

3

Utah RISE

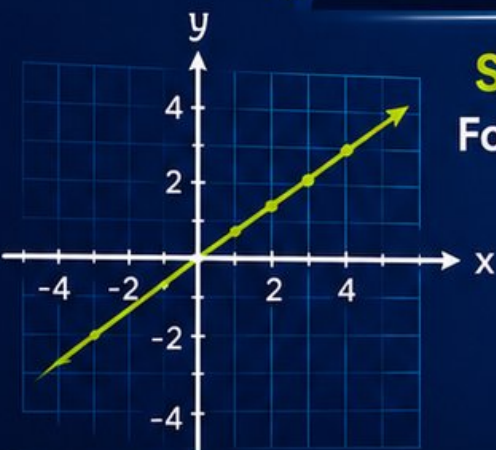
GRADE 8

MATH

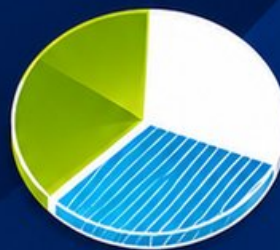
PRACTICE TESTS

$$a^2 + b^2 = c^2$$
$$\sqrt{x}$$

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



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



3

**PRINTED
TESTS**

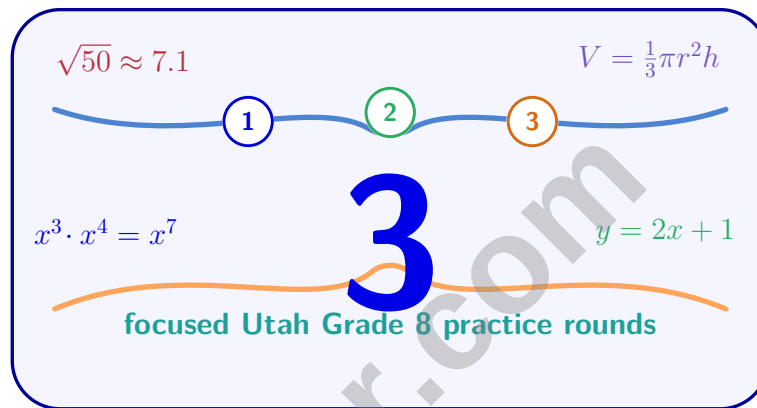
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**ONLINE
TESTS**

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

3 Utah RISE Grade 8 Math Practice Tests

Compact Utah Test Prep for Grade 8 Math Growth



Three complete 40-question Grade 8 RISE 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, Utah Grade 8 Problem Solver!

Three focused rounds for sharper RISE math thinking

This book gives you three full Grade 8 RISE 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 Utah 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.

Utah 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 RISE 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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Table of Contents



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1) A garden has 8 flowers initially. Each week, 3 new flowers are planted. Which equation gives the total number of flowers f after w weeks?

☐ A. $f = 3w + 8$

☐ C. $f = 11w$

☐ B. $f = 8w + 3$

☐ D. $f = 3w - 8$

2) A cylinder has radius 4 cm and height 9 cm. What is the difference between total surface area and lateral surface area?

☐ A. $32\pi \text{ cm}^2$

☐ C. $72\pi \text{ cm}^2$

☐ B. $16\pi \text{ cm}^2$

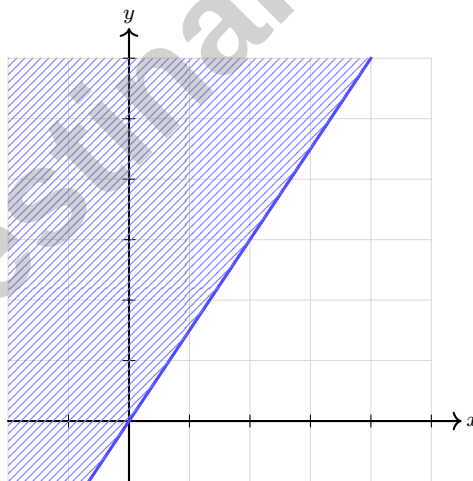
☐ D. $40\pi \text{ cm}^2$

3) 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


4)

Which inequality does this graph show?

☐ A. $y > 1.5x$

☐ C. $y \geq 1.5x$

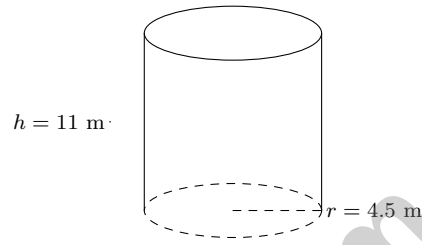
☐ B. $y < 1.5x$

☐ D. $y \leq 1.5x$



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

6)



A cylinder with radius 4.5 m and height 11 m is shown. Approximately, what is its volume? (Use $\pi \approx 3.14$.)

- ☐ A. 280.35 m^3
☐ C. 699.44 m^3
- ☐ B. 560.7 m^3
☐ D. 1401.56 m^3
- 7) A car's fuel consumption model is $M = -0.05d + 35$, where M is miles per gallon and d is driving distance in hundreds of miles. What does the slope of -0.05 tell you?
- ☐ A. The car uses 0.05 gallons per mile
 ☐ C. For every 100 miles driven (1 unit of d), MPG decreases by 0.05
- ☐ B. The car starts with 35 gallons at $d = 0$
☐ D. The car loses 0.05 MPG for every gallon used



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8) A college savings plan earns 7% compound interest annually. If \$5,000 is invested for 10 years, approximately how much will be accumulated?

☐ A. \$8,500

☐ B. \$13,800

☐ C. \$11,500

☐ D. \$9,835

9) Simplify $\frac{4x^5}{2x^3}$.

☐ A. $4x^2$

☐ B. $2x^8$

☐ C. x^2

☐ D. $2x^2$

10) Convert $0.\overline{3}$ to a fraction.

11) Which of the following is a perfect cube?

☐ A. 200

☐ B. 150

☐ C. 180

☐ D. 125

12) Multiply: $(6 \times 10^2) \times (3 \times 10^4)$

☐ A. 18×10^5

☐ B. 18×10^8

☐ C. 9×10^6

☐ D. 1.8×10^7



- 1) Among 180 volunteers at an event, 108 are adults and 72 are youth. Of the adults, 81 worked the morning shift. What is the relative frequency of morning-shift workers among adults?

☐ A. 0.45☐ C. 0.75☐ B. 0.60☐ D. 0.85

- 2) Convert $0.\overline{72}$ to a fraction in simplest form.

☐ A. $\frac{8}{100}$ ☐ C. $\frac{72}{90}$ ☐ B. $\frac{72}{100}$ ☐ D. $\frac{72}{99} = \frac{8}{11}$

- 3) Between which two consecutive integers does $\sqrt[3]{100}$ lie?

☐ A. 2 and 3☐ C. 3 and 4☐ B. 5 and 6☐ D. 4 and 5

- 4) Is $\sqrt{12}$ greater than or less than 3.5?

☐ A. Greater than 3.5☐ C. Exactly 3.5☐ B. Cannot determine☐ D. Less than 3.5

- 5) The population of a country is 3.2×10^7 . What is this population in standard form?

☐ A. 3,200,000☐ C. 320,000,000☐ B. 3,200,000,000☐ D. 32,000,000

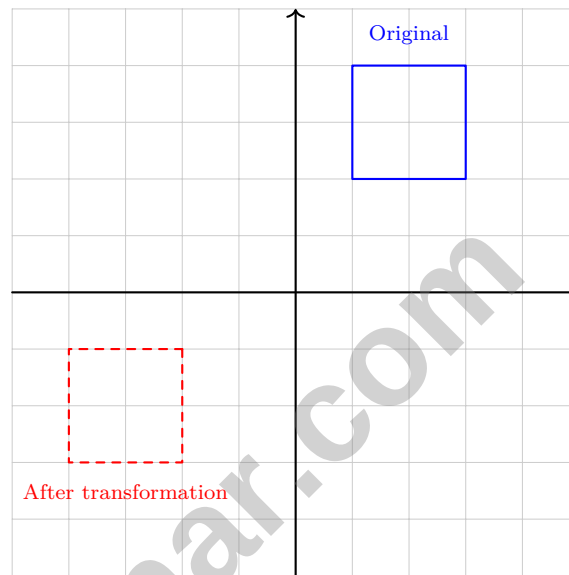
- 6) Two hikers start from the same point, walking in opposite directions. One walks at 4 mph, the other at 5 mph. After how many hours are they 27 miles apart?



- 7) A rectangular prism has length 10 cm, width 6 cm, and height 4 cm. The lateral surface area (sides only, not top/bottom) is 128 cm^2 . What is the total surface area?

☐ A. 128 cm^2
☐ B. 188 cm^2

☐ C. 248 cm^2
☐ D. 308 cm^2



8)

The blue rectangle is transformed to the dashed red rectangle. Which line of reflection was used?

☐ A. The x -axis
☐ B. The y -axis

☐ C. The line $y = -x$
☐ D. The origin point $(0, 0)$



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& answers

1) Solve: $-2x + 5 \geq 11$

☐ A. $x \geq -3$

☐ C. $x \leq -3$

☐ B. $x \geq 3$

☐ D. $x \leq 3$

2) A student dilates a triangle with scale factor 2 and claims the new triangle's perimeter is twice the original. Is this correct?

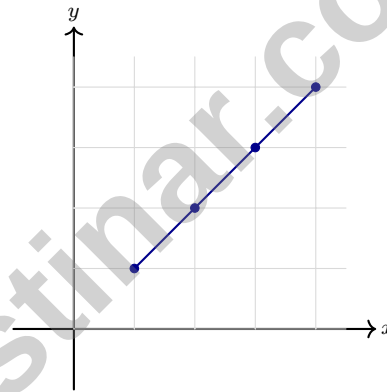
☐ A. No, the perimeter is multiplied by 4

☐ C. No, the area is multiplied by 2

☐ B. Yes, linear measurements scale by 2

☐ D. Only if the triangle is equilateral

3) The graph shows function h . Which of the following is true?



☐ A. $h(2) = 3$

☐ C. $h(3) = 2$

☐ B. $h(1) = 1$

☐ D. $h(4) = 3$

4) Which value is irrational?

☐ A. $0.5 + 0.25$

☐ C. $\sqrt{10} + 1$

☐ B. $\frac{1}{2} + \frac{1}{3}$

☐ D. 2^2



- 5) A teacher selects 2 students from a class of 6 to be line leaders. The first student is the main leader and the second is the assistant. In how many ways can this be done?
- ☐ A. $6 + 5 = 11$ ☐ C. $\binom{6}{2} = 15$
☐ B. $6 \times 5 = 30$ ☐ D. $6^2 = 36$
- 6) What is $0.3\overline{45}$ as a fraction?
- ☐ A. $\frac{345}{1000}$ ☐ C. $\frac{345}{999}$
☐ B. $\frac{3}{45}$ ☐ D. $\frac{342}{990} = \frac{19}{55}$
- 7) Which best approximates $\sqrt{50}$?
- ☐ A. 6.5 ☐ C. 5.0
☐ B. 7.5 ☐ D. 7.1
- 8) Which is the best estimate of $\sqrt{30}$?
- ☐ A. 4.5 ☐ C. 6.0
☐ B. 15.0 ☐ D. 5.5
- 9) The number of stars in the observable universe is estimated at 10^{24} . Which is closest to this value?
- ☐ A. 1 trillion ☐ C. 1 quadrillion
☐ B. 1 sextillion ☐ D. 1 septillion
- 10) A camping tent is shaped like a triangular prism with a triangular base having a base of 6 feet and height 4 feet. The tent extends 8 feet in length. The two slant edges of the triangular face are each 5 feet. If the tent is completely enclosed (including the floor), what is the total surface area of fabric needed?
- ☐ A. 88 sq. ft. ☐ C. 128 sq. ft.
☐ B. 112 sq. ft. ☐ D. 152 sq. ft.



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Utah RISE 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 Utah RISE practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (8.F.4) Initial flowers: 8 (intercept). New flowers planted per week: 3 (slope). Equation: $f = 3w + 8$.
- 2) **Choice A is correct.** (8.G.9) Total SA = $2\pi r^2 + 2\pi rh = 2\pi(16) + 2\pi(4)(9) = 32\pi + 72\pi = 104\pi$ cm². Lateral SA = $2\pi(4)(9) = 72\pi$ cm². Difference = $104\pi - 72\pi = 32\pi$ cm² (the two circular bases).
- 3) **Choice D is correct.** (8.G.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).
- 4) **Choice C is correct.** (8.G.8) SOLID line (includes boundary) and shading ABOVE indicate $y \geq 1.5x$.
- 5) **The correct answer is 0.00047.** (8.EE.3) Move the decimal 4 places to the left: $4.7 \times 10^{-4} = 0.00047$.
- 6) **Choice C is correct.** (8.G.9) $V = \pi r^2 h = 3.14 \times 20.25 \times 11 = 3.14 \times 222.75 = 699.44$ m³.
- 7) **Choice C is correct.** (8.SP.3) The slope -0.05 is the rate of change in M per unit increase in d . Since d is measured in hundreds of miles, each 100-mile interval causes MPG to drop by 0.05.
- 8) **Choice D is correct.** (8.G.7) $A = 5000(1.07)^{10} \approx 5000 \times 1.967 = \$9,835$.
- 9) **Choice D is correct.** (8.EE.1) Divide coefficients: $\frac{4}{2} = 2$. Divide powers: $\frac{x^5}{x^3} = x^2$. Result: $2x^2$.
- 10) **The correct answer is $\frac{1}{3}$.** (8.G.1) Let $x = 0.\bar{3}$. Then $10x = 3.\bar{3}$, so $9x = 3$ and $x = \frac{1}{3}$.
- 11) **Choice D is correct.** (8.EE.2) $125 = 5^3$. The other options are not perfect cubes.
- 12) **Choice D is correct.** (8.EE.4) Multiply: $6 \times 3 = 18 = 1.8 \times 10^1$. Add exponents: $10^{2+4} = 10^6$. Combine: $1.8 \times 10^1 \times 10^6 = 1.8 \times 10^7$.
- 13) **Choice C is correct.** (8.EE.5) Store A: $8/4 = 2$ per notebook. Store B: $12/5 = 2.40$ per notebook. Store A is cheaper.
- 14) **Choice D is correct.** (8.EE.6) Substitute $(3, 5)$: $5 = \frac{1}{3}(3) + k$, so $5 = 1 + k$, thus $k = 4$.
- 15) **The correct answer is $(6, 7)$.** (8.NS.2) $6^2 = 36$ and $7^2 = 49$. Since $36 < 45 < 49$, we have $6 < \sqrt{45} < 7$.
- 16) **Choice D is correct.** (8.EE.7) Subtract $3x$: $7 = 2$, which is false. No value of x satisfies this equation.
- 17) **Choice D is correct.** (8.EE.8) Set the expressions equal: $\frac{1}{3}x + 2 = -\frac{2}{3}x + 5$. Add $\frac{2}{3}x$ to both sides: $x + 2 = 5$, so $x = 3$. Then $y = \frac{1}{3}(3) + 2 = 3$. Solution: $(3, 3)$.
- 18) **Choice C is correct.** (8.EE.7) When dividing (or multiplying) both sides of an inequality by a negative number, the inequality symbol must flip to preserve the truth of the statement. For example, if $2 > 1$ (true), multiplying by -1 gives $-2 > -1$ (false), so we flip to get $-2 < -1$ (true).
- 19) **Choice A is correct.** (8.EE.7) Trinomial $x^2 + 9x + 20$ factors as $(x + 4)(x + 5)$ (multiply: $4 \cdot 5 = 20$, add: $4 + 5 = 9$).
- 20) **Choice B is correct.** (8.F.1) For each hour parked, the cost is uniquely determined: $c = 0.50h$. This satisfies the definition of a function.
- 21) **The correct answer is A, C.** (8.NS.1) $\sqrt{169} = 13$ is rational (perfect square). The repeating decimal $0.777\ldots = \frac{7}{9}$ is rational. The other values are irrational: $\sqrt{170}$ (non-perfect square), 2π (irrational multiple of π), and $\sqrt{2} + 1$ (irrational plus rational is irrational).
- 22) **Choice A is correct.** (8.F.2) β slope: $(6 - 12)/2 = -3$. Using $(0, 12)$: $\beta(x) = -3x + 12$. Same as α .
- 23) **Choice A is correct.** (8.F.3) A nonlinear function does not form a straight line. This graph shows a parabola (curved shape), characteristic of a quadratic or nonlinear function.
- 24) **Choice B is correct.** (8.F.5) The change in slope (from $3/4$ to $(4.5 - 3)/(7 - 4) = 0.5$ per meter) indicates a change in the rate structure. Option B explains why: different geological layers can cost differently. A is wrong because the slope changes, C is wrong because the line continues, and D is wrong because the slope stays positive.
- 25) **Choice B is correct.** (8.G.2) If the quadrilaterals are congruent with P corresponding to T, then $\angle P$ must equal $\angle T$. Since $75^\circ \neq 85^\circ$, the claim of congruence is false.
- 26) **Choice A is correct.** (8.G.5) Co-interior angles are supplementary: $(2x + 15) + (x + 45) = 180$, so $3x + 60 = 180$, giving $x = 40$.
- 27) **Choice A is correct.** (8.G.6, 8.G.7) Using $(\sqrt{8})^2 + (\sqrt{8})^2 = c^2$ gives $8 + 8 = 16$, so $c = \sqrt{16} = 4$.



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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!



2 Extra Online Practice Tests Included!

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

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PRACTICE. PREPARE. SUCCEED.



Testinar

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