

3

Nebraska

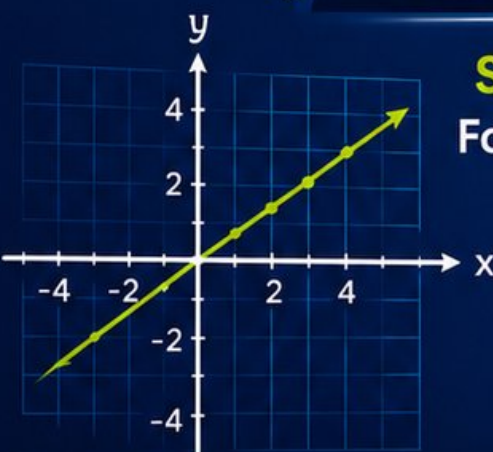
NSCAS Growth

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

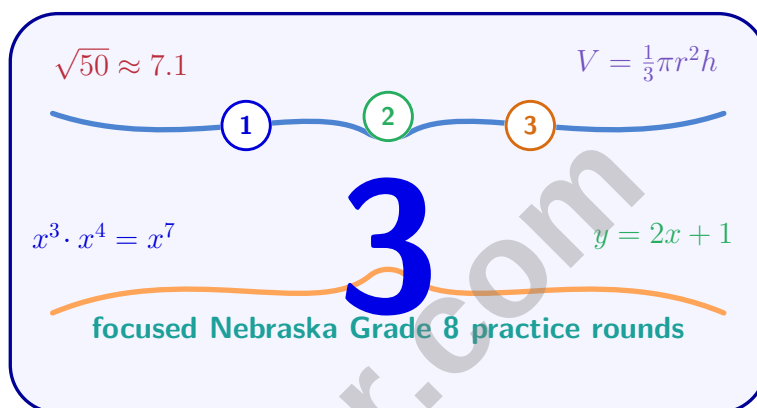
**ONLINE
TESTS**



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

3 Nebraska NSCAS Growth Grade 8 Math Practice Tests

Standards-Aligned Nebraska Review for Grade 8 Math Success



Three complete 40-question Grade 8 NSCAS Growth 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, Nebraska Grade 8 Problem Solver!

Three focused rounds for sharper NSCAS Growth math thinking

This book gives you three full Grade 8 NSCAS Growth 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 Nebraska 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.

Nebraska 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 NSCAS Growth 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.



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& answers

Table of Contents



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1) What is the distance between the points (1, 2) and (4, 6)?

☐ A. 5

☐ C. $\sqrt{7}$

☐ B. 7

☐ D. $\sqrt{26}$

2) Two cylinders have the same height of 10 cm. Cylinder A has radius 3 cm, Cylinder B has radius 6 cm. Which statement is true?

☐ A. Both have the same SA

☐ D. B has greater SA but not exactly twice

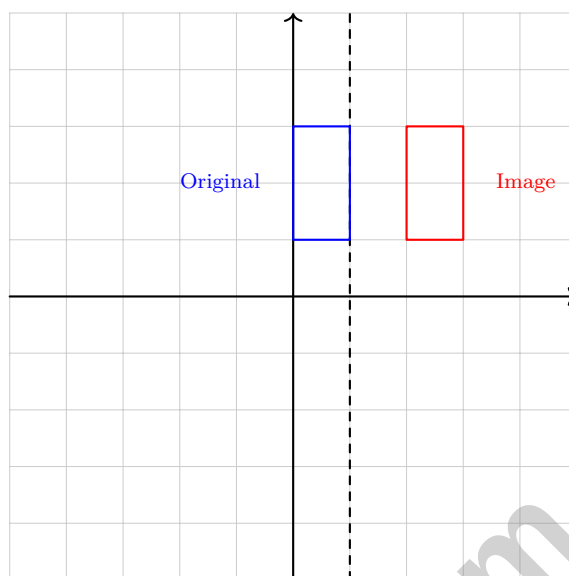
☐ B. A has greater SA

☐ C. B has exactly twice the SA of A

3) Write 4.7×10^{-4} in decimal (standard) form.



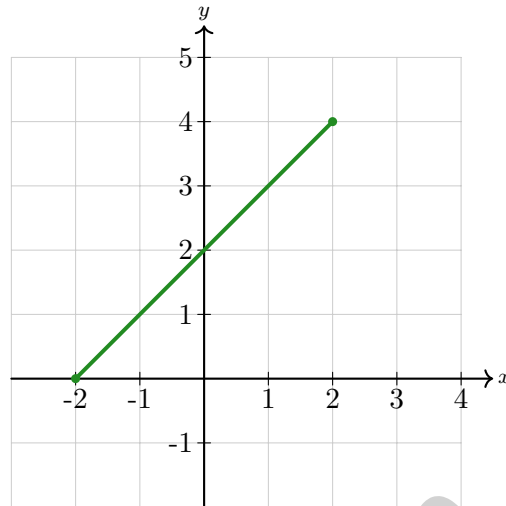
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4)

The figure shows a reflection across the dashed line $x = 1$. If a point on the original was at $(0, 2)$, where is it in the image?

☐ A. $(1, 2)$ ☐ B. $(2, 2)$ ☐ C. $(0, 2)$ ☐ D. $(3, 2)$ 



5)

What is the equation of the line shown?

☐ A. $y = x + 2$

☐ B. $y = x - 2$

☐ C. $y = 2x + 4$

☐ D. $y = -x + 2$

6) Solve for x : $3(x - 4) = 2x + 5$

☐ A. $x = -7$

☐ B. $x = 7$

☐ C. $x = 17$

☐ D. $x = 9$

7) What is the solution to $-2(x + 3) > 8$?

☐ A. $x > -7$

☐ B. $x > 7$

☐ C. $x < -7$

☐ D. $x < 7$

8) Convert $0.\overline{34}$ to a fraction in simplest form.

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1)

Decimal Types

Terminating	Repeating
0.5, 0.75	0. $\overline{12}$

Which decimal is rational?

- ☐ A. 0.123456... (non-repeating) ☐ C. 0.454545... (repeating)
☐ B. π ☐ D. e (Euler's number)

2) Which is larger: $\sqrt{3} \times \sqrt{8}$ or 4.8?

- ☐ A. Cannot be determined ☐ C. They are exactly equal
☐ B. 4.8 is larger ☐ D. $\sqrt{3} \times \sqrt{8}$ is larger

3) What is $0.\overline{142}$ as a fraction?

- ☐ A. $\frac{1}{142}$ ☐ C. $\frac{142}{1000}$
☐ B. $\frac{142}{100}$ ☐ D. $\frac{142}{999}$

4) To the nearest tenth, which is the best estimate for $\sqrt{56}$?

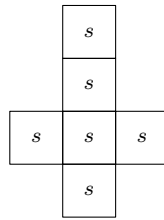
- ☐ A. 7.0 ☐ C. 8.0
☐ B. 6.0 ☐ D. 7.5

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

- ☐ A. 60×10^5 ☐ C. 5×10^5
☐ B. 6×10^6 ☐ D. 6×10^5



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Net of cube

6)

If the net above represents a cube with edge length 3 cm, what is the total surface area of the cube?

☐ A. 18 cm^2

☐ C. 36 cm^2

☐ B. 27 cm^2

☐ D. 54 cm^2

7) Which property is preserved under all three rigid transformations (translation, reflection, and rotation)?

☐ A. Position on the coordinate plane

☐ C. Length of sides

☐ B. Orientation (clockwise vs. counterclockwise)

☐ D. Size relative to other figures

8) A horizontal line passes through the point $(2, 5)$. What is the equation of this line?

☐ A. $x = 2$

☐ C. $y = 2x + 5$

☐ B. $x = y$

☐ D. $y = 5$

9) If an equation simplifies to $0 = 5$ after subtracting variables and constants from both sides, what does this tell you?

☐ A. The equation has exactly one solution

☐ C. The equation has infinitely many solutions

☐ B. The solution is $x = 0$

☐ D. The equation has no solution



1) Which expression is equivalent to $\frac{5^6}{5^2}$?

Expression	Value
A. 5^4	625
B. 5^3	125
C. 5^8	390,625
D. 5^{12}	244,140,625

☐ A. Option D

☐ C. Option C

☐ B. Option B

☐ D. Option A

2) A student says that if a cube is dilated by scale factor 3, the volume is multiplied by 3. Is this correct?

☐ A. Yes, volume always scales linearly

☐ C. No, volume is multiplied by 27

☐ B. No, volume is multiplied by 9

☐ D. No, the volume remains the same

3) A table shows:

x	0	3	6
y	5	2	-1

What is the rate of change (slope)?



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4) Which system best models: "The sum of two numbers is 20. Their difference is 4"?

☐ A. $x + y = 20$; $x - y = 4$

☐ C. $x \cdot y = 20$; $x/y = 4$

☐ B. $x + y = 20$; $x + y = 4$

☐ D. $x = 20$; $y = 4$

5) A student evaluated $f(x) = 3x + 2$ at $x = 4$ and wrote $f(4) = 3 + 2 + 4 = 9$. What error did the student make?

☐ A. Did not multiply x by the coefficient 3

☐ C. Added the constant instead of substituting correctly

☐ B. Multiplied 3 by 4 correctly but made an arithmetic mistake

☐ D. The answer is correct

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

☐ A. 1.4

☐ C. 2.8

☐ B. 5.0

☐ D. 2.2

7) A rent-to-own contract charges \$600/month for 36 months on furniture worth \$12,000 cash. What is the finance charge?

☐ A. \$2,400

☐ C. \$9,600

☐ B. \$6,000

☐ D. \$21,600

8) Write $0.\overline{4}$ as a fraction in simplest form.

☐ A. $\frac{2}{5}$

☐ C. $\frac{4}{99}$

☐ B. $\frac{4}{10}$

☐ D. $\frac{4}{9}$



Nebraska NSCAS Growth 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 Nebraska NSCAS Growth practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** **(8.G.3)** Distance = $\sqrt{(4-1)^2 + (6-2)^2} = \sqrt{9+16} = \sqrt{25} = 5$.
- 2) **Choice D is correct.** **(8.G.3)** Cylinder A: $SA = 2\pi(3)^2 + 2\pi(3)(10) = 18\pi + 60\pi = 78\pi \text{ cm}^2$. Cylinder B: $SA = 2\pi(6)^2 + 2\pi(6)(10) = 72\pi + 120\pi = 192\pi \text{ cm}^2$. Ratio: $192\pi/78\pi \approx 2.46 \neq 2$. So B is greater but not exactly twice.
- 3) **The correct answer is 0.00047.** **(8.N.2)** Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.
- 4) **Choice B is correct.** **(8.G.2)** Reflecting across the vertical line $x = 1$: distance from $(0, 2)$ to the line is 1 unit left. The image is 1 unit right of the line at $(2, 2)$.
- 5) **Choice A is correct.** **(8.A.2)** Slope = $\frac{4-0}{2-(-2)} = \frac{4}{4} = 1$. Using $(-2, 0)$: $0 = 1(-2) + b$ gives $b = 2$.
- 6) **Choice C is correct.** **(8.N.1)** Distribute: $3x - 12 = 2x + 5$. Subtract $2x$: $x - 12 = 5$. Add 12: $x = 17$. Check: $3(17 - 4) = 3(13) = 39$ and $2(17) + 5 = 39$ ✓. (Distractor B from forgetting to distribute the 3; D from arithmetic error.)
- 7) **Choice C is correct.** **(8.G.1)** Distribute: $-2x - 6 > 8$. Add 6: $-2x > 14$. Divide by -2 (FLIP): $x < -7$.
- 8) **The correct answer is $\frac{34}{99}$.** **(8.A.1)** Set $x = 0.34$, so $100x = 34.34$. Subtracting: $100x - x = 34$, giving $99x = 34$ and $x = \frac{34}{99}$.
- 9) **Choice C is correct.** **(8.G.2)** Test $(2, 4)$: $3(2) + 4 = 10 > 9$ TRUE. Others fail: $(2, 2)$: $8 \not> 9$; $(3, 0)$: $9 \not> 9$; $(1, 6)$: $9 \not> 9$.
- 10) **The correct answer is $(6, 7)$.** **(8.N.1)** $6^2 = 36$ and $7^2 = 49$. Since $36 < 45 < 49$, we have $6 < \sqrt{45} < 7$.
- 11) **Choice D is correct.** **(8.G.2)** Cylinder: $V = 3.14 \times 64 \times 6 = 1205.76 \text{ m}^3$. Cone: $V = \frac{1}{3} \times 3.14 \times 64 \times 6 = 401.92 \text{ m}^3$. Difference: $1205.76 - 401.92 = 803.84 \text{ m}^3$.
- 12) **Choice C is correct.** **(8.D.2)** The y -intercept (15) is the cost when $u = 0$, representing fixed storage costs.
- 13) **Choice D is correct.** **(8.D.3)** At 0% APR during the promo period, no interest accrues. Balance after 18 months is still \$1,200.
- 14) **Choice D is correct.** **(8.G.2)** $17 \times 17 = 289$, so $\sqrt{289} = 17$.
- 15) **Choice C is correct.** **(8.D.2)** $3.2 \times 10^{-3} = 3.2 \div 1,000 = 0.0032$. Moving the decimal 3 places left.
- 16) **Choice C is correct.** **(8.A.1)** FOIL: $(2x + 1)(x + 3) = 2x^2 + 6x + x + 3 = 2x^2 + 7x + 3$.
- 17) **Choice B is correct.** **(8.A.2)** Table A: outputs are 3, 5, 7, 9 and inputs are 1, 2, 3, 4 — all outputs are greater. Table B: when $x = 0$, $y = 0$ (equal, not greater).
- 18) **The correct answer is A, C.** **(8.N.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.
- 19) **Choice A is correct.** **(8.D.2)** Slope of u : $(3 - (-1))/(2 - 0) = 4/2 = 2 > 0$. Slope of v : $-1 < 0$. Only u is positive.
- 20) **Choice D is correct.** **(8.D.2)** Constant first differences (whether positive or negative) indicate a linear function. The negative value indicates the function is decreasing.
- 21) **Choice A is correct.** **(8.G.1)** Correct: $m = \frac{6-3}{3-1} = \frac{3}{2}$. The student used $\frac{\Delta x}{\Delta y} = \frac{2}{3}$ instead of $\frac{\Delta y}{\Delta x}$, so the rise and run were inverted.
- 22) **Choice C is correct.** **(8.A.1)** The graph rises from day 0 to day 3, then decreases from day 3 to day 4 as the tank drains. After day 4, the level increases again as the tank refills.
- 23) **Choice B is correct.** **(8.G.2)** Figures A and C are both 4×2 rectangles. Figure B is a 2×2 square, so it is not congruent to either rectangle.
- 24) **Choice A is correct.** **(8.G.2)** The points $(0, 2) \rightarrow (0, -2)$ and $(2, 4) \rightarrow (2, -4)$. This is the reflection rule $(x, y) \rightarrow (x, -y)$.
- 25) **Choice A is correct.** **(8.G.1)** Adjacent angles on a straight line are supplementary: $123 + x = 180$, so $x = 57^\circ$.
- 26) **Choice B is correct.** **(8.G.3)** The 7-24-25 triple applies directly: $d^2 = 7^2 + 24^2 = 49 + 576 = 625$, so $d = 25 \text{ cm}$.
- 27) **Choice B is correct.** **(8.G.1)** When corresponding angles are not congruent, the lines are not parallel. Corresponding angles are congruent only when lines are parallel.



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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!



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PRACTICE. PREPARE. SUCCEED.



Testinar

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