

10 Idaho ISAT

GRADE
8
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

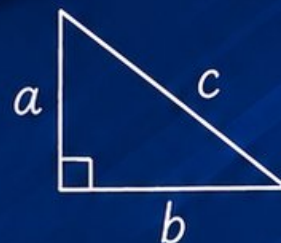
10 PRINTED
TESTS



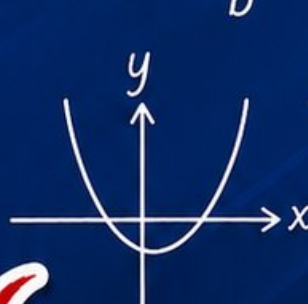
2 ONLINE
TESTS



- ✓ Build Confidence
- ✓ Master Key Math Skills
- ✓ Answer Explanations for Every Question
- ✓ Test-Taking Strategies That Work



$$y = mx + b$$



$$3x - 7 = 2(x + 5)$$
$$x = 17$$

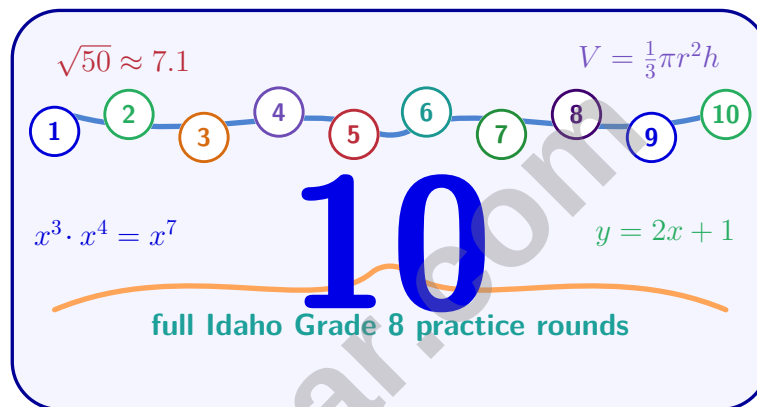


USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.

10 Idaho ISAT Grade 8 Math Practice Tests

Idaho Grade 8 ISAT Practice for careful practice in integer exponents, expressions, equations, scale, surface area, and data analysis



Ten complete 40-question Grade 8 ISAT practice rounds with linear relationships, scientific notation, real numbers, equations, functions, geometry, data analysis, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Idaho Grade 8 Problem Solver!

Ten focused rounds for sharper Idaho ISAT math thinking

This book gives you ten full Grade 8 ISAT math practice tests. Each round is built to help you notice structure, compare quantities, use linear reasoning, handle real numbers, and explain your thinking with care.

Grade 8 standards focus: This page supports **Two-Way Tables for Categorical Data** (8.SP.A.4): Understand that patterns of association can be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. It also prepares you for **Counting Principle and Permutations** (8.NS.A.2): Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions.

Your Idaho 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 ten-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 a proportion, equation, diagram, number line, 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.

Grade 8 standards focus: Keep the routine connected to **Multiplying Linear Expressions and Factoring** (8.EE.C.7): Solve linear equations in one variable. Another recurring target is **Properties of Integer Exponents** (8.EE.A.1): Know and apply the properties of integer exponents to generate equivalent numerical expressions.

Idaho 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?

Ten Idaho ISAT tests, 400 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Linear relationships, integer exponents, scientific notation, real-number reasoning, and careful reading.
Tests 4–6	Expressions, equations, inequalities, transformations, geometry, and multi-step problem solving.
Tests 7–9	Data analysis, probability, mixed review, stamina, and choosing efficient strategies.
Test 10	A final Idaho round to show growth across the whole book.
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.

Grade 8 standards focus: Use these habits while practicing **Surface Area of Prisms, Cylinders, and Pyramids** (8.G.C.9): Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. The same routine helps with **Slope as Rate of Change** (8.EE.B.5): Understand slope as a constant rate of change between two quantities.



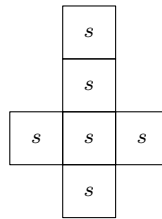
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1) Error Analysis: A student claims $y = 2^x$ is linear because x appears only once. What is wrong with this reasoning?

- ☐ A. The variable x can appear any number of times in a linear function ☐ C. The base 2 is raised to the power x , making it exponential/nonlinear
☐ B. Linear means the coefficient must be 1 ☐ D. The student forgot the constant term



Net of cube

2)

If the net above represents a cube with edge length 3 cm, what is the total surface area of the cube?

- ☐ A. 18 cm^2 ☐ C. 36 cm^2
☐ B. 27 cm^2 ☐ D. 54 cm^2

3) A sphere has a radius of 3 inches. What is its volume in cubic inches? (Use $\pi \approx 3.14$.)

- ☐ A. 56.52 in^3 ☐ C. 169.56 in^3
☐ B. 113.04 in^3 ☐ D. 339.12 in^3

4) Which of the following equals 2?

- ☐ A. $\sqrt[3]{4}$ ☐ C. $\sqrt{16}$
☐ B. $\sqrt[3]{9}$ ☐ D. $\sqrt{4}$



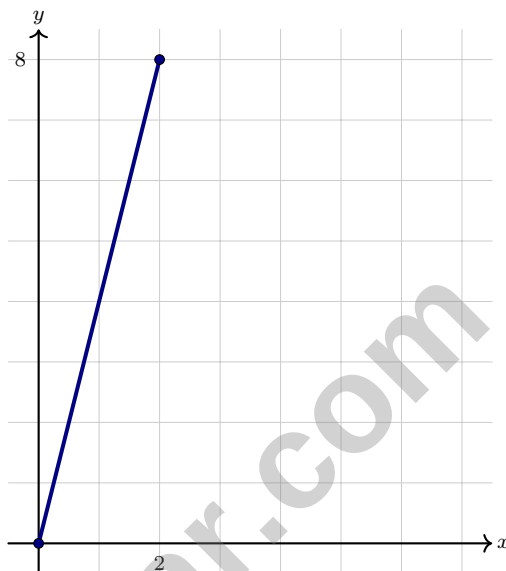
5) $\frac{7.5 \times 10^9}{2.5 \times 10^5} = ?$

☐ A. 10×10^4

☐ B. 3.75×10^4

☐ C. 3×10^4

☐ D. 5×10^{14}



6)

What is the slope of the line?

☐ A. 2

☐ B. 16

☐ C. 8

☐ D. 4

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



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8) A system of two linear equations has no solution. Which statement must be true?

- ☐ A. Both lines have the same y -intercept
- ☐ B. Both slopes are negative
- ☐ C. The lines have the same slope and different y -intercepts
- ☐ D. The lines are perpendicular

9) Which relation is NOT a function?

- ☐ A. $\{(3, 1), (3, 2), (4, 1)\}$
- ☐ B. $\{(1, 5), (2, 6), (3, 7)\}$
- ☐ C. $\{(0, 0), (1, 1), (2, 2)\}$
- ☐ D. $\{(2, 8), (3, 8), (4, 8)\}$

10) Which table represents a linear function?

☐ A.

x	y
1	2
2	4
3	8

☐ B.

x	y
1	5
2	8
3	11

☐ C.

x	y
1	1
2	3
3	6

☐ D.

x	y
1	2
2	5
3	10



- 1) Function $p(x) = \frac{3}{2}x - 4$ and the table for function q : (0, 2), (2, 5), (4, 8). Which has a steeper slope?

x	0	2	4
$q(x)$	2	5	8

- ☐ A. $p(x)$
☐ C. Both have equal slopes.
☐ B. $q(x)$
☐ D. Cannot be determined.
- 2) The elevation rises 500 feet over a horizontal distance of 2000 feet. What is the slope?

- 3) Which pair of equations represents lines with the same slope but different y -intercepts?

- ☐ A. $y = 3x + 2$ and $y = 2x + 3$
☐ C. $y = 4x + 1$ and $y = 4x + 1$
☐ B. $y = -2x + 5$ and $y = -2x - 3$
☐ D. $y = x + 5$ and $y = 2x + 5$
- 4) A figure is dilated by a scale factor of 3. How does the length of each side change?
- ☐ A. Divided by 3
 ☐ C. Unchanged
☐ B. Multiplied by 3
 ☐ D. Increased by 3 inches

- 5) The table shows values of function p :

x	-2	0	2	4
$p(x)$	3	7	11	15

If the pattern continues, what is $p(6)$?

- ☐ A. 17
 ☐ C. 20
☐ B. 19
 ☐ D. 22



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6) If $\sqrt{x}$ is rational and x is a positive integer, what must be true about x ?

- ☐ A. x is odd
☐ B. x is greater than 10
☐ C. x is prime
☐ D. x is a perfect square

7) Convert $0.\overline{7}$ to a fraction. Which step is incorrect?

- ☐ A. Let $x = 0.\overline{7}$.
☐ B. $10x = 7.\overline{7}$.
☐ C. $10x - x = 7.\overline{7} - 0.\overline{7} = 7$ is wrong; should be 0.7.
☐ D. $9x = 7$, so $x = \frac{7}{9}$.

8) Which product is irrational?

- ☐ A. $\sqrt{9} \times \sqrt{4}$
☐ B. $\sqrt{2} \times \sqrt{8}$
☐ C. $2 \times \sqrt{3}$
☐ D. $\sqrt{16} \times \sqrt{25}$

9) Which is the best estimate of $\sqrt{45}$?

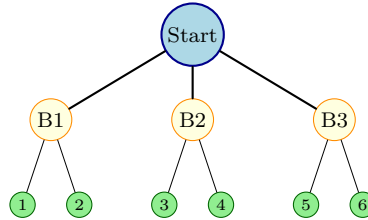
- ☐ A. 5.5
☐ B. 6.0
☐ C. 6.7
☐ D. 9.0

10) A grain of sand has mass 6.4×10^{-5} g. What is this in decimal form?

- ☐ A. 64,000 g
☐ B. 0.0064 g
☐ C. 0.64 g
☐ D. 0.000064 g



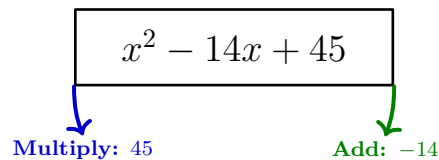
- 1) A tree diagram shows that a choice has 3 branches first, then each branch splits into 2 more branches. How many final outcomes are there?



- ☐ A. $3 + 2 = 5$
☐ C. $3^2 = 9$
☐ B. $3 \times 2 = 6$
☐ D. $2^3 = 8$
- 2) A student creates a table of values for the function $y = 3x - 1$. Find the output when the input is 5.

x	$y = 3x - 1$
0	-1
1	2
5	?

- 3) Factor $x^2 - 14x + 45$.



- ☐ A. $(x - 5)(x - 9)$
☐ C. $(x - 10)(x - 4)$
☐ B. $(x - 15)(x + 1)$
☐ D. $(x - 45)(x + 1)$



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& answers

4) Which rule describes a 270° counterclockwise rotation about the origin?

☐ A. $(x, y) \rightarrow (-y, x)$

☐ C. $(x, y) \rightarrow (-x, -y)$

☐ B. $(x, y) \rightarrow (y, -x)$

☐ D. $(x, y) \rightarrow (x, y)$

5) A student's test score improves by 3 points for every hour of study. What is the slope if hours are on the x -axis?

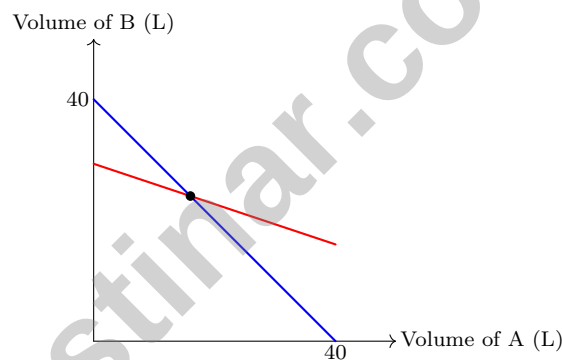
☐ A. $\frac{1}{3}$

☐ C. 6

☐ B. -3

☐ D. 3

6) A juice bar mixes two juices. Juice A is 25% apple. Juice B is 75% apple. The shop wants 40 liters of a 55% apple blend. The graph below shows the relationship between volumes of A and B.



Which point represents the solution?

☐ A. (10, 30)

☐ C. (16, 24)

☐ B. (20, 20)

☐ D. (30, 10)



Idaho ISAT 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 Idaho ISAT practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (8.F.A.3) In $y = 2^x$, x is an exponent (not the variable being exponentiated). This is an exponential function, not linear. Linear requires $y = mx + b$ form.
- 2) **Choice D is correct.** (8.G.C.9) The net shows all 6 faces of a cube. Each face has area $3^2 = 9 \text{ cm}^2$. Total surface area $= 6 \times 9 = 54 \text{ cm}^2$.
- 3) **Choice B is correct.** (8.G.C.9) $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 27 = \frac{4}{3} \times 84.78 = 113.04 \text{ in}^3$.
- 4) **Choice D is correct.** (8.EE.A.2) $\sqrt{4} = 2$. The other choices do not equal 2: $\sqrt[3]{9} \neq 2$, $\sqrt{16} = 4$, and $\sqrt[3]{4} \neq 2$.
- 5) **Choice C is correct.** (8.EE.A.4) Divide coefficients: $7.5 \div 2.5 = 3$. Subtract exponents: $10^{9-5} = 10^4$. Result: 3×10^4 .
- 6) **Choice D is correct.** (8.EE.B.5) Slope $= \frac{8}{2} = 4$. The line passes through (0,0) and (2,8).
- 7) **The correct answer is 10.** (8.EE.A.1) Using the quotient rule, $n - 4 = 6$, so $n = 10$. Verification: $\frac{b^{10}}{b^4} = b^6$.
- 8) **Choice C is correct.** (8.EE.C) For a system to have no solution, the lines must be parallel. This requires the same slope but different y -intercepts.
- 9) **Choice A is correct.** (8.F.A.1) Option A fails the function test: input 3 maps to both 1 and 2. The other options each have unique input-output pairs.
- 10) **Choice B is correct.** (8.F.B.4) Linear functions have constant slope. Option B: slope from 1 to 2 is $\frac{8-5}{1} = 3$; from 2 to 3 is $\frac{11-8}{1} = 3$. Constant, so linear.
- 11) **Choice B is correct.** (8.F.B.5) The highest point on the graph is at the second vertex, (2,3). All other points are lower.
- 12) **The correct answer is 9.** (8.EE.C.7) Let b be the brother's age. The equation is $2b - 4 = 14$. Add 4: $2b = 18$. Divide by 2: $b = 9$.
- 13) **Choice D is correct.** (8.G.A.2) Rotation is a rigid motion that preserves lengths. If two segments are congruent before rotation, they remain congruent after rotation. Both still have their original lengths.
- 14) **Choice A is correct.** (8.G.A.3) Reverse the translation: $(x, y) \rightarrow (x + 6, y - 4)$. So $P = (1 + 6, 8 - 4) = (7, 4)$.
- 15) **Choice B is correct.** (8.G.A.5) Co-interior angles are supplementary; their sum is always 180° .
- 16) **The correct answer is 6.** (8.EE.C.7) Add 5 and divide by 2: $x \geq 6$. The boundary value is 6.
- 17) **Choice B is correct.** (8.G.B.6, 8.G.B.7) From $6^2 + b^2 = 10^2$, we get $36 + b^2 = 100$, so $b = 8$ (scaled 3-4-5 triple).
- 18) **Choice C is correct.** (8.G.B.7) When a transversal cuts two parallel lines, it creates 8 angles: 4 angles of measure 157° (corresponding and vertical angles) and 4 angles of measure 23° (supplements).
- 19) **Choice A is correct.** (8.G.C.9) $V = \frac{1}{3} \times 6.25 \times 9.6 = \frac{60}{3} = 20 \text{ m}^3$.
- 20) **Choice B is correct.** (8.G.B.7) Trapezoid area $= \frac{1}{2}(b_1 + b_2) \times h = \frac{1}{2}(8 + 12) \times 6 = \frac{1}{2} \times 20 \times 6 = 60 \text{ cm}^2$.
- 21) **The correct answer is A,D.** (8.G.B.8) A is correct: P's smaller MAD (3 vs 7) means values cluster more tightly around the mean. D is correct: we are told both have 10 values. B is incorrect: P has less variability. C is not guaranteed by MAD alone, and E is incorrect because both means are equal at 50.
- 22) **Choice D is correct.** (8.G.A.5) The sum for a heptagon is $(7 - 2) \times 180 = 900^\circ$. Each angle is $\frac{900}{7} = 128.57 \dots^\circ$, which rounds to $\approx 129^\circ$.
- 23) **Choice D is correct.** (8.SP.A.3) Check (1,5): $5 = 3(1) + 2 = 5 \checkmark$. Check (2,8): $8 = 3(2) + 2 = 8 \checkmark$.
- 24) **Choice C is correct.** (8.EE.C.7) FOIL: $(3x + 4)(2x - 1) = 6x^2 - 3x + 8x - 4 = 6x^2 + 5x - 4$.
- 25) **Choice B is correct.** (8.F.A.2) Slope $= (8 - 4)/(3 - 1) = 4/2 = 2$.
- 26) **Choice A is correct.** (8.G.B.8) Distance $= \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$ units.
- 27) **Choice D is correct.** (8.SP.A.1) Taller people generally wear larger shoe sizes, forming a clear upward trend. The relationship is positive (both increase together) and reasonably strong.
- 28) **Choice A is correct.** (8.EE.B.5) Option A: slope $= \frac{0 - 3}{2 - 0} = \frac{-3}{2} = -\frac{3}{2}$.
- 29) **Choice D is correct.** (8.SP.A.2) A positive slope indicates a positive association: as x increases, y tends to increase. This is correlation, not necessarily causation.



Hi, Future Algebra Thinker!

◇ Grade 8 practice builds a bridge to high school mathematics through exponents, linear systems, functions, transformations, geometry, and data models. This full-length book gave you ten complete Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

★ **Remember this:** Every time you solved for an unknown or explained a relationship, you were building skills that future math will use again. ★

Bridge Skills

- **Use Variables:** Let letters stand for unknown values.
- **Balance Equations:** Keep both sides fair.
- **Read Graphs:** Connect points to meaning.
- **Compare Rates:** Look for constant relationships.

Grade 8 test-day tip: When you see a variable, say what it represents. That keeps algebra connected to the problem.

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

Jay Daie

Your Algebra Bridge Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **10** full-length Math practice tests and **2** online tests to help Grade 8 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.



THIS BOOK INCLUDES:

10

Full-Length
Printed Tests

2

Online
Practice Tests



Detailed Answers
& Explanations



MORE PRACTICE. GREATER RESULTS.

Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

WHAT YOU'LL GAIN



Build Confidence

Practice regularly to feel prepared and test-ready.



Master Key Skills

Develop strong math skills and problem solving abilities.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Strategies

Learn proven strategies to approach every question with confidence.



Boost Performance

Apply your knowledge and achieve your best score!

TOPICS COVERED

- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Inequalities
- ✓ Functions
- ✓ Geometry
- ✓ Ratios & Proportions
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement
- ✓ Pythagorean Theorem
- ✓ Surface Area & Volume
- ✓ And More!



2 ONLINE TESTS

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



2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

Don't lose it—your extra practice and success start here!



PRACTICE
REGULARLY



STAY
FOCUSED



SOLVE
CONFIDENTLY



SUCCEED
BRIGHTLY