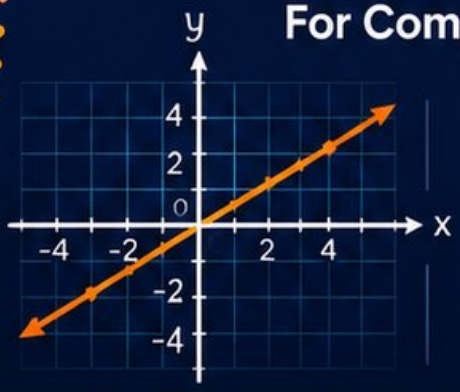
8 Utah RISE GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$A = \pi r^2$
$C = 2\pi r$
$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3} b^2 h$

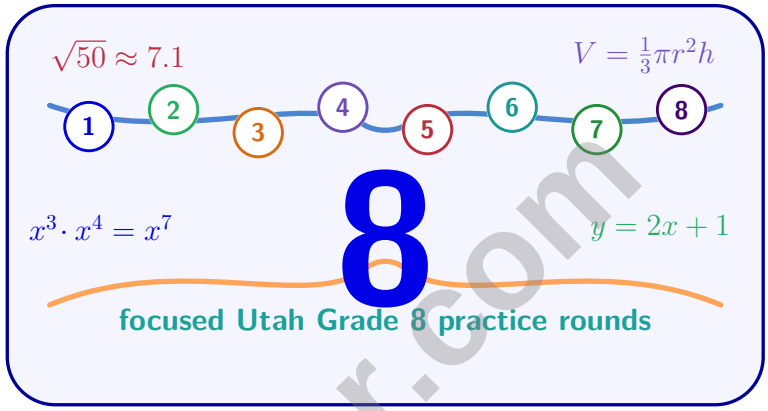
8 PRINTED TESTS

2 ONLINE TESTS

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

8 Utah RISE Grade 8 Math Practice Tests

Utah Grade 8 Review for Functions, Geometry, Statistics, and Models



Eight 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!

Eight focused rounds for sharper RISE math thinking

This book gives you eight 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.

How to Use This Book

An eight-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?

Eight RISE tests, 320 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 7–8	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.

Table of Contents

1) Which table represents a NONLINEAR function?

x	0	1	2	3
y	1	2	4	8

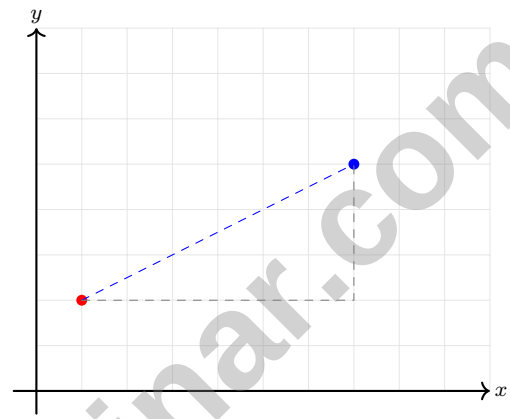
☐ A. No, y increases

☐ B. Yes, the first differences are not constant

☐ C. Yes, the y-values are doubling

☐ D. No, the x-values are equally spaced

2) Two vertices of a rectangle are at $(1, 2)$ and $(7, 5)$. What is the length of the diagonal connecting these two vertices?



☐ A. $\sqrt{45}$

☐ B. 9

☐ C. 10

☐ D. 13

3) A student incorrectly calculates the relative frequency of vegetarians among age 18–40 as $\frac{84}{112}$ instead of $\frac{84}{196}$. What error did the student make?

☐ A. Used the column total instead of the row total.

☐ B. Used the grand total instead of the row total.

☐ C. Used the column total instead of the grand total.

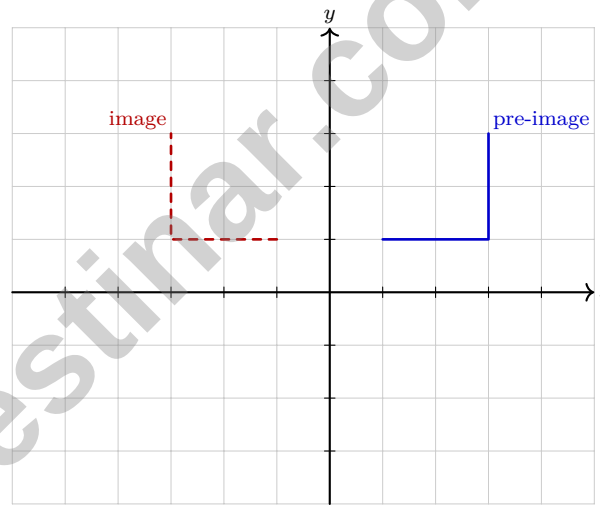
☐ D. Forgot to convert to a percentage.

4) An event coordinator needs to select a chairperson from 4 candidates, a secretary from 5 candidates, and a treasurer from 3 candidates. How many different leadership teams can be formed?

☐ A. $4 + 5 + 3 = 12$
☐ B. $4 \times 5 \times 3 = 60$
☐ C. $5^{4+3} = 5^7$
☐ D. $(4 + 5) \times 3 = 27$

5) Function through $(1, 2)$ and $(4, 14)$. y-intercept?

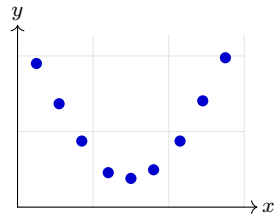
6)



The segment (blue pre-image) is transformed to the red image. Which transformation is applied?

☐ A. Reflection across the y-axis
☐ B. Rotation 180°
☐ C. Translation left 2
☐ D. Reflection across $y = x$

7)



A scatter plot of outdoor temperature (°C) versus energy consumption (kWh) for a city shows a U-shaped curve: energy use is high on very cold days, lower on mild days, and high again on very hot days. This pattern violates the assumption of:

☐ A. Random data collection
☐ B. Linear (straight-line) relationship
☐ C. Positive correlation always
☐ D. No outliers in the data

8) A die shows 6 faces numbered 1 through 6. What is the probability of rolling an even number?

☐ A. $\frac{1}{6}$
☐ B. $\frac{1}{2}$
☐ C. $\frac{2}{3}$
☐ D. $\frac{1}{3}$

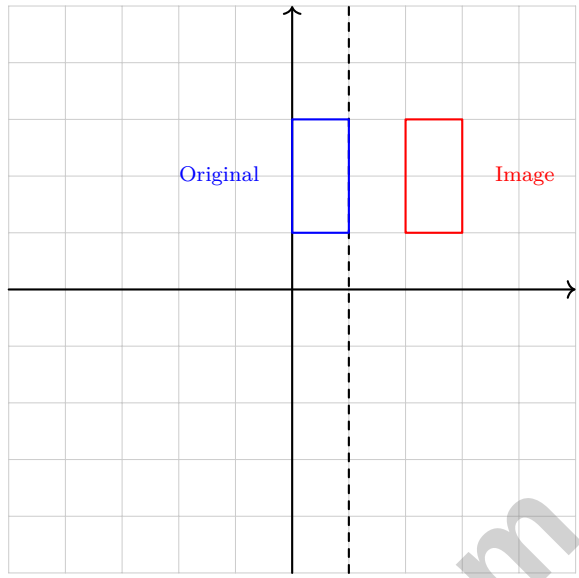
9) Why can the repeating decimal $0.\overline{142857}$ be written as a fraction?

☐ A. Because it has a finite number of digits
☐ B. Because its digits form a perfect square
☐ C. Because it is between 0 and 1
☐ D. Because the decimal pattern repeats

10) Which equals $0.\overline{36}$?

☐ A. $\frac{36}{100} = \frac{9}{25}$
☐ B. $\frac{6}{10}$
☐ C. $\frac{36}{90}$
☐ D. $\frac{36}{99} = \frac{4}{11}$

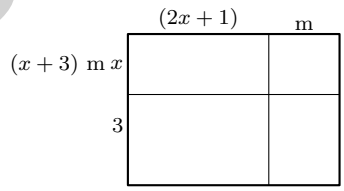
1)



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. $(3, 2)$

2) A garden is shaped like a rectangle with length $(2x + 1)$ m and width $(x + 3)$ m. What is its area in square meters?



☐ A. $2x^2 + 7x + 3$
☐ B. $2x^2 + 3x + 7$
☐ C. $3x^2 + 4x + 3$
☐ D. $2x^2 + 6x + 3$

3) A rectangle's length is 4 cm more than its width. If the perimeter is 32 cm, what is the length?

4) $S_1(w) = 20w$ and S_2 at $(0, 50)$, $(1, 56)$. After 4 weeks, which has more?

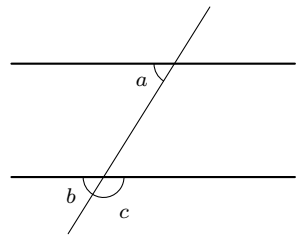
☐ A. S_1
☐ B. S_2
☐ C. Both same.
☐ D. Cannot be determined.

5) A line passing through $(0, -3)$ and $(2, 1)$ has shading above it. What is the slope of the boundary line?

6) A student is given the equation $y = 5x+8$ and claims the slope is 8 and the y-intercept is 5. What is the student's error?

☐ A. The student reversed the slope and intercept.
☐ B. The student added slope and intercept incorrectly.
☐ C. The student forgot to simplify the equation.
☐ D. The student mixed up x and y values.

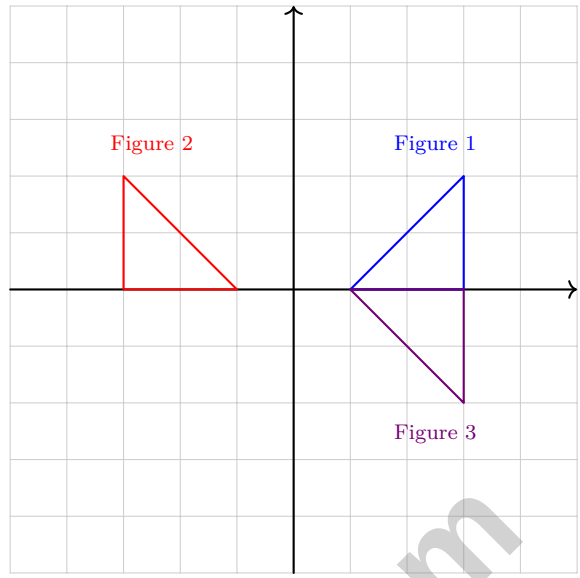
1) Two parallel lines are cut by a transversal. If angle $a = 52°$, and angles a and b are corresponding angles, what is angle c if it is supplementary to angle b?



☐ A. 52°
☐ B. 104°
☐ C. 128°
☐ D. 180°

2) If $\frac{b^n}{b^4} = b^6$, what is the value of n?

3)



If Figure 1 is the original, identify the transformation from Figure 1 to Figure 2 and from Figure 1 to Figure 3.

☐ A. Both are rotations
☐ B. 1→2 is reflection across y-axis; 1→3 is reflection across x-axis
☐ C. Both are translations
☐ D. 1→2 is translation; 1→3 is rotation

4) The inequality $4x - y \geq 8$ is rewritten as $y \leq 4x - 8$. Which region should be shaded?

☐ A. Above the line with a dashed boundary
☐ B. Below the line with a solid boundary
☐ C. Above the line with a solid boundary
☐ D. Below the line with a dashed boundary

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.

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

1) **Choice B is correct.** 8.F.3 The differences between consecutive y-values are $2-1=1$, $4-2=2$, $8-4=4$. These are not constant, which indicates the function is nonlinear.

2) **Choice A is correct.** 8.G.8 $d=\sqrt{(7-1)^2+(5-2)^2}=\sqrt{6^2+3^2}=\sqrt{36+9}=\sqrt{45}$.

3) **Choice A is correct.** 8.SP.4 The correct denominator for row-conditional frequency is the row total (196), not the column total (112). The student selected the column 'Vegetarian' total by mistake.

4) **Choice B is correct.** 8.NS.2 Multiply independent choices: 4 chairperson candidates × 5 secretary candidates × 3 treasurer candidates = 60 different teams.

5) **The correct answer is** -2 **.** 8.F.2 Slope: $(14-2)/(4-1)=4$. From $(1,2)$: $2=4(1)+b \Rightarrow b=-2$.

6) **Choice A is correct.** 8.G.3 Points $(1,1)\to(-1,1)$ and $(3,3)\to(-3,3)$. The y-coordinates are unchanged while x-coordinates negate, confirming reflection across the y-axis.

7) **Choice B is correct.** 8.SP.1 A U-shaped (parabolic) curve is nonlinear. It cannot be well-approximated by a straight line. The relationship changes direction, which is incompatible with simple linear regression assumptions.

8) **Choice B is correct.** 8.G.7 Even numbers on a die: 2, 4, 6. That's 3 out of 6 outcomes, so $P(\text{even})=\frac{3}{6}=\frac{1}{2}$.

9) **Choice D is correct.** 8.NS.1 By definition, any repeating decimal can be expressed as a fraction $\frac{a}{b}$ of two integers. For example, $0.\overline{142857}=\frac{1}{7}$. Terminating decimals also have fractional forms, but the defining property is the repeating pattern, which guarantees rationality.

10) **Choice D is correct.** 8.G.1 Let $x=0.\overline{36}$. Then $100x=36.\overline{36}$. Subtracting: $99x=36$, so $x=\frac{36}{99}=\frac{4}{11}$.

11) **Choice D is correct.** 8.NS.2 Since the square root function is increasing and $20<50$, we have $\sqrt{20}<\sqrt{50}$. The number line shows $\sqrt{20}\approx 4.5$ and $\sqrt{50}\approx 7.1$, confirming $\sqrt{20}<\sqrt{50}$.

12) **Choice B is correct.** 8.G.8 Absolute deviations: $|3-6|=3$, $|5-6|=1$, $|7-6|=1$, $|9-6|=3$. Sum = 8. MAD = $8/4=2$.

13) **Choice D is correct.** 8.EE.1 Negative exponent rule: $6^{-3}=\dfrac{1}{6^3}$.

14) **Choice D is correct.** 8.EE.2 $5^2=25$ and $6^2=36$. Since 35 is between these but closer to 36, $\sqrt{35}\approx 5.92$, closest to 5.8 among the choices.

15) **Choice D is correct.** 8.EE.6 A line through the origin has y-intercept 0. With slope 3, the equation is $y=3x+0$ or $y=3x$.

16) **Choice D is correct.** 8.EE.7 Expand: $3x+3=2x+8$. Subtract $2x$ and 3: $x=5$.

17) **Choice A is correct.** 8.EE.7 Subtract 2: $5x>-10$. Divide by 5: $x>-2$.

18) **Choice C is correct.** 8.G.7 Rectangle area is $20\times 8=160$ m^2. Each circular pool has area $3.14\times 2^2=12.56$ m^2, so two pools have area 25.12 m^2. The remaining area is $160-25.12=134.88$ m^2.

19) **Choice D is correct.** 8.NS.2 $\sqrt{9}=3$, $\sqrt{4}=2$, and $0.5=\frac{1}{2}$ are all rational. $\sqrt{8}=2\sqrt{2}$ is irrational.

20) **Choice D is correct.** 8.G.7 $A=2500(1.06)^3\approx\$2{,}977.54$. Among the choices, \$2,975 is the closest estimate.

21) **Choice D is correct.** 8.EE.3 Divide: $\frac{3\times10^8}{3.4\times10^2}=\frac{3}{3.4}\times10^6\approx 0.88\times10^6=8.8\times10^5\approx 880{,}000$.

22) **The correct answer is B,E.** 8.F.4 Option B is correct because the constant term 35 is the fixed monthly cost. Option E is correct because at $t=0$, $C=0.10(0)+35=35$. The slope is 0.10, so the cost per text is \$0.10, not \$0.35.

23) **Choice C is correct.** 8.EE.4 Multiply coefficients: $1.5\times 2.4=3.6$. Add exponents: $10^{-3+(-2)}=10^{-5}$. Result: 3.6×10^{-5}.

24) **Choice C is correct.** 8.EE.5 Substitute $t=3.5$: $d=12(3.5)=42$ miles. The proportional relationship scales with time.

25) **The correct answer is** 107 **.** 8.G.7 Co-interior angles are supplementary: $x+73=180$, so $x=107°$.

26) **Choice C is correct.** 8.EE.8 The graph shows only one line drawn (or the same line twice). When both equations represent the same line, every point on the line is a solution, giving infinitely many solutions.

27) **The correct answer is** 360 **.** 8.G.9 Base area: $\frac{1}{2}\times 9\times 12=54$ in^2. Volume: $\frac{1}{3}\times 54\times 20=360$ in^3.

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 8 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, SUCCEED TOMORROW!

GRADE 8

Give your child the confidence and skills they need with **8 full-length Grade 8** Math practice tests that mirror real test formats and cover all key math standards. Perfect for building skills, strengthening problem-solving abilities, and achieving 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.