

3

New Hampshire

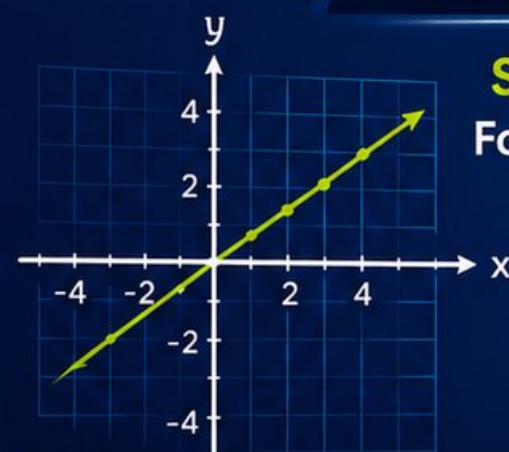
NH SAS

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3 PRINTED TESTS



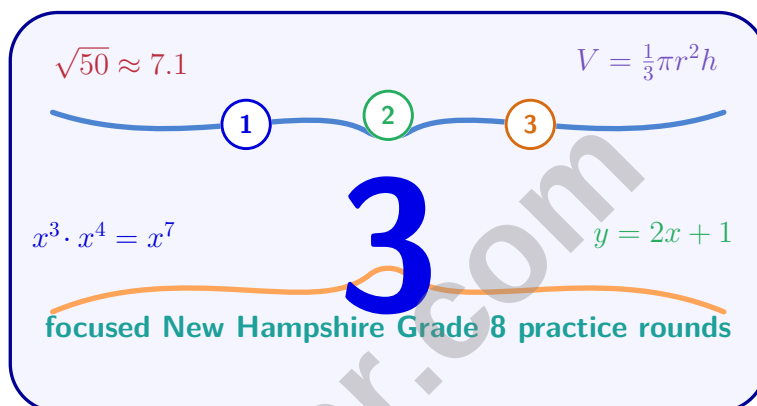
2 ONLINE TESTS



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

3 New Hampshire NH SAS Grade 8 Math Practice Tests

Three Complete New Hampshire Practice Rounds for Grade 8 Readiness



Three 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



Copyright ©

Testinar Inc



Published by Testinar Inc

Testinar.com

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, including Section 107 or 108 of the 1976 United States Copyright Act.

This publication is independently produced and has no official connection to any state, district, or national testing program.

Test names and organizational names used herein are the property of their respective trademark holders.



Copyright ©

Welcome, New Hampshire Grade 8 Problem Solver!

Three focused rounds for sharper NH SAS math thinking

This book gives you three 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 three-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?

Three NH SAS tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	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.



Scan me!
For more practice
& answers

Table of Contents



Testinar.com

1) Solve for x : $5(x - 2) = 3(x + 2)$

☐ A. $x = 8$

☐ C. $x = 1$

☐ B. $x = -8$

☐ D. $x = 10$

2) Explain why 10^5 is 100 times greater than 10^3 . Use exponents in your reasoning.

3) A rectangular prism has length 10 ft, width 5 ft, and surface area 250 ft^2 . What is its height?

☐ A. 3 ft

☐ C. 5 ft

☐ B. 4 ft

☐ D. 6 ft

4) A figure in Quadrant I is reflected across the line $y = -x$. Which quadrant will the image be in?

☐ A. Quadrant I

☐ C. Quadrant IV

☐ B. Quadrant II

☐ D. Quadrant III

5) If a line has slope $\frac{2}{5}$ and y -intercept -3 , what is its equation?

☐ A. $y = \frac{2}{5}x - 3$

☐ C. $y = \frac{5}{2}x - 3$

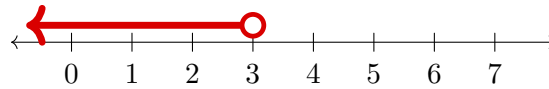
☐ B. $y = -\frac{2}{5}x - 3$

☐ D. $y = \frac{2}{5}x + 3$



Scan me!
For more practice
& answers

6) Solve: $x + 7 < 10$. Which number line shows the solution?

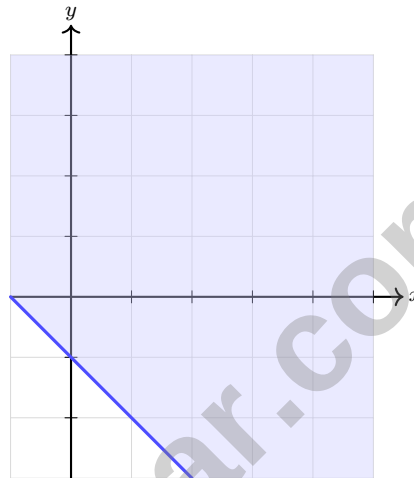


☐ A. $x < 3$

☐ C. $x \leq 3$

☐ B. $x > 3$

☐ D. $x \geq 3$



7)

The line shown has equation $y = -x - 1$. With shading above, the inequality is:

☐ A. $y > -x - 1$

☐ C. $y \geq -x - 1$

☐ B. $y < -x - 1$

☐ D. $y \leq -x - 1$

8) The equation of a line of best fit for a scatter plot is $y = 1.5x + 20$. What does the slope of 1.5 represent?

- | | |
|---|---|
| ☐ A. For every 1 unit increase in x , y increases by 1.5 units | ☐ C. The starting value of y when $x = 0$ |
| ☐ B. For every 1 unit increase in x , y increases by 20 units | ☐ D. For every 1 unit increase in x , y decreases by 1.5 units |



9) A borrower needs to repay \$1,000. She has time but limited monthly cash flow. Comparing the plans, which choice represents the BEST overall financial decision (lowest total cost + manageable payments)?

- | | |
|--|---|
| ☐ A. \$50/month for 24 months (total \$1,200; low monthly cost) | ☐ C. \$125/month for 8 months (total \$1,000; high monthly cost) |
| ☐ B. \$100/month for 12 months (total \$1,200; medium monthly cost) | ☐ D. \$83/month for 18 months (total \$1,494; expensive overall) |

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

- | | |
|--------------------------------------|--------------------------------------|
| ☐ A. b^{-5} | ☐ C. b^{15} |
| ☐ B. b^9 | ☐ D. b^5 |

11) Convert the mixed decimal $0.5\overline{8}$ to a fraction in simplest form.

12) A square has an area of 361 square cm. What is its perimeter?

$s = ?$

Area = 361 cm²

$s = ?$

- | | |
|-----------------------------------|------------------------------------|
| ☐ A. 38 cm | ☐ C. 76 cm |
| ☐ B. 57 cm | ☐ D. 152 cm |



Scan me!
For more practice
& answers

1) Convert $0.4\overline{2}$ to a fraction in simplest form.

☐ A. $\frac{4}{20}$
☐ B. $\frac{42}{100}$

☐ C. $\frac{42}{99}$
☐ D. $\frac{38}{90} = \frac{19}{45}$

2) If $g(x) = x^2 + 2$ and $g(x) = 11$, find the possible values of x .

3) Which best approximates $\sqrt{50}$?

☐ A. 6.5
☐ B. 7.5

☐ C. 5.0
☐ D. 7.1

4) Which is the best estimate of $\frac{\sqrt{10}}{\sqrt{2}}$?

☐ A. 1.4
☐ B. 5.0

☐ C. 2.8
☐ D. 2.2

5) Multiply $(2 \times 10^3) \times (3 \times 10^2)$. Express in scientific notation.

☐ A. 60×10^5
☐ B. 6×10^6

☐ C. 5×10^5
☐ D. 6×10^5

6) A regular hexagonal pyramid has a regular hexagonal base. The base has perimeter 24 cm and area $24\sqrt{3} \text{ cm}^2$. The slant height is 8 cm. What is the lateral surface area?

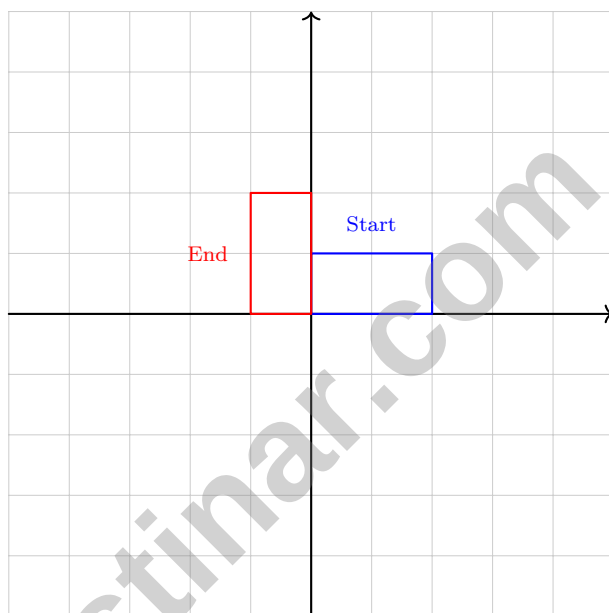
☐ A. 48 cm^2
☐ B. 72 cm^2

☐ C. 96 cm^2
☐ D. 144 cm^2



Scan me!
For more practice
& answers

- 7) Two similar parallelograms have corresponding side lengths 10 and 15. What is the scale factor from the first to the second?



8)

What transformation maps the blue figure (Start) to the red figure (End)?

- | | |
|---|--|
| ☐ A. Reflection across the y -axis | ☐ D. 90° clockwise rotation about the origin |
| ☐ B. Reflection across the x -axis | |
| ☐ C. 90° counterclockwise rotation about the origin | |



1) Which is a NONLINEAR function?

☐ A. $y = 11x$

☐ C. $y = x^2 + 7$

☐ B. $y = -9 + x$

☐ D. $y = \frac{1}{2}x - 3$

2) A data analyst fits two different trend lines to a scatter plot. Line A has MAD (mean absolute deviation of residuals) = 0.3, while Line B has MAD = 0.8. Which conclusion is justified?

☐ A. Line B is better because it has a higher MAD

☐ C. Both lines are equally good

☐ B. Line A is better because residuals are closer to zero

☐ D. We cannot compare lines using MAD alone

3) Which pair of figures is NOT similar?

☐ A. Two circles with radii 3 and 6

☐ C. A rectangle 2×4 and a rectangle

☐ B. A 3-4-5 triangle and a 6-8-10 triangle

3×6

☐ D. A square 5×5 and a rectangle 5×10

4) Given $f(x) = 2x - 5$, what is $f(4)$?

☐ A. 11

☐ C. -1

☐ B. 3

☐ D. 13

5) Which of the following is irrational?

☐ A. $\sqrt{49}$

☐ C. $\sqrt{50}$

☐ B. $\frac{7}{8}$

☐ D. 2.5



Scan me!
For more practice
& answers

6) Convert $0.4\overline{18}$ to a fraction in simplest form.

☐ A. $\frac{4}{18}$
☐ B. $\frac{418}{1000}$

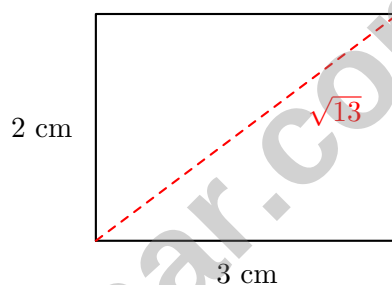
☐ C. $\frac{418}{999}$
☐ D. $\frac{414}{990} = \frac{23}{55}$

7) Which best approximates $\sqrt[3]{50}$?

☐ A. 3.5
☐ B. 2.9

☐ C. 4.2
☐ D. 3.7

8) A rectangle has dimensions 2 cm by 3 cm. The diagonal is $\sqrt{13}$ cm. What is the best estimate of the diagonal?



☐ A. 3.0 cm
☐ B. 6.5 cm

☐ C. 4.2 cm
☐ D. 3.6 cm

9) Which expression equals 4.25×10^{-1} ?

☐ A. 425
☐ B. 4.25

☐ C. 42.5
☐ D. 0.425



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.



Scan me!
For more practice
& answers

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (8.EE.C.7) Expand: $5x - 10 = 3x + 6$. Subtract $3x$ and add 10: $2x = 16$, so $x = 8$.
- 2) **The correct answer is 100.** (8.EE.A.3) When dividing powers with the same base, subtract the exponents. $10^{5-3} = 10^2$, and $10^2 = 100$, so 10^5 is 100 times larger than 10^3 .
- 3) **Choice C is correct.** (8.G.C.9) Use $SA = 2(lw + lh + wh)$. Then $250 = 2(10 \times 5 + 10h + 5h) = 100 + 30h$, so $150 = 30h$ and $h = 5$ ft.
- 4) **Choice D is correct.** (8.G.A.1) Reflecting across $y = -x$ uses $(x, y) \rightarrow (-y, -x)$. A point like $(1, 2)$ maps to $(-2, -1)$ in Quadrant III (both coordinates negative).
- 5) **Choice A is correct.** (8.EE.B.6) In slope-intercept form $y = mx + b$, with $m = \frac{2}{5}$ and $b = -3$, we get $y = \frac{2}{5}x - 3$.
- 6) **Choice A is correct.** (8.EE.C.8b) Subtract 7: $x < 3$. The open circle and left ray match this solution.
- 7) **Choice C is correct.** (8.EE.C.8b) SOLID line (includes boundary) with shading ABOVE means $y \geq -x - 1$.
- 8) **Choice A is correct.** (8.SP.A.3) The slope is the rate of change. A slope of 1.5 means for every 1-unit increase in x , y increases by 1.5.
- 9) **Choice A is correct.** (8.G.B.7) Option C has zero interest (lowest cost) but requires \$125/month. Option A costs \$200 extra but is affordable at \$50/month. For someone with limited cash flow, Option A balances cost and affordability.
- 10) **Choice D is correct.** (8.EE.A.1) $(b^3)^2 = b^6$; then $b^6 \cdot b^4 = b^{10}$; then $\frac{b^{10}}{b^5} = b^5$.
- 11) **The correct answer is $\frac{53}{90}$.** (8.NS.A.1) Set $x = 0.5\bar{8} = 0.5888\dots$. Then $10x = 5.\bar{8}$ and $100x = 58.\bar{8}$. Subtracting: $90x = 53$, so $x = \frac{53}{90}$.
- 12) **Choice C is correct.** (8.EE.A.2) Area = 361, so $s = \sqrt{361} = 19$ cm. Perimeter = $4s = 4 \times 19 = 76$ cm.
- 13) **Choice D is correct.** (8.EE.A.4) Rewrite with common exponent: $5.8 \times 10^6 - 0.23 \times 10^6 = (5.8 - 0.23) \times 10^6 = 5.57 \times 10^6$.
- 14) **Choice C is correct.** (8.EE.B.5) $k = \frac{2}{8} = \frac{1}{4} = 0.25$.
- 15) **Choice C is correct.** (8.EE.C.7) Difference of squares: $x^2 - 25 = x^2 - 5^2 = (x + 5)(x - 5)$.
- 16) **Choice B is correct.** (8.F.A.1) Each input value $(1, 2, 3, 4)$ corresponds to exactly one output value $(3, 6, 9, 12)$. The relationship is $y = 3x$, making it a function.
- 17) **Choice B is correct.** (8.F.A.2) Rate of A: -3 liters/min. Rate of B: $(20 - 40)/5 = -4$ liters/min. Since $|-4| > |-3|$, Tank B empties faster.
- 18) **Choice B is correct.** (8.F.B.4) At $h = 0$: $C_X = 10$ and $C_Y = 5$. Plan Y's initial cost (y -intercept = 5) is less than Plan X's (y -intercept = 10).
- 19) **Choice B is correct.** (8.F.B.5) From $x = -1$ to $x = 2$, the graph moves downward from 2 to -1 . The other listed intervals are flat or increasing.
- 20) **The correct answer is $(6, 7)$.** (8.NS.A.2) $6^2 = 36$ and $7^2 = 49$. Since $36 < 45 < 49$, we have $6 < \sqrt{45} < 7$.
- 21) **The correct answer is A, C.** (8.NS.A.1) Statement A is true because rational numbers are closed under addition. Statement C is true because any terminating decimal, such as $0.75 = \frac{3}{4}$, is rational. Statement B is false because two irrational numbers can multiply to a rational number, for example $\sqrt{2} \times \sqrt{8} = 4$. Statement D is false because integers are rational. Statement E is false because perfect squares have rational square roots, not irrational ones.
- 22) **Choice B is correct.** (8.G.A.2) From the diagram, quadrilateral ABCD (left) is congruent to EFGH (right) with vertices labeled in order: $A \rightarrow E$, $B \rightarrow F$, $C \rightarrow G$, $D \rightarrow H$. The tick marks on sides confirm this correspondence. Since congruent figures have equal corresponding angles, $\angle A = \angle E$, $\angle B = \angle F$, and so on.
- 23) **Choice C is correct.** (8.G.A.5) In an isosceles triangle, the two base angles are equal. If the vertex angle is 40° , then $40 + 2x = 180$, so $x = 70^\circ$.
- 24) **Choice B is correct.** (8.G.B.6, 8.G.B.7) Using the Pythagorean Theorem: $5^2 + 12^2 = c^2$ gives $25 + 144 = 169$, so $c = 13$ (the 5-12-13 triple).
- 25) **Choice A is correct.** (8.G.B.8) Distance = $\sqrt{8^2 + 6^2} = \sqrt{64 + 36} = \sqrt{100} = 10$.
- 26) **Choice B is correct.** (8.G.C.9) $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 16 \times 9 = \frac{1}{3} \times 452.16 = 150.72$ in³.



Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for 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.



Build Skills & Boost Confidence

Strengthen understanding and feel prepared for test day.

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!



2 Extra Online Practice Tests Included!

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

testinar.com/math8

PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better **Results**.