

7

Utah
RISE

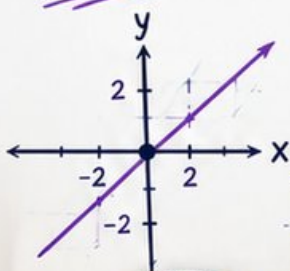
GRADE 8

MATH

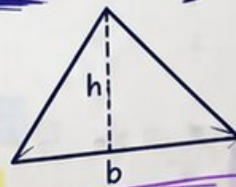
PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

$$y = mx + b$$

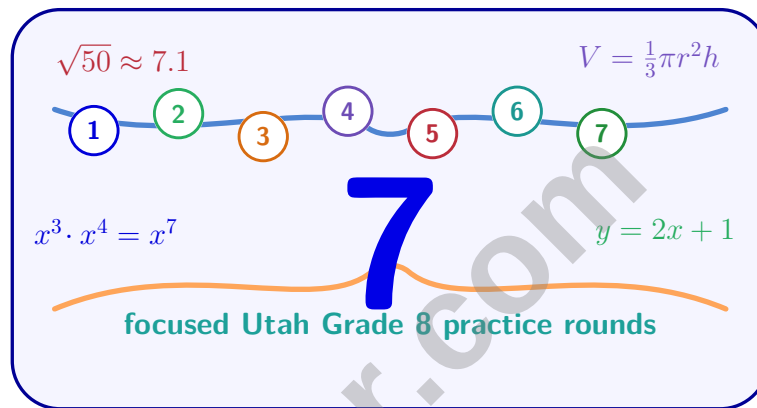
BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!Practice
Today
Succeed
Tomorrow!

$$A = \frac{1}{2}bh$$

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

7 Utah RISE Grade 8 Math Practice Tests

Clear Grade 8 RISE Rounds for Reasoning, Graphs, and Geometry



Seven 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!

Seven focused rounds for sharper RISE math thinking

This book gives you seven 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 seven-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?

Seven RISE tests, 280 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.
Test 7	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) A square pyramid has a base with side 8 cm. If the volume is 192 cm^3 , what is the height?

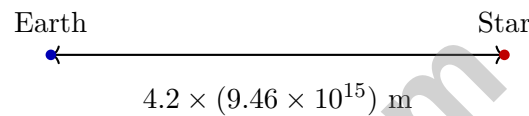
☐ A. 6 cm

☐ C. 12 cm

☐ B. 9 cm

☐ D. 18 cm

2) A light-year is the distance light travels in one year, approximately 9.46×10^{15} meters. If a star is 4.2 light-years away, how many meters is it? (Express in scientific notation.)



☐ A. $39.7 \times 10^{14} \text{ m}$

☐ C. $3.97 \times 10^{16} \text{ m}$

☐ B. $4.2 \times 10^{15} \text{ m}$

☐ D. $2.25 \times 10^{16} \text{ m}$

3) A function has the first differences: 4, 4, 4, 4. Is the function linear?

☐ A. No, because differences are all the same

☐ C. No, because only x -values can be constant

☐ B. Yes, constant first differences mean linear

☐ D. Yes, only if the starting value is positive

4) Two parallel lines cut by a transversal have alternate exterior angles measuring $(7k - 3)^\circ$ and $(5k + 17)^\circ$. Find k .

☐ A. 8

☐ C. 12

☐ B. 10

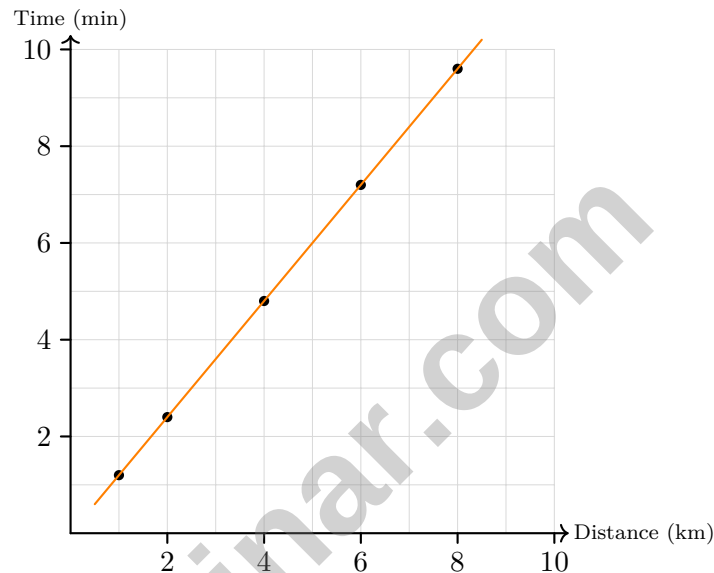
☐ D. 14



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- 5) A decorative shape consists of a circle (radius 5 cm) with four congruent right triangles arranged around it (each with legs 3 cm and 4 cm). What is the total area? Use $\pi \approx 3.14$.

- ☐ A. 66.5 cm^2 ☐ C. 102.5 cm^2
☐ B. 90.5 cm^2 ☐ D. 147.5 cm^2



6)

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



7) Solve: $2x - 6 \leq 10$

☐ A. $x \leq 8$

☐ C. $x \leq 2$

☐ B. $x \geq 8$

☐ D. $x \geq 2$

8) Solve for x : $3(x + 2) - 5 = x + 7$. Show all steps and verify your solution.

9) An angle is 25° more than its complement. Find the measure of the complement.

☐ A. 25°

☐ C. 57.5°

☐ B. 32.5°

☐ D. 90°

10) In a regular quadrilateral (square), what is the measure of each interior angle?

☐ A. 135°

☐ C. 120°

☐ B. 60°

☐ D. 90°

11) A plant height model is $h = 3t + 8$, where h is height in inches and t is time in weeks. If the data only covers weeks 1 through 10, would predicting the height at week 15 be interpolation or extrapolation?

☐ A. Interpolation, because 15 is within the range

☐ C. Interpolation, because we can always predict

☐ B. Neither, because the model breaks down

☐ D. Extrapolation, because 15 is outside the data range



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- 1) Two data sets both have 5 values and mean = 10: Set P: {8, 9, 10, 11, 12} Set Q: {1, 5, 10, 15, 19} Which set has the larger MAD?

☐ A. Set P ☐ C. Equal MAD
☐ B. Set Q ☐ D. Cannot compare

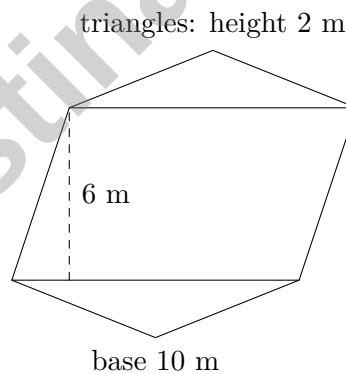
- 2) What is the slope of the line $y = -2x + 5$?

☐ A. -2 ☐ C. $-\frac{1}{2}$
☐ B. 2 ☐ D. 5

- 3) Which equation has the solution $x = 2$?

☐ A. $3x + 4 = 11$ ☐ C. $2x + 3 = 7$
☐ B. $5x - 1 = 12$ ☐ D. $4x - 2 = 10$

- 4) A composite figure has a parallelogram base (base 10 m, height 6 m) with two congruent triangles placed on opposite sides (base 10 m, height 2 m each). What is the total area?



☐ A. 40 m^2 ☐ C. 80 m^2
☐ B. 60 m^2 ☐ D. 100 m^2



5) A bacterium is 9×10^{-6} meters long. A virus is 3×10^{-8} meters long. The bacterium is how many times longer?

☐ A. 3×10^3

☐ C. 3×10^2

☐ B. 3×10^{-2}

☐ D. 6×10^{-6}

6) Solve:
$$\begin{cases} x + 2y = 10 \\ 3x - 2y = 2 \end{cases}$$

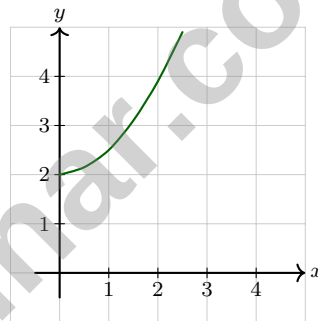
☐ A. $(1, \frac{9}{2})$

☐ C. $(3, \frac{7}{2})$

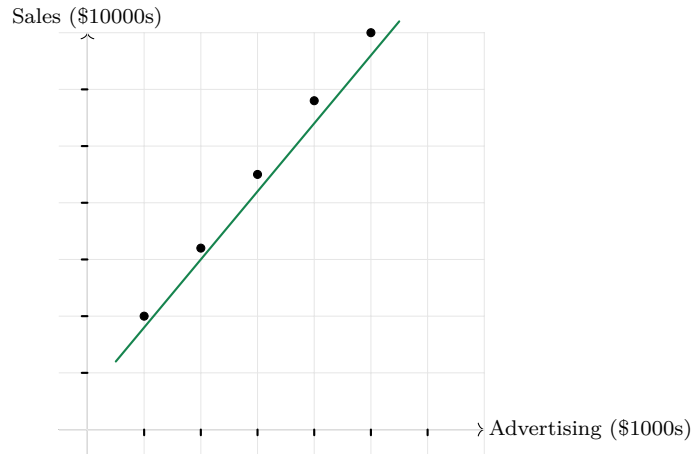
☐ B. $(2, 4)$

☐ D. $(4, 3)$

7) Which graph shows a NONLINEAR function?

☐ A. No, it passes through $(0, 2)$ ☐ C. No, the relationship is still linear overall☐ B. Yes, the curve increases at an accelerating rate☐ D. Yes, but only if $y > x$ 

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1)

A business tracks advertising spend vs. sales. The model is $S = 1.1a + 0.8$, where S is sales and a is advertising. What does the 0.8 intercept tell you?

- ☐ A. Sales decrease by \$0.80 per \$1000 ad spend
 ☐ C. The company spends \$800 on advertising initially
☐ B. Base sales of \$8000 occur with zero ad spend
 ☐ D. Maximum possible sales are \$8000

2) A library tracks 420 patrons by age and material preference:

	Books	Digital	Total
Youth (< 18)	140	70	210
Adult (≥ 18)	140	70	210
Total	280	140	420

Is there an association between age group and material preference? Why or why not?

- ☐ A. Yes; youth prefer books at $\frac{140}{210} = \frac{2}{3}$ while adults also do at $\frac{140}{210} = \frac{2}{3}$.
 ☐ C. No; both groups prefer books at identical relative frequencies.
☐ B. Yes; youth prefer books more than adults.
 ☐ D. No; the total for books (280) exceeds digital (140).



3) Four scatter plots are shown with different correlation patterns. Which plot would be most useful for predicting the value of one variable given the other?

- ☐ A. Weak positive correlation with many outliers
- ☐ B. Strong positive correlation with minimal scatter
- ☐ C. No correlation with random scatter
- ☐ D. Perfect nonlinear association

4) A fair coin is flipped and a fair die is rolled. What is the probability of getting tails AND rolling a 5 or 6?

- ☐ A. $\frac{1}{6}$
- ☐ B. $\frac{1}{4}$
- ☐ C. $\frac{2}{18}$
- ☐ D. $\frac{2}{6}$

5) A balloon starts at 300 meters and descends at 2 meters per second. What is the slope of the height model?

6) Which statement is false?

- ☐ A. Every whole number is rational
- ☐ B. No irrational number can be written as a fraction
- ☐ C. $\sqrt{9}$ is rational
- ☐ D. π is rational



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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 B is correct.** (8.G.9) $192 = \frac{1}{3} \times 64 \times h \Rightarrow h = \frac{192 \times 3}{64} = \frac{576}{64} = 9$ cm.
- 2) **Choice C is correct.** (8.EE.4) Multiply: $4.2 \times (9.46 \times 10^{15}) = (4.2 \times 9.46) \times 10^{15} \approx 39.7 \times 10^{15} = 3.97 \times 10^{16}$ m.
- 3) **Choice B is correct.** (8.F.3) A function is linear if and only if its first differences are constant. Since all differences equal 4, this function is linear.
- 4) **Choice B is correct.** (8.G.5) Alternate exterior angles are congruent: $7k - 3 = 5k + 17 \Rightarrow 2k = 20 \Rightarrow k = 10$.
- 5) **Choice C is correct.** (8.G.7) Circle area = $\pi r^2 = 3.14 \times 5^2 = 78.5$ cm². Each triangle area = $\frac{1}{2} \times 3 \times 4 = 6$ cm². Four triangles = 24 cm². Total = $78.5 + 24 = 102.5$ cm².
- 6) **Choice B is correct.** (8.SP.2) Points nearly aligned on the line indicates high correlation, small residuals, and a strong linear model.
- 7) **Choice A is correct.** (8.EE.7) Add 6: $2x \leq 16$. Divide by 2: $x \leq 8$.
- 8) **The correct answer is $x = 3$.** (8.EE.7) Distribute the 3: $3x + 6 - 5 = x + 7$. Simplify: $3x + 1 = x + 7$. Subtract x from both sides: $2x + 1 = 7$. Subtract 1 from both sides: $2x = 6$. Divide by 2: $x = 3$. Verify: $3(3+2) - 5 = 3(5) - 5 = 15 - 5 = 10$ and $3 + 7 = 10$ ✓.
- 9) **Choice B is correct.** (8.G.7) Let the complement be x . Then $(x+25)+x = 90 \Rightarrow 2x+25 = 90 \Rightarrow 2x = 65 \Rightarrow x = 32.5^\circ$.
- 10) **Choice D is correct.** (8.G.5) The sum for a quadrilateral is $(4-2) \times 180 = 360^\circ$. Each angle of a square is $\frac{360}{4} = 90^\circ$.
- 11) **Choice D is correct.** (8.SP.3) Extrapolation means predicting outside the observed data range. Since data covers weeks 1–10, week 15 requires extrapolation.
- 12) **Choice B is correct.** (8.NS.2) Option B specifies distinct positions (first position vs second position), so the order in which students are arranged matters—this is a permutation. Options A, C, and D are selections where order does not matter (combinations): we only care WHO is selected, not the order.
- 13) **Choice A is correct.** (8.EE.8) These lines have the same slope ($\frac{1}{2}$) but different y -intercepts (1 and -3), making them parallel with no intersection.
- 14) **Choice C is correct.** (8.EE.7) FOIL: $(2x+1)(x+3) = 2x^2 + 6x + x + 3 = 2x^2 + 7x + 3$.
- 15) **Choice B is correct.** (8.F.2) A rate: 0.15. B rate: $(80 - 55)/(200 - 100) = 25/100 = 0.25$. Since $0.25 > 0.15$, B is higher.
- 16) **The correct answer is 2.** (8.G.8) The boundary line is $y = -\frac{1}{3}x + 2$, whose y -intercept is 2.
- 17) **Choice A is correct.** (8.F.4) At constant speed with no initial distance, the slope is 60 mph and the intercept is 0. Equation: $d = 60h$.
- 18) **Choice B is correct.** (8.G.2) Congruent regular polygons have equal side lengths. Both octagons have side length 3 inches.
- 19) **Choice A is correct.** (8.G.3) Reverse the translation: $(x, y) \rightarrow (x+6, y-4)$. So $P = (1+6, 8-4) = (7, 4)$.
- 20) **The correct answer is A, B.** (8.EE.6) Options A and B both have slope 4, making them parallel. Option C has slope -4 , option D has slope $\frac{1}{4}$, and option E has slope 2, so none of these match.
- 21) **Choice A is correct.** (8.G.6, 8.G.7) The diagonal is the hypotenuse of a right triangle with legs 8 and 6: $d^2 = 8^2 + 6^2 = 64 + 36 = 100$, so $d = 10$ m.
- 22) **Choice A is correct.** (8.G.8) $d = \sqrt{(8-2)^2 + (13-5)^2} = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$.
- 23) **Choice D is correct.** (8.SP.1) Taller people generally wear larger shoe sizes, forming a clear upward trend. The relationship is positive (both increase together) and reasonably strong.
- 24) **The correct answer is $(-2, 2)$.** (8.G.1) Step 1: Reflect across y -axis: $(2, 5) \rightarrow (-2, 5)$. Step 2: Translate 3 down: $(-2, 5) \rightarrow (-2, 2)$.
- 25) **Choice B is correct.** (8.SP.4) Uninsured full-time = $144 - 108 = 36$. Relative frequency among full-time only: $\frac{36}{144} = \frac{1}{4} = 0.25$. This is row-conditional.
- 26) **Choice A is correct.** (8.G.8) MAD = 0 only when every value equals the mean exactly.
- 27) **Choice A is correct.** (8.G.7) Independent events: $P(H \text{ and } 4) = P(H) \times P(4) = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$.



One Last Encouragement

Hi, Determined Student!

◇ You did meaningful Grade 8 practice. That matters because confidence is built through action, not waiting until everything feels easy. This broad and demanding book gave you seven strong Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** Carry this with you: you can learn hard things by breaking them into steps, asking good questions, and reviewing with honesty. ★

Take This With You

- **You Can Start:** Even when the problem looks big.
- **You Can Adjust:** When the first method is not enough.
- **You Can Learn:** From every corrected mistake.
- **You Can Improve:** One practice session at a time.

Grade 8 test-day tip: Walk into test day ready to think, not ready to be perfect. Thinking clearly is the goal.

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 SUCCEED TOMORROW!

Give your child the confidence and skills they need with **7 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!

GRADE 8

Practice
Today
Succeed
Tomorrow!

Algebra

Geometry

Statistics

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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