

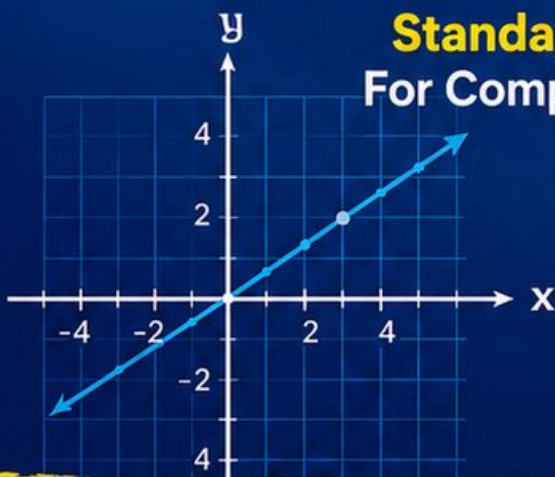
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Utah
RISE

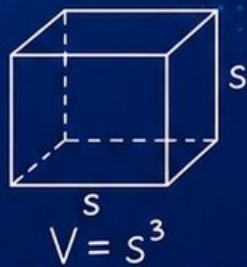
Grade 8

MATH

PRACTICE TESTS

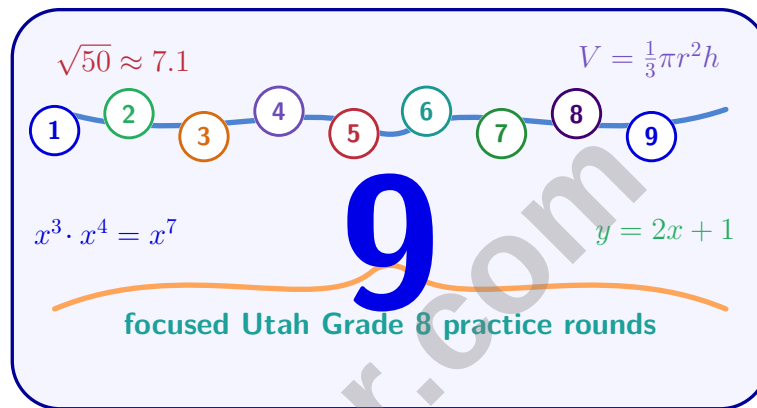
Standards Aligned Problem Solving
For Comprehensive Assessment Programs

$$2x + 3y = 12$$
$$y = mx + b$$

9 PRINTED
TESTS2 ONLINE
TESTSUse these **two additional online practice tests** for extra review after the printed tests in this book.

9 Utah RISE Grade 8 Math Practice Tests

Standards-Aligned Utah Prep for Equations, Transformations, Volume, and Data



Nine 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!

Nine focused rounds for sharper RISE math thinking

This book gives you nine 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 nine-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?

Nine RISE tests, 360 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real and irrational numbers, integer exponents, scientific notation, equations, and careful reading.
Tests 4–6	Slope, systems of equations, functions, inequalities, transformations, congruence, and similarity.
Tests 7–9	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
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

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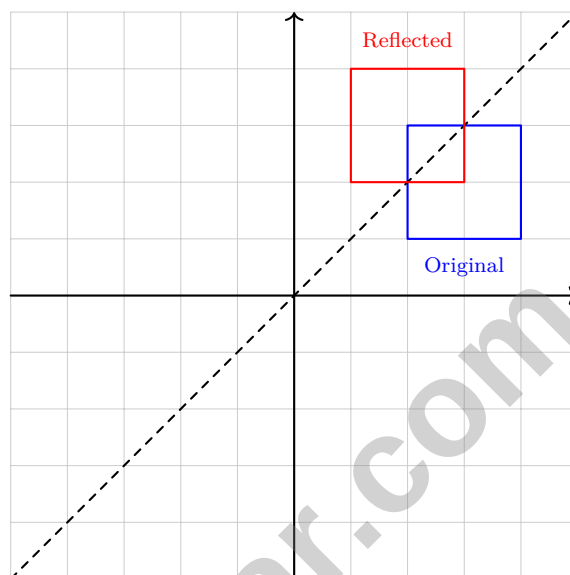
1) Which is the best estimate of 2π ?

☐ A. 3.28

☐ C. 6.28

☐ B. 5.14

☐ D. 8.56



2)

The blue rectangle is reflected across the dashed line. Which line of reflection is shown?

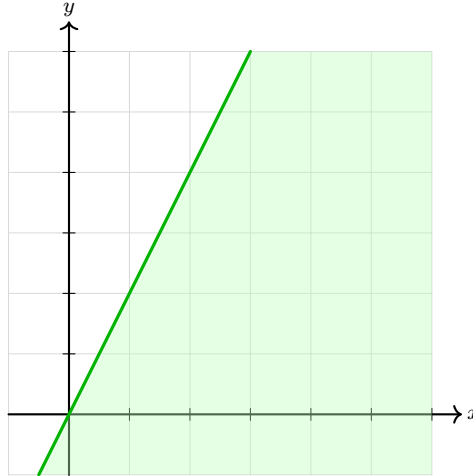
☐ A. $y = x$

☐ C. $y = x - 3$

☐ B. $y = -x$

☐ D. $y = 2x$





3)

The graph shows which inequality?

☐ A. $y > 2x$

☐ B. $y < 2x$

☐ C. $y \geq 2x$

☐ D. $y \leq 2x$

- 4) A young professional has debt: credit card \$1,500 at 18% APR, student loan \$10,000 at 4% APR. In one year with no payments, approximately how much additional interest accumulates?

☐ A. \$270

☐ B. \$400

☐ C. \$670

☐ D. \$1,770



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5) Which law does this diagram represent?

Same base $\rightarrow$ Add the exponents

$$x^m \cdot x^n = x^{m+n}$$

Example: $2^3 \times 2^4 = 2^{3+4} = 2^7$
Same base required.

Which of the following uses this same law?

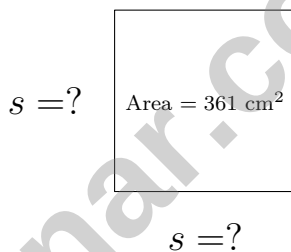
☐ A. $(5a)^2 = 25a^2$

☐ C. $2^4 \cdot 2^5 = 2^9$

☐ B. $\frac{p^7}{p^3} = p^4$

☐ D. $(y^3)^4 = y^{12}$

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



☐ A. 38 cm

☐ C. 76 cm

☐ B. 57 cm

☐ D. 152 cm

7) $(4.8 \times 10^{-2}) \times (1.25 \times 10^2) = ?$

☐ A. 0.6×10^0

☐ C. 6×10^0

☐ B. 6×10^{-1}

☐ D. 6×10^{-4}



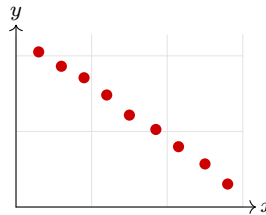
1) Which system below can be solved by the elimination shown: adding the two equations to eliminate y ?

☐ A. $3x + y = 10$ and $2x + y = 7$

☐ C. $x - 2y = 3$ and $2x + y = 5$

☐ B. $4x + 3y = 12$ and $2x - 3y = 6$

☐ D. $5x + 2y = 11$ and $3x + y = 6$



2)

A scatter plot shows the relationship between exercise frequency (days per week) and resting heart rate (bpm). The points form a clear downward trend with minimal scatter around the trend line. A student can infer that:

☐ A. Exercise causes higher heart rates

☐ C. Exercise and heart rate are unrelated

☐ B. More exercise is associated with lower resting heart rate

☐ D. Heart rate determines exercise frequency



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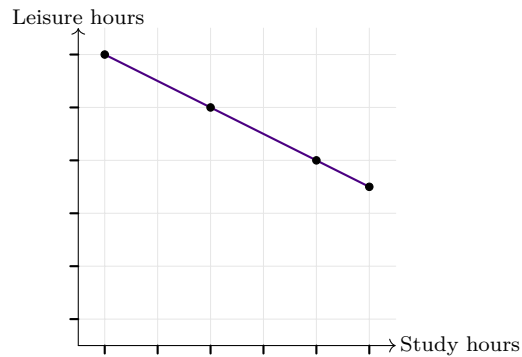
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3)

The equation $y = -0.5x + 5$ represents the relationship between study hours and available leisure time. What is the x -intercept (when leisure time equals 0)?

- ☐ A. 5
☐ B. 20

- ☐ C. 10
☐ D. 50

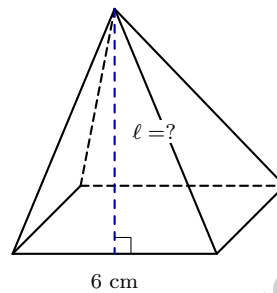
4) A pyramid has a triangular base with area 18 cm^2 . If its height is doubled and the base area stays the same, the volume becomes 240 cm^3 . What was the original height?

- ☐ A. 10 cm
☐ B. 15 cm

- ☐ C. 20 cm
☐ D. 30 cm



- 1) A function machine applies the rule: “Divide the input by 2 and subtract 1.” What is the output when the input is 10?

☐ A. 5☐ C. 3☐ B. 9☐ D. 4

2)

A square pyramid has a square base with side 6 cm and total surface area 96 cm^2 . Find the slant height ℓ .

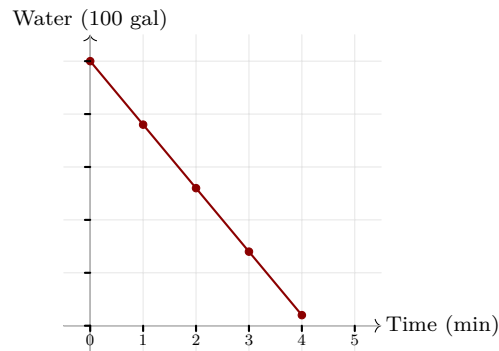
☐ A. 4 cm☐ C. 6 cm☐ B. 5 cm☐ D. 8 cm

- 3) A cylinder has volume 1570 cm^3 and diameter 20 cm. What is its height? (Use $\pi \approx 3.14$.)

☐ A. 2.5 cm☐ C. 5 cm☐ B. 10 cm☐ D. 15 cm

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4)

A water tank drains following the model $w = 500 - 120t$, where w is water remaining in gallons and t is time in minutes. What is the practical meaning of the -120 coefficient?

- ☐ A. 120 gallons of water remain at time 0 ☐ C. The tank holds 500 gallons total
☐ B. 120 gallons drain per minute ☐ D. The tank is empty after 12 minutes

5) $S(m) = 500 + 25m$ and table $(0, \$600)$, $(3, \$675)$, $(6, \$750)$. Which starts with more money?

m	0	3	6
Table function	\$600	\$675	\$750

- ☐ A. S ☐ C. Both same.
☐ B. Table function ☐ D. Cannot be determined.

6) Solve for m : $\frac{m}{5} - 2 = 3$. Show all work and verify your solution.



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 C is correct.** **(8.NS.2)** $2\pi \approx 2 \times 3.14 = 6.28$. Distractor A (3.28) is $\pi + \pi/2$. Distractor B (5.14) is $\pi + 2$. Distractor D (8.56) is 2×4.28 . All common calculation errors.
- 2) **Choice A is correct.** **(8.G.1)** Reflecting across $y = x$ swaps coordinates: $(x, y) \rightarrow (y, x)$. The vertex $(2, 1) \rightarrow (1, 2)$, which is part of the reflected rectangle shown.
- 3) **Choice D is correct.** **(8.G.8)** SOLID line (includes boundary) and shading BELOW the line indicates $y \leq 2x$.
- 4) **Choice C is correct.** **(8.G.7)** Credit card interest: $1500 \times 0.18 = \$270$. Student loan interest: $10000 \times 0.04 = \$400$. Total: $\$270 + \$400 = \$670$.
- 5) **Choice C is correct.** **(8.EE.1)** The diagram shows the product rule (add exponents). (C) uses it: $2^{4+5} = 2^9$. (A) is power of product, (B) is quotient rule, (D) is power of power.
- 6) **Choice C is correct.** **(8.EE.2)** Area = 361, so $s = \sqrt{361} = 19$ cm. Perimeter = $4s = 4 \times 19 = 76$ cm.
- 7) **Choice C is correct.** **(8.EE.4)** Multiply coefficients: $4.8 \times 1.25 = 6$. Add exponents: $10^{-2+2} = 10^0 = 1$. Result: $6 \times 10^0 = 6 \times 1 = 6$.
- 8) **Choice D is correct.** **(8.EE.6)** The y -intercept is the constant term b in $y = mx + b$, which is 4.
- 9) **Choice A is correct.** **(8.EE.7)** Distribute: $-3x + 6 = 9$. Subtract 6: $-3x = 3$. Divide by -3 : $x = -1$.
- 10) **Choice A is correct.** **(8.EE.7)** Dividing by -5 requires flipping: $x \geq -3$, not $x \leq -3$.
- 11) **Choice C is correct.** **(8.EE.7)** FOIL: $(3x + 4)(2x - 1) = 6x^2 - 3x + 8x - 4 = 6x^2 + 5x - 4$.
- 12) **Choice A is correct.** **(8.F.2)** Slope: $(5 - 3)/(2 - 1) = 2$. From $(1, 3)$: $3 = 2(1) + b \Rightarrow b = 1$. So $y = 2x + 1$.
- 13) **Choice C is correct.** **(8.F.3)** $y = x^2 + 7$ has x squared, making it nonlinear (quadratic). The other three are linear functions in the form $y = mx + b$.
- 14) **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.
- 15) **Choice B is correct.** **(8.G.5)** Sum: $(2m + 5) + (3m - 10) + (m + 35) = 180 \Rightarrow 6m + 30 = 180 \Rightarrow m = 25^\circ$. Thus angle $A = 2(25) + 5 = 55^\circ$.
- 16) **Choice C is correct.** **(8.G.7)** Two semicircles form one complete circle. Area = $\pi r^2 = 3.14 \times 3^2 = 28.26$ m².
- 17) **Choice C is correct.** **(8.EE.5)** Unit price $k = \frac{9.60}{8} = 1.20$ dollars per song.
- 18) **Choice D is correct.** **(8.EE.8)** The second equation is exactly 2 times the first: $4x - 2y = 10$ is $2(2x - y = 5)$. They represent the same line, so there are infinitely many solutions.
- 19) **Choice A is correct.** **(8.F.1)** The range is the set of all outputs (y -coordinates): $-1, 2, 5, 8$.
- 20) **The correct answer is -2 .** **(8.EE.3)** With the same coefficient, the smallest power has the smallest exponent: -2 .
- 21) **The correct answer is A, C.** **(8.G.6, 8.G.7)** A: $6^2 + 8^2 = 36 + 64 = 100 = 10^2$ ✓. C: $8^2 + 15^2 = 64 + 225 = 289 = 17^2$ ✓. B: $49 + 64 = 113 \neq 81$. D: $100 + 225 = 325 \neq 400$. E: $25 + 49 = 74 \neq 81$.
- 22) **The correct answer is 3.** **(8.NS.1)** Each radicand is between 4 and 9, so each square root is between 2 and 3.
- 23) **The correct answer is $\frac{53}{90}$.** **(8.G.1)** Set $x = 0.5\bar{8} = 0.5888\dots$. Then $10x = 5.\bar{8}$ and $100x = 58.\bar{8}$. Subtracting: $90x = 53$, so $x = \frac{53}{90}$.
- 24) **Choice A is correct.** **(8.F.4)** Initial altitude is 200 cm (intercept). Altitude decreases by 5 cm per second (negative slope). Equation: $h = -5t + 200$.
- 25) **Choice C is correct.** **(8.F.5)** From week 3 to 5, the price jumps from \$1 to \$4 in 2 weeks, a rate of \$1.50/week. All other segments are flat.
- 26) **Choice D is correct.** **(8.G.3)** Reverse the translation: $(x, y) \rightarrow (x - 3, y + 5)$. So $(4, -2) \rightarrow (4 - 3, -2 + 5) = (1, 3)$.
- 27) **Choice A is correct.** **(8.G.8)** $d = \sqrt{2^2 + 3^2} = \sqrt{4 + 9} = \sqrt{13}$. Check: (B) $\sqrt{9 + 9} = \sqrt{18}$; (C) $\sqrt{4 + 4} = \sqrt{8}$; (D) $\sqrt{16 + 1} = \sqrt{17}$.
- 28) **Choice B is correct.** **(8.SP.4)** Equal row sizes do not imply independence. High-income voters vote yes at $\frac{150}{250} = 0.60$, while low-income at $\frac{120}{250} = 0.48$. Different conditional frequencies reveal association despite balanced margins.



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 9 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

CONFIDENCE TODAY, SUCCESS TOMORROW!

GRADE

8

Help your child excel in math with **9 full-length Grade 8 practice tests** designed to reflect real test formats and cover all key math standards.

With a wide variety of questions and real-world applications, this book builds the skills and confidence students need to achieve their best!



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 | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
| ✓ Functions | ✓ Inequalities |
| ✓ Geometry | ✓ Data Analysis & Graphing |
| ✓ Measurement & Data | ✓ And More! |



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Better **Results**.