

Nebraska

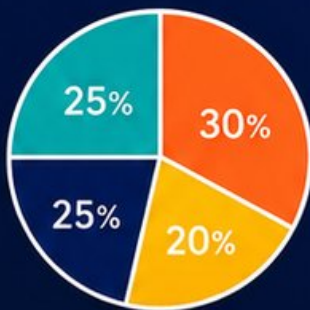
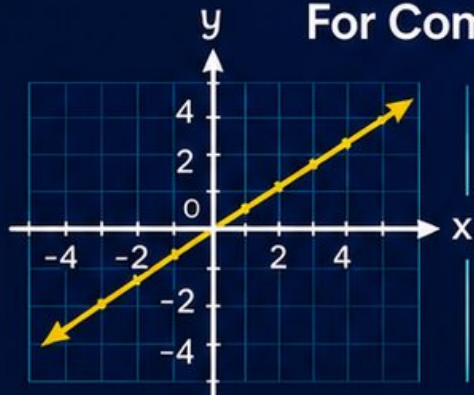
NSCAS Growth

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

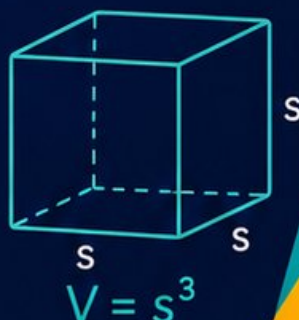


$$y = mx + b$$

$$2x - 3y = 6$$

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

$$A = bh$$



4 PRINTED TESTS



2 ONLINE TESTS

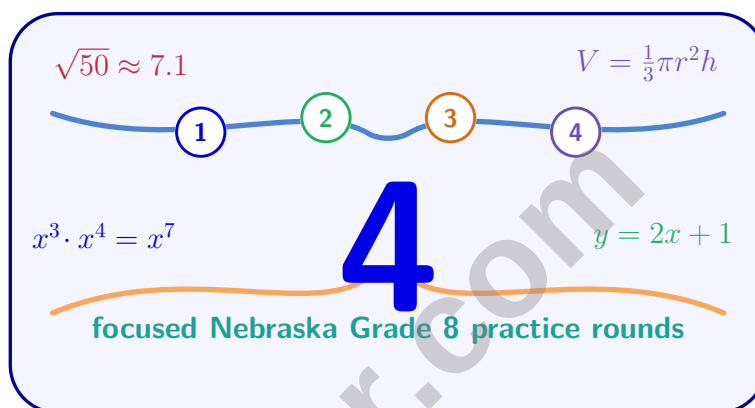


Use these **two additional online practice tests** for extra review after the printed tests in this book.



4 Nebraska NSCAS Growth Grade 8 Math Practice Tests

Grade 8 NSCAS Growth Practice for Equations, Graphs, Geometry, and Data



Four 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!

Four focused rounds for sharper NSCAS Growth math thinking

This book gives you four 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 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.

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?

Four NSCAS Growth 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.

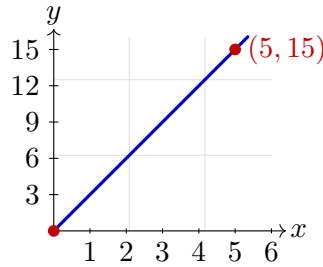


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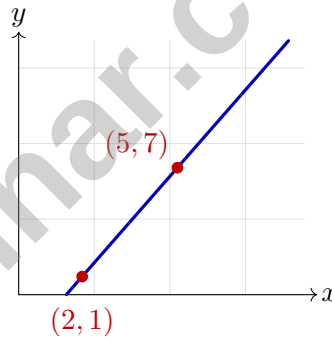
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- 1) A graph of a proportional relationship passes through the origin and (5, 15). What is the slope (unit rate)?



- ☐ A. 2 ☐ C. 5
☐ B. 15 ☐ D. 3
- 2) A graph shows a line passing through (2, 1) and (5, 7). If the line continues, which point would it pass through?



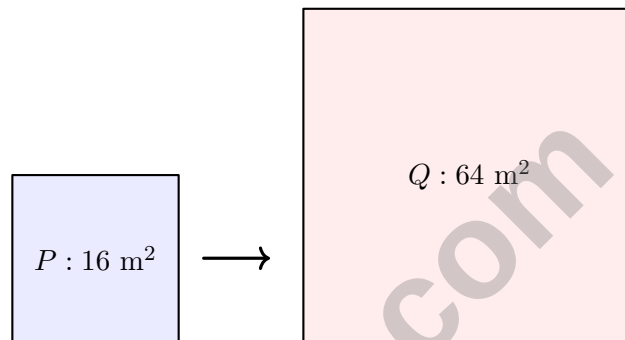
- ☐ A. (8, 13) ☐ C. (8, 11)
☐ B. (8, 12) ☐ D. (7, 10)
- 3) Solve by elimination:
$$\begin{cases} 4x + 3y = 18 \\ 2x - 3y = 6 \end{cases}$$

- ☐ A. (2, 2) ☐ C. (4, 2/3)
☐ B. (3, 2) ☐ D. (4, 1)



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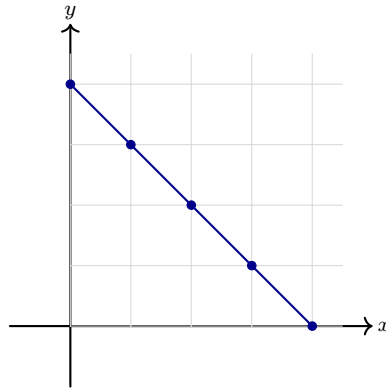
- 4) A residual plot shows the residuals for a trend line fit to a data set. What would a residual plot with no clear pattern indicate?
- ☐ A. There are no residuals ☐ C. The data is nonlinear
- ☐ B. The trend line is a good fit ☐ D. The trend line is a poor fit
- 5) Figure P has area 16 m^2 and Figure Q (similar to P) has area 64 m^2 . What is the scale factor from P to Q ?



- ☐ A. 2 ☐ C. 8
- ☐ B. 4 ☐ D. 16
- 6) Two rectangular fields have the same width. The first field is 50 m long and has a perimeter of 180 m. The second field is 60 m long and has a perimeter of 200 m. What is the width?
- ☐ A. 20 m ☐ C. 40 m
- ☐ B. 30 m ☐ D. 50 m



7) The graph shows function $r(x)$. What is $r(0)$?

☐ A. 0☐ C. 4☐ B. 2☐ D. 1

8) If $x = \sqrt{144}$, is x rational or irrational?

☐ A. Irrational; $x = 144$ ☐ C. Irrational; $x = 12$ ☐ B. Rational; $x = 144$ ☐ D. Rational; $x = 12$

9) Is the product $\sqrt{3} \times \sqrt{12}$ closer to 5 or 6?

☐ A. Closer to 5☐ C. Exactly 5☐ B. Exactly 7☐ D. Closer to 6

10) A side job pays a bonus of \$800, invested at 5% simple interest. How long until the account grows to \$880?

☐ A. 1 year☐ C. 3 years☐ B. 4 years☐ D. 2 years

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- 1) 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 ☐ C. 134 cups
☐ B. 120 cups ☐ D. 160 cups

- 2) A video streaming service charges a flat fee plus a per-minute rate. The relationship is shown:

Minutes watched	10	20	30
Cost (\$)	2.50	4.50	6.50

What is the slope?

- ☐ A. \$0.20 per minute ☐ C. \$0.10 per minute
☐ B. \$2.50 per minute ☐ D. \$0.05 per minute

- 3) 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 ☐ C. 0.60
☐ B. 0.50 ☐ D. 0.65

- 4) For the data $\{4, 4, 8, 8\}$, the mean is 6. Calculate the MAD.

- ☐ A. 0 ☐ C. 4
☐ B. 2 ☐ D. 6



5) Two fair coins are tossed. How many total outcomes are in the sample space?

☐ A. 2

☐ C. 8

☐ B. 4

☐ D. 3

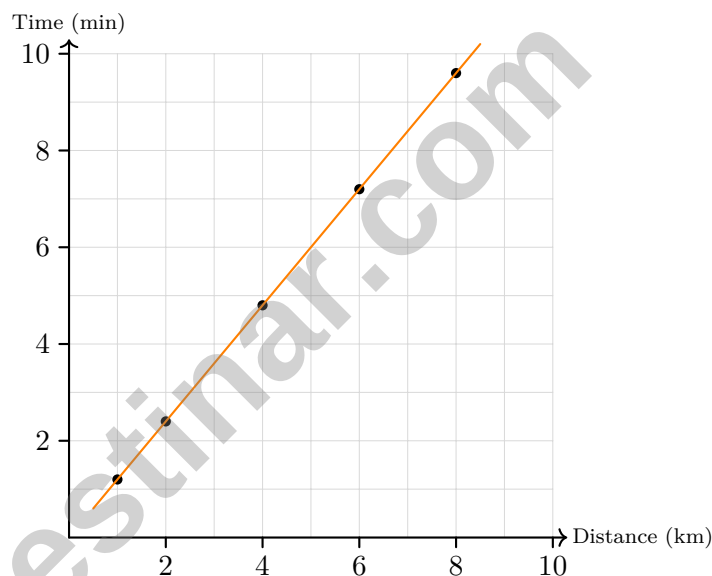
6) A cafe has 9 types of sandwiches and 4 types of drinks. How many different lunch combinations (one sandwich + one drink) can a customer order?

☐ A. $9 + 4 = 13$

☐ C. $9 \times 4 = 36$

☐ B. $9 - 4 = 5$

☐ D. $\frac{9}{4} = 2.25$



7)

A delivery company tracks distance versus delivery time. The trend line shows an almost perfect fit with points nearly aligned. What can you conclude?

☐ A. Distance and time are unrelated

☐ C. The trend line should not be trusted

☐ B. There is a strong linear relationship with very small residuals

☐ D. The data contains measurement errors



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

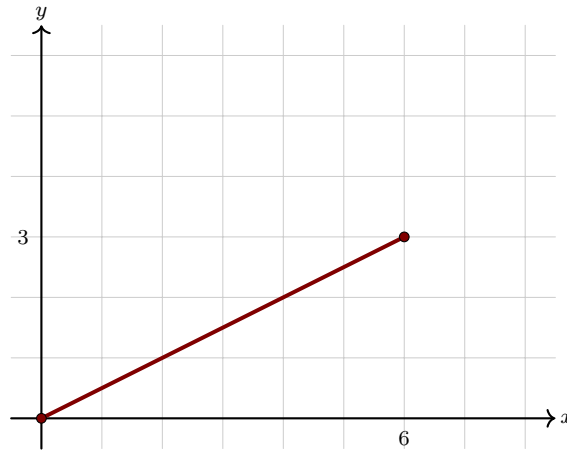
Hours	2	4	6	8
Pay (\$)	18	36	54	72

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

- ☐ A. \$8 per hour ☐ C. \$10 per hour
☐ B. \$12 per hour ☐ D. \$9 per hour
- 2) Solve: $x^? \cdot x^4 = x^9$.
- ☐ A. 13 ☐ C. 5
☐ B. 36 ☐ D. $\frac{9}{4}$
- 3) A balloon starts at 300 meters and descends at 2 meters per second. What is the slope of the height model?



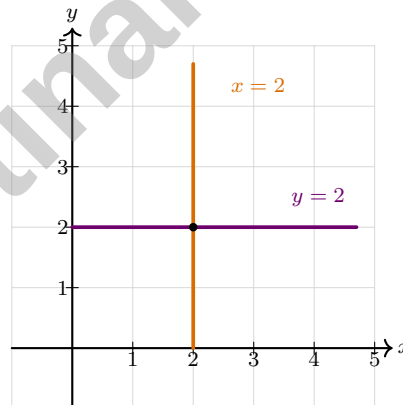
4)



What is the unit rate shown in the graph?

- ☐ A. 3 units of y per unit of x ☐ C. $\frac{1}{2}$ unit of y per unit of x
☐ B. 2 units of y per unit of x ☐ D. 6 units of y per unit of x

5) Graph the two equations and identify what type of solution the system has.



- ☐ A. No solution ☐ C. Exactly one solution at $(2, 2)$
☐ B. Infinitely many solutions ☐ D. Two solutions



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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 D is correct.** (8.G.1) Slope = $\frac{\Delta y}{\Delta x} = \frac{15-0}{5-0} = 3$. For a proportional line through the origin, the slope equals the unit rate.
- 2) **Choice A is correct.** (8.A.1) Slope = $\frac{7-1}{5-2} = \frac{6}{3} = 2$. From (5, 7) with slope 2: at $x = 8$, $y = 7 + 2(3) = 13$. Point is (8, 13).
- 3) **Choice C is correct.** (8.G.1) Add the equations: $(4x + 3y) + (2x - 3y) = 18 + 6$, so $6x = 24$, giving $x = 4$. Substitute: $4(4) + 3y = 18$, so $16 + 3y = 18$, and $y = 2/3$. Solution: $(4, 2/3)$.
- 4) **Choice B is correct.** (8.D.1) A residual plot with no clear pattern means residuals are scattered randomly and close to zero. This indicates the linear model explains the data well and assumptions are met.
- 5) **Choice A is correct.** (8.G.2) If area ratio is $\frac{64}{16} = 4$, then the linear scale factor is $\sqrt{4} = 2$.
- 6) **Choice C is correct.** (8.G.1) Let $w =$ width. First field: $2(50) + 2w = 180$, so $100 + 2w = 180$, giving $2w = 80$ and $w = 40$ m. Check with second field: $2(60) + 2w = 200$, so $120 + 2w = 200$, giving $w = 40$ m. ✓
- 7) **Choice C is correct.** (8.D.2) At $x = 0$, the point on the graph is at height $y = 4$. Therefore, $r(0) = 4$.
- 8) **Choice D is correct.** (8.N.1) $\sqrt{144} = 12$ because $12 \times 12 = 144$. Since 12 is an integer, it is rational.
- 9) **Choice D is correct.** (8.N.1) $\sqrt{3} \times \sqrt{12} = \sqrt{36} = 6$ exactly.
- 10) **Choice D is correct.** (8.D.3) Interest needed: \$80. Solve: $80 = 800 \times 0.05 \times t \Rightarrow t = 2$ years.
- 11) **Choice C is correct.** (8.A.1) Let $x = 0.037$. Then $1000x = 37.037$. Subtracting: $999x = 37$, so $x = \frac{37}{999}$.
- 12) **Choice D is correct.** (8.N.1) A: $2 + 3 = 5$ (rational). B: $\sqrt{16} = 4$ (rational). C: $6 - 2 = 4$ (rational). D: $\sqrt{3}$ is irrational, so $\sqrt{3} + 1$ is irrational.
- 13) **Choice C is correct.** (8.N.2) The coefficient 0.9 is less than 1, violating the requirement that it must be in $[1, 10]$.
- 14) **The correct answer is 0.75.** (8.G.2) Among dog owners: $\frac{108}{144} = 0.75$. This is a row-conditional frequency.
- 15) **Choice D is correct.** (8.G.3) Two triangular bases: $2 \times \frac{1}{2}(5)(3.1) = 15.5 \text{ cm}^2$. Three rectangular sides: $6(5 + 4 + 4) = 78 \text{ cm}^2$. Total = $15.5 + 78 = 93.5 \text{ cm}^2$.
- 16) **The correct answer is 2.4.** (8.D.1) Absolute deviations: $|12 - 16| = 4$, $|14 - 16| = 2$, $|16 - 16| = 0$, $|18 - 16| = 2$, $|20 - 16| = 4$. Sum = 12. MAD = $12/5 = 2.4$.
- 17) **The correct answer is $\frac{1}{4}$.** (8.D.3) There are 13 spades in a standard deck. $P(\text{spade}) = \frac{13}{52} = \frac{1}{4}$.
- 18) **The correct answer is A,E.** (8.N.2) A is true because $(m^5)^2 = m^{10}$. E is true because $(m^2)^5 = m^{10}$. B simplifies to m^9 , C is a sum, and D simplifies to m^8 .
- 19) **Choice B is correct.** (8.G.2) Reflect (x, y) across x -axis: $(x, -y)$. Then across y -axis: $(-x, -y)$. A 180° rotation also gives $(-x, -y)$.
- 20) **Choice D is correct.** (8.A.2) The y -intercept is where the line crosses the y -axis, which occurs at $(0, 2)$.
- 21) **Choice D is correct.** (8.N.1) A: Identity (infinitely many). B: Subtract $3x$: $4 = 7$ (false, no solution). C and D: Unique solutions.
- 22) **Choice A is correct.** (8.G.1) Subtract 7: $x < 3$. The open circle and left ray match this solution.
- 23) **Choice A is correct.** (8.G.2) The $>$ symbol (strict) gives a DASHED line. Since y is GREATER than the expression, shade ABOVE.
- 24) **Choice B is correct.** (8.G.2) From $V = \pi r^2 h$: $1695.6 = 3.14 \times 36 \times h \Rightarrow h = \frac{1695.6}{113.04} = 15$ in.
- 25) **Choice B is correct.** (8.D.2) Residual = actual - predicted = $35 - 32 = 3$. The model underestimated by 3 points.
- 26) **Choice D is correct.** (8.G.2) $6 \times 6 \times 6 = 216$, so $\sqrt[3]{216} = 6$.
- 27) **Choice C is correct.** (8.D.2) Volume = (side)³ = $(1.5 \times 10^{-2})^3 = (1.5)^3 \times (10^{-2})^3 = 3.375 \times 10^{-6} \text{ m}^3$.
- 28) **Choice A is correct.** (8.A.1) FOIL: $(4x - 3)(x + 2) = 4x^2 + 8x - 3x - 6 = 4x^2 + 5x - 6$.
- 29) **Choice C is correct.** (8.A.2) Each barcode corresponds to a product, but the price can change multiple times, giving the barcode multiple price outputs. The other options satisfy the one-input-one-output rule.



Hi, Confident Learner!

◇ This carefully paced book gave you four steady Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 8 math can feel big because it connects real numbers and exponents with linear equations, systems, functions, transformations, geometry, and data. ◇

★ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ★

Confidence Builders

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

Grade 8 test-day tip: When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

Jay Daie

Your Confidence Coach

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!

4



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!



4 PRINTED TESTS

+



2 ONLINE TESTS



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