electrician work?
- ☐ A. 4 hours ☐ C. 6 hours
☐ B. 5 hours ☐ D. 7 hours
- 3) A hexagonal garden can be decomposed into a rectangle (12 ft by 6 ft) and two congruent isosceles right triangles (legs 6 ft each) on opposite ends. What is the total area?
- ☐ A. 72 ft² ☐ C. 144 ft²
☐ B. 108 ft² ☐ D. 180 ft²
- 4) Trapezoid $PQRS$ is similar to Trapezoid $TUVW$ with scale factor $\frac{3}{2}$. If $PQ = 8$ cm in trapezoid $PQRS$, what is the length of TU in trapezoid $TUVW$?
- ☐ A. 12 cm ☐ C. 8 cm
☐ B. 5.33 cm ☐ D. 10.67 cm



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5)

A model predicts exam score: $S = 8p - 8$, where p is the number of 10-point topic sets studied. The model gives $S = 32$ at $p = 5$, but the actual score was 35. What is the residual?

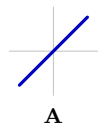
☐ A. -3

☐ C. 35

☐ B. 3

☐ D. 67

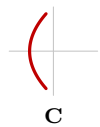
6) Which graph does NOT represent a function?



A



B



C



D

☐ A. A line passing through $(0, 2)$ and $(2, 6)$.

☐ C. A curve shaped like a sideways parabola opening right.

☐ B. A horizontal line at $y = 5$.

☐ D. A diagonal line with negative slope.

7) Savings comparison: Teen saves \$25 first week, \$30 second week, \$35 third week. Matches which pattern?

☐ A. $S(w) = 20 + 5w$ (linear)

☐ C. $S(w) = w^2 + 24$ (quadratic)

☐ B. $S(w) = 25w$ (linear)

☐ D. $S(w) = 25 \cdot 2^{w-1}$ (exponential)


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 D is correct.** **(8.EE.A.4)** Add first: $(9 + 3.6) \times 10^5 = 12.6 \times 10^5 = 1.26 \times 10^6$. Then divide: $\frac{1.26 \times 10^6}{4 \times 10^2} = 0.315 \times 10^4 = 3.15 \times 10^3$.
- 2) **Choice C is correct.** **(8.NS.A.1)** Only $-\frac{9}{2}$ is rational (a fraction of two integers). The others are irrational: $\sqrt{13}$ is a non-perfect-square root, $2 + \sqrt{5}$ is a sum involving an irrational, and $\sqrt{\pi}$ is the root of an irrational.
- 3) **Choice C is correct.** **(8.NS.A.2)** If $a < \sqrt{n} < a + 1$, then squaring all parts gives $a^2 < n < (a + 1)^2$.
- 4) **Choice D is correct.** **(8.NS.A.2)** $\sqrt{2} \approx 1.41$, $\sqrt{3} \approx 1.73$, $\sqrt{5} \approx 2.24$, so the order is increasing.
- 5) **Choice C is correct.** **(8.G.B.7)** Rate per 2 weeks: $\$15 / \$100 = 15\%$ per 2 weeks. There are $52 \text{ weeks} / 2 = 26$ two-week periods in a year. APR: $0.15 \times 26 = 3.9 = 390\%$.
- 6) **Choice D is correct.** **(8.EE.A.1)** $(k^2)^3 = k^6$; then $k^6 \cdot k^{-1} = k^5$; then $\frac{k^5}{k^5} = k^0 = 1$.
- 7) **Choice D is correct.** **(8.EE.A.2)** $\sqrt[3]{4} = 2$. The other choices do not equal 2: $\sqrt[3]{9} \neq 2$, $\sqrt{16} = 4$, and $\sqrt[3]{4} \neq 2$.
- 8) **Choice C is correct.** **(8.EE.A.3)** The most negative exponent gives the smallest value. $1.5 \times 10^{-4} = 0.00015$ is the smallest.
- 9) **Choice C is correct.** **(8.EE.B.5)** $k = \frac{10}{1} = 10$. The line is very steep, passing through $(0, 0)$ and $(1, 10)$.
- 10) **Choice A is correct.** **(8.EE.C.8a)** Two lines with different slopes always intersect at exactly one point. The lines $y = mx + 3$ and $y = -2x + 6$ have different slopes unless $m = -2$. If $m = -2$, the lines have the same slope but different y -intercepts, so they do not intersect.
- 11) **Choice B is correct.** **(8.F.A.3)** $y = 10x - 6$ is in the form $y = mx + b$ with $m = 10$ and $b = -6$, making it linear. The others involve exponents, fractions with x , or exponential bases.
- 12) **Choice A is correct.** **(8.G.A.3)** The y -coordinate stays the same while the x -coordinate negates. This is reflection across the y -axis: $(x, y) \rightarrow (-x, y)$.
- 13) **Choice A is correct.** **(8.EE.B.5)** Using any two points, e.g., $(0, -2)$ and $(2, 2)$: slope $= \frac{2 - (-2)}{2 - 0} = \frac{4}{2} = 2$.
- 14) **Choice C is correct.** **(8.EE.C.8c)** Initial salt: $0.15(200) = 30$ gallons. After adding x gallons of fresh water: total volume $= 200 + x$, salt amount $= 30$. Setting salinity to 10%: $\frac{30}{200+x} = 0.10$, so $30 = 0.10(200 + x) = 20 + 0.10x$, giving $0.10x = 10$, thus $x = 100$ gal.
- 15) **Choice B is correct.** **(8.F.A.1)** Locate $x = -1$ and read the corresponding y -value from the graph: $y = 2$. So $f(-1) = 2$.
- 16) **The correct answer is 2.5.** **(8.G.B.8)** Absolute deviations: $|3 - 7.5| = 4.5$, $|7 - 7.5| = 0.5$, $|9 - 7.5| = 1.5$, $|11 - 7.5| = 3.5$. Sum $= 10$. MAD $= 10/4 = 2.5$.
- 17) **Choice D is correct.** **(8.G.C.9)** Two triangular ends: $2 \times \frac{1}{2}(6)(4) = 24$ sq. ft. Three rectangular sides: base $8 \times 6 = 48$ sq. ft., two slant sides $8 \times 5 + 8 \times 5 = 80$ sq. ft. Total $= 24 + 48 + 80 = 152$ sq. ft.
- 18) **Choice A is correct.** **(8.G.A.1)** A 180° rotation about the origin takes a point in Quadrant I to Quadrant III. Shape C's corner at $(2, 3)$ maps to $(-2, -3)$, matching Shape D.
- 19) **Choice A is correct.** **(8.EE.B.6)** Substitute: $-3 = -\frac{3}{4}(4) + b$, so $-3 = -3 + b$, thus $b = 0$.
- 20) **The correct answer is A,C.** **(8.G.A.4)** Correct: (A) All linear measurements (sides, perimeter) are multiplied by 2.5. (C) Area is multiplied by $(2.5)^2 = 6.25$. Incorrect: (B) Angles are congruent in dilation, not scaled. (D) Perimeter is multiplied, not divided, by 2.5. (E) Dilation preserves shape; polygon type does not change.
- 21) **Choice A is correct.** **(8.EE.C.7)** Distribute: $6x - 3x - 6 = 3$. Combine: $3x - 6 = 3$. Add 6: $3x = 9$. Divide by 3: $x = 3$.
- 22) **Choice C is correct.** **(8.EE.C.8b)** Multiply by -1 (FLIP): $x \geq -5$.
- 23) **Choice D is correct.** **(8.EE.C.8b)** SOLID line and shading BELOW the negatively-sloped line indicate $y \leq -\frac{2}{3}x + 2$.
- 24) **Choice B is correct.** **(8.G.C.9)** $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 64 \times 24 = \frac{1}{3} \times 4815.36 = 1605.12 \text{ cm}^3$.
- 25) **Choice C is correct.** **(8.G.A.5)** A hexagon's interior angles add to 720° . The known angles add to $120 + 100 + 90 + 115 + 130 = 555^\circ$, so the missing angle is $720 - 555 = 165^\circ$.



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Hi, Progress Maker!

◇ You have done more than complete a set of tests. You have rehearsed the habits that make Grade 8 math feel less surprising. ◇

★ **Remember this:** Progress is not always loud. Sometimes it looks like fewer careless errors, clearer work, better pacing, and more confidence when a problem is unfamiliar. You practiced across 6 full Grade 8 practice tests, and that repeated effort matters. ★

Signs of Growth

- **Clear Work:** Your steps are easier to follow.
- **Better Pacing:** You know when to move on and return.
- **Stronger Checks:** You catch mistakes earlier.
- **Calmer Thinking:** You know what to try next.

Grade 8 test-day tip: Keep one short list of mistakes you often make, then check that list before each practice session.

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

Jay Daie

Your Growth 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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