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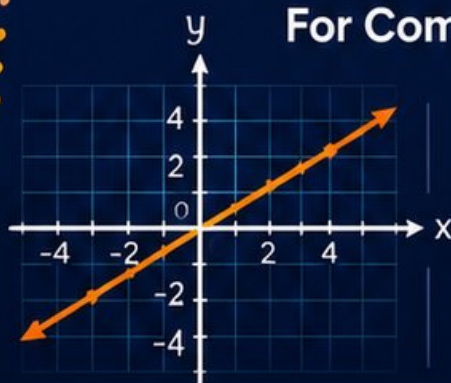
Idaho ISAT

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

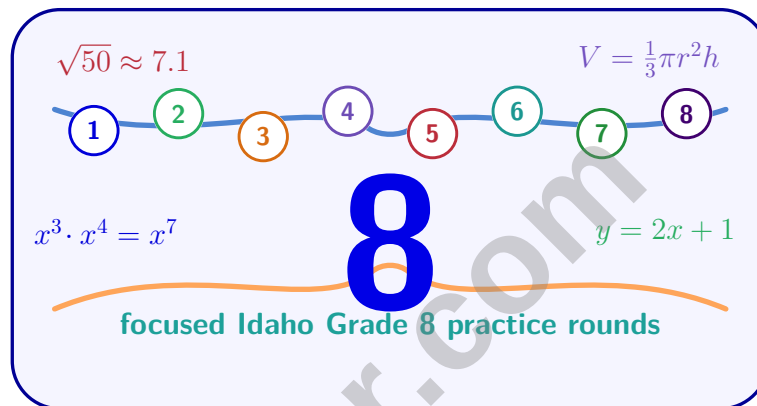
2

 ONLINE
TESTS

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

8 Idaho ISAT Grade 8 Math Practice Tests

Idaho Grade 8 Practice for Equations, Functions, Geometry, and Data



Eight complete 40-question Grade 8 ISAT 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, Idaho Grade 8 Problem Solver!

Eight focused rounds for sharper ISAT math thinking

This book gives you eight full Grade 8 ISAT 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 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

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.

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?

Eight ISAT 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.



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1) If each exterior angle of a regular polygon is 18° , what is the polygon?

☐ A. 15-sided polygon

☐ C. 20-sided polygon

☐ B. 18-sided polygon

☐ D. 24-sided polygon

2) A trend line has equation $y = 2.5x - 5$. What would be the predicted value of y when $x = 10$?

☐ A. 30

☐ C. 20

☐ B. 25

☐ D. 15

3) For the table $(0, 10)$, $(2, 14)$, $(4, 18)$, $(6, 22)$, what is the slope?

x	0	2	4	6
y	10	14	18	22

4) A manufacturing plant tracks widget defects per day: $\{0, 1, 1, 2, 6\}$. Mean = 2. What does the MAD tell us?

☐ A. The mode number of defects

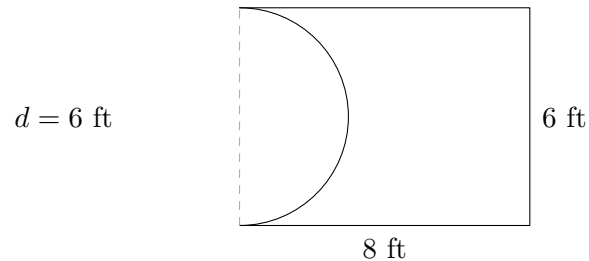
☐ C. That 6 defects is an outlier

☐ B. The typical deviation from the average number of defects

☐ D. The maximum possible defects



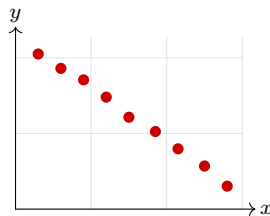
- 5) A student calculated the perimeter of a composite figure (semicircle on a rectangle) by adding dimensions: $8 + 6 + 8 + 6 + \pi \times 4 = 28 + 4\pi \approx 40.56$ ft. Which error did they make?



- ☐ A. Forgot to use the diameter, not radius.
- ☐ B. Double-counted the top of the rectangle where the semicircle attaches.
- ☐ C. Used perimeter formula instead of area.
- ☐ D. Calculated the radius as diameter.
- 6) A rectangular room measures 12 feet by 5 feet. What is the distance across the diagonal of the room (from one corner to the opposite corner)?



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7)

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 |

8) Among 160 gym members, 96 have a personal trainer and 64 do not. Of those with a trainer, 72 achieved their fitness goals. What is the joint relative frequency of members with a trainer who achieved goals?

- | | |
|----------------------------------|----------------------------------|
| ☐ A. 0.36 | ☐ C. 0.60 |
| ☐ B. 0.45 | ☐ D. 0.75 |

9) 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. $\frac{1}{6}$ | ☐ C. $\frac{2}{18}$ |
| ☐ B. $\frac{1}{4}$ | ☐ D. $\frac{2}{6}$ |



1) Which inequality is equivalent to $2x + 1 \geq 9$?

☐ A. $x \leq 4$

☐ C. $x \geq 4$

☐ B. $x < 4$

☐ D. $x > 4$

2) Which set of ordered pairs does NOT represent a function?

☐ A. $\{(0, 5), (1, 6), (2, 7), (3, 8)\}$

☐ C. $\{(1, 3), (2, 3), (3, 3), (4, 3)\}$

☐ B. $\{(1, 1), (2, 4), (3, 9), (4, 16)\}$

☐ D. $\{(2, 4), (2, 5), (3, 6), (4, 7)\}$

3) Which of the following CORRECTLY pairs an equation with its type?

☐ A. $y = x + 2$ is nonlinear

☐ C. $y = \frac{1}{2}x$ is linear

☐ B. $y = x^2 + 2$ is linear

☐ D. $y = \sqrt{x - 1}$ is linear

4) A square pyramid has a base with side 8 cm. If the volume is 192 cm^3 , what is the height?

☐ A. 6 cm

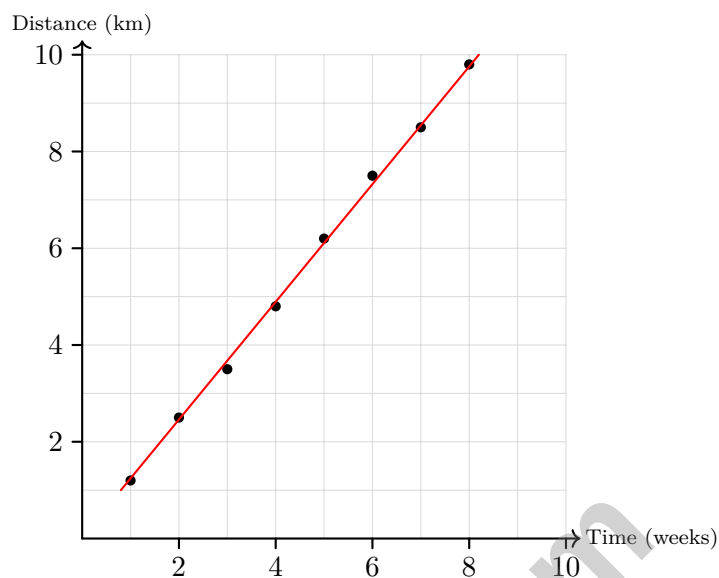
☐ C. 12 cm

☐ B. 9 cm

☐ D. 18 cm



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5)

A runner training program tracks distance over time. Based on the trend line, what is the approximate slope (distance per week)?

☐ A. 1 km per week☐ C. 2 km per week☐ B. 1.2 km per week☐ D. 0.5 km per week

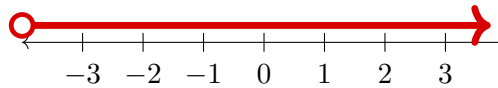
6) A rectangle's length is 4 cm more than its width. If the perimeter is 32 cm, what is the length?



- 1) A parallelogram has a base of 8 inches and a slant side of 6 inches. After a reflection, what are the dimensions of the reflected parallelogram?

- ☐ A. 4 inches and 3 inches ☐ C. 12 inches and 9 inches
☐ B. 8 inches and 6 inches ☐ D. 16 inches and 12 inches

- 2) Which shows the solution to $x - 3 > -7$ on a number line?



- ☐ A. $x > -4$ ☐ C. $x \geq -4$
☐ B. $x < -4$ ☐ D. $x \leq -4$
- 3) The inequality has x -intercept 6 and y -intercept -3 . The boundary line passes through both. Which inequality has shading that includes the origin?

- ☐ A. $x - 2y \leq 6$ ☐ C. $2y - x \leq 6$
☐ B. $x - 2y \geq 6$ ☐ D. $2y - x \geq 6$

- 4) Evaluate $(2x^3)^2$ when $x = 1$.

- 5) Which value of x satisfies $x^2 = 100$?

- ☐ A. 8 ☐ C. 10
☐ B. 9 ☐ D. 11



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6) What is $(5 \times 10^7) \times (4 \times 10^3)$?

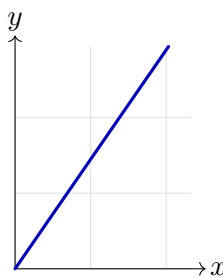
☐ A. 2×10^{10}

☐ C. 9×10^{10}

☐ B. 20×10^4

☐ D. 2×10^{11}

7) Which point must be on the graph of $y = 2x$?



☐ A. $(1, 2)$

☐ C. $(2, 1)$

☐ B. $(1, 3)$

☐ D. $(0, 2)$

8) A line parallel to $y = 5x - 1$ passes through $(0, 3)$. What is its y -intercept?



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.G.A.5) Number of sides = $\frac{360}{18} = 20$.
- 2) **Choice C is correct.** (8.SP.A.2) $y = 2.5(10) - 5 = 25 - 5 = 20$.
- 3) **The correct answer is 2.** (8.F.A.3) The change in y is 4 when x increases by 2, so the slope is $4 \div 2 = 2$.
- 4) **Choice B is correct.** (8.G.B.8) MAD measures average distance from the mean. Deviations: $|0 - 2| = 2$, $|1 - 2| = 1$ (twice), $|2 - 2| = 0$, $|6 - 2| = 4$. Sum = 8. MAD = $8/5 = 1.6$, showing typical spread.
- 5) **Choice B is correct.** (8.G.B.7) For a semicircle on top of a rectangle, the top edge of the rectangle is NOT part of the perimeter outline; it's replaced by the semicircular arc. The student added both, overcounting.
- 6) **The correct answer is 13.** (8.G.B.6, 8.G.B.7) The diagonal is the hypotenuse: $d^2 = 12^2 + 5^2 = 144 + 25 = 169$, so $d = 13$ feet (the 5-12-13 triple).
- 7) **Choice B is correct.** (8.SP.A.1) The downward trend shows negative correlation: as exercise increases, resting heart rate decreases. This is a typical physiological response.
- 8) **Choice B is correct.** (8.SP.A.4) Joint relative frequency: $\frac{72}{160} = 0.45$.
- 9) **Choice A is correct.** (8.G.B.7) $P(\text{tails}) = \frac{1}{2}$; $P(5 \text{ or } 6) = \frac{2}{6}$. Product: $\frac{1}{2} \times \frac{2}{6} = \frac{2}{12} = \frac{1}{6}$.
- 10) **Choice B is correct.** (8.NS.A.2) Each position is independent: $26 \times 10 \times 26 \times 10 = 26^2 \times 10^2 = 676,000$.
- 11) **Choice D is correct.** (8.G.B.7) $A = 5000(1.07)^{10} \approx 5000 \times 1.967 = \$9,835$.
- 12) **Choice D is correct.** (8.NS.A.1) $\sqrt{2} \times \sqrt{2} = 2$, which is rational. The other products simplify to square roots of non-perfect squares: $\sqrt{3} \times \sqrt{5} = \sqrt{15}$, $\sqrt{7} \times \sqrt{11} = \sqrt{77}$, and $\sqrt{6} \times \sqrt{10} = \sqrt{60} = 2\sqrt{15}$. Those are irrational.
- 13) **Choice D is correct.** (8.NS.A.1) Let $x = 0.1\bar{3} = 0.1333\dots$. Then $10x = 1.\bar{3}$ and $100x = 13.\bar{3}$. Subtracting: $100x - 10x = 12$, so $90x = 12$ and $x = \frac{12}{90} = \frac{2}{15}$.
- 14) **The correct answer is 18.** (8.G.C.9) $B = 8 \times 5 = 40 \text{ m}^2$. From $V = \frac{1}{3}Bh$: $240 = \frac{1}{3} \times 40 \times h \Rightarrow h = 18 \text{ m}$.
- 15) **Choice D is correct.** (8.NS.A.2) $9.9^2 = 98.01 < 99$, so $9.9 < \sqrt{99}$. The estimate is slightly below the actual value.
- 16) **Choice C is correct.** (8.EE.A.3) Both equal 0.032: $3.2 \times 10^{-2} = 0.032$ and $0.32 \times 10^{-1} = 0.032$. Note: the second form is not in correct scientific notation (coefficient < 1), demonstrating that equivalent values may not both be in proper form.
- 17) **Choice A is correct.** (8.EE.B.6) Using points (0, 1) and (4, 5): slope = $\frac{5-1}{4-0} = \frac{4}{4} = 1$.
- 18) **Choice C is correct.** (8.EE.C.7) Expand the right side: $6x - 4 = 6x - 4$. Both sides are identical, so every value of x is a solution.
- 19) **Choice D is correct.** (8.EE.A.1) Simplify coefficients: $\frac{20}{5} = 4$. Simplify variables: $\frac{x^9}{x^3} = x^6$. Result: $4x^6$.
- 20) **The correct answer is B, C.** (8.F.A.1) Option B (parabola $y = x^2 + 2$): passes the vertical line test; each x gives one y —a function. Option C (horizontal line $y = 4$): passes the vertical line test; constant function—a function. Option A (circle): fails VLT; vertical lines intersect twice—not a function. Option D (sideways parabola $x = (y - 1)^2$): fails VLT; each $x > 0$ has two y -values—not a function. Option E (ellipse): fails VLT; vertical lines intersect twice—not a function.
- 21) **Choice D is correct.** (8.EE.A.4) Rewrite with common exponent: $2.5 \times 10^4 + 0.3 \times 10^4 = (2.5 + 0.3) \times 10^4 = 2.8 \times 10^4$.
- 22) **Choice C is correct.** (8.EE.B.5) Slope $k = \frac{3}{4}$. Line passes through origin and (4, 3), so $y = \frac{3}{4}x$.
- 23) **Choice C is correct.** (8.NS.A.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.
- 24) **Choice D is correct.** (8.EE.A.2) $\sqrt{40}$ is irrational because 40 is not a perfect square. The others equal 5, 10, and 12 respectively.
- 25) **Choice A is correct.** (8.EE.C) The two lines intersect at the point marked on the graph. At this point, both $x = 1$ and $y = 2$. Verify: $y = 1 + 1 = 2$ ✓ and $1 + 2 = 3$ ✓.
- 26) **Choice A is correct.** (8.EE.C.7) FOIL: $(4x - 3)(x + 2) = 4x^2 + 8x - 3x - 6 = 4x^2 + 5x - 6$.



You Are Building Test Stamina

Hi, Stamina Builder!

◇ This wide-ranging book gave you eight serious Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Completing practice tests builds more than math knowledge. It builds the focus needed to think clearly for a long stretch. ◇

★ **Remember this:** That stamina matters. On real test day, calm pacing can be just as important as remembering a formula. ★

Stamina Skills

- **Breathe:** Reset before a difficult page.
- **Pace:** Do not spend too long in one place.
- **Return:** Come back to skipped questions with fresh eyes.
- **Finish Strong:** Use the last minutes to check.

Grade 8 test-day tip: Practice a simple reset: pause, breathe, reread, then choose your next step.

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

Jay Daie

Your Test-Stamina Coach

PRACTICE TODAY, SUCCEED TOMORROW!

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!

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Questions designed to cover essential Grade 8 math standards.



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Engaging problems that connect math to everyday life.



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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
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- ✓ Transformations
- ✓ Inequalities
- ✓ Data Analysis & Graphing
- ✓ And More!



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