

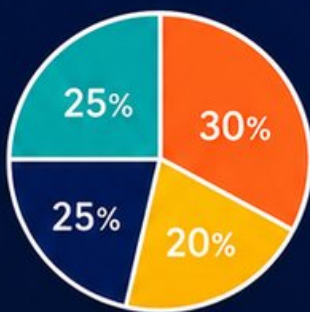
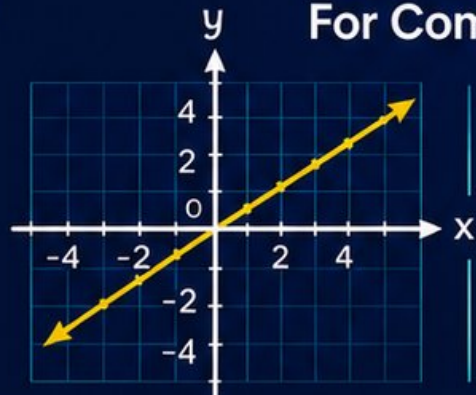
Idaho ISAT

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

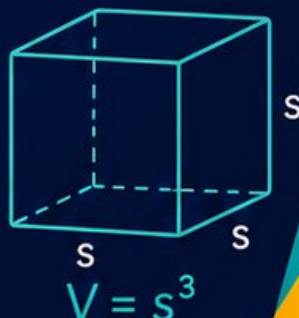


$$y = mx + b$$

$$2x - 3y = 6$$

$$\sqrt{x^2 + y^2}$$

$$A = bh$$



4 PRINTED TESTS



2 ONLINE TESTS

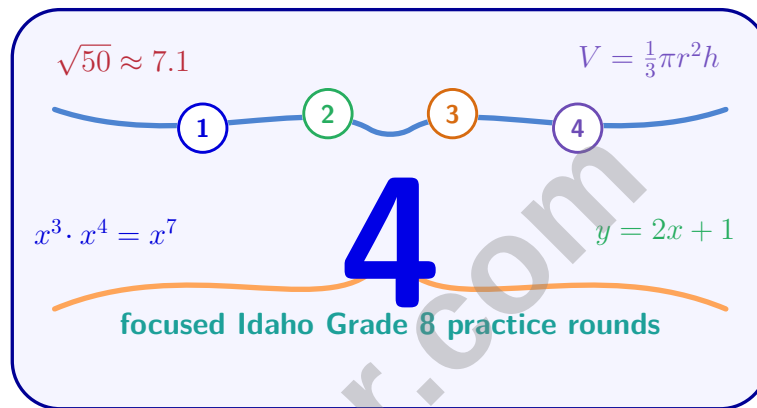


Use these **two additional online practice tests** for extra review after the printed tests in this book.



4 Idaho ISAT Grade 8 Math Practice Tests

Four ISAT Math Rounds for Skill-Building and Test Confidence



Four 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!

Four focused rounds for sharper ISAT math thinking

This book gives you four 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

A four-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?

Four ISAT tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
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) Which of the following best describes $0.9\overline{9}$?

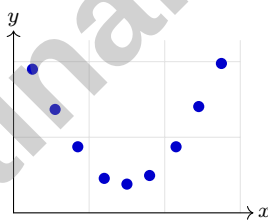
- ☐ A. Irrational ☐ C. Equal to 1, rational
☐ B. Between 0 and 1, rational ☐ D. Greater than 1, irrational

2) A ladder leans against a wall. The slope of the ladder line is undefined. What does this indicate?

- ☐ A. The ladder is horizontal ☐ C. The ladder is at a 45° angle
☐ B. The ladder is on the ground ☐ D. The ladder is vertical

3) A student finds the hypotenuse of a 7-24-? right triangle. They calculate $c^2 = 7 + 24 = 31$. Is this method correct?

- ☐ A. Yes; $c = \sqrt{31}$ units ☐ C. Yes; the hypotenuse is 31 units
☐ B. No; they should add the squares: $c^2 = 49 + 576 = 625$, so $c = 25$ ☐ D. No; they forgot to multiply by 2



4)

A scatter plot shows social media usage (hours/day) versus self-reported happiness (scale 1–10) for 200 teenagers. The points show no clear linear pattern. A parent concludes: “**Social media has no effect on happiness.**” What is wrong with this conclusion?

- ☐ A. The parent misunderstood what a correlation coefficient measures ☐ C. The sample size is too large for any conclusions
☐ B. No linear pattern does not mean there is no relationship at all ☐ D. A positive correlation would automatically prove causation



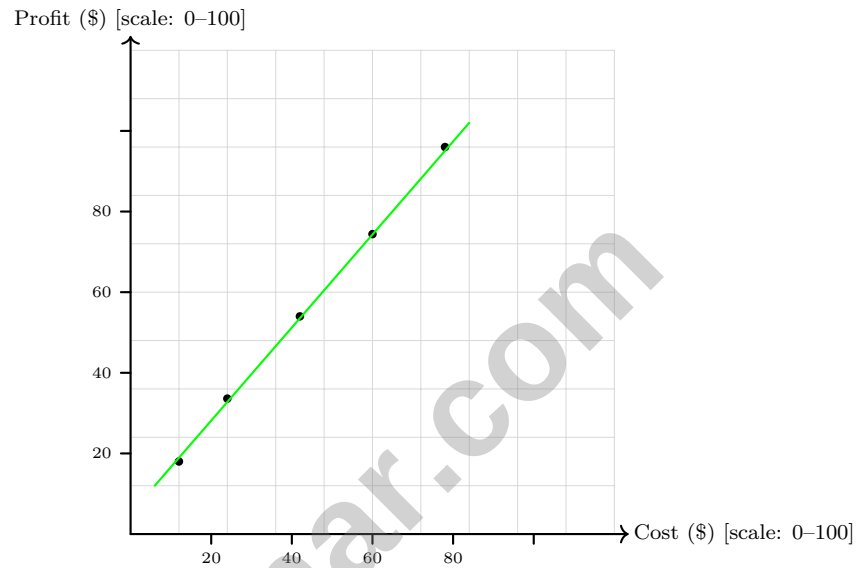
5) A school is electing a president, vice-president, and treasurer from 9 candidates. How many ways can these positions be filled?

☐ A. $9 + 8 + 7 = 24$

☐ C. $\binom{9}{3} = 84$

☐ B. $9 \times 8 \times 7 = 504$

☐ D. $9^3 = 729$



6)

Looking at the scatter plot above, approximately what is the profit when the cost is \$60?

☐ A. \$80

☐ C. \$40

☐ B. \$60

☐ D. \$20

7) A segment has length 20 cm and is dilated by a scale factor of 0.4. What is the new length?

☐ A. 8 cm

☐ C. 24 cm

☐ B. 20 cm

☐ D. 50 cm



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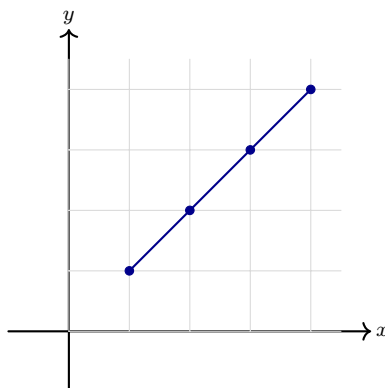
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8) The graph shows function h . Which of the following is true?



☐ A. $h(2) = 3$

☐ B. $h(1) = 1$

☐ C. $h(3) = 2$

☐ D. $h(4) = 3$

9) Convert $0.\overline{18}$ to a fraction in simplest form.

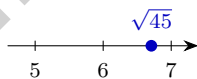
☐ A. $\frac{1}{18}$

☐ B. $\frac{18}{100}$

☐ C. $\frac{18}{90}$

☐ D. $\frac{18}{99} = \frac{2}{11}$

10) Where on a number line would $\sqrt{45}$ be located?



☐ A. Between 5 and 6

☐ B. Between 4 and 5

☐ C. Between 6 and 7

☐ D. At 7

11) Which is the best estimate of $\sqrt{15}$?

☐ A. 3.2

☐ B. 7.5

☐ C. 4.2

☐ D. 3.9



1) Multiply: $(x + 7)(x - 1)$

☐ A. $x^2 + 6x - 7$

☐ B. $x^2 - 7$

☐ C. $x^2 + 7x - 1$

☐ D. $x^2 + 8x - 7$

2) A bicycle rental costs \$5 base fee plus \$3 per hour. If the relationship is graphed with hours on the x -axis and cost on the y -axis, what is the slope?

☐ A. $\frac{3}{5}$

☐ B. 8

☐ C. 3

☐ D. 5

3) How much of a 100% alcohol solution must be mixed with 500 mL of 20% alcohol solution to create a 50% solution?

☐ A. 100 mL

☐ B. 200 mL

☐ C. 300 mL

☐ D. 400 mL

4) A survey of 200 people on vacation preferences: 130 prefer beach, 70 prefer mountains. Among beach-lovers, 91 are first-time visitors. What fraction of beach-lovers are repeat visitors?

☐ A. $\frac{39}{200}$

☐ B. $\frac{39}{130}$

☐ C. $\frac{91}{130}$

☐ D. $\frac{70}{200}$

5) Two classes have the same mean test score of 75. Class A has $MAD = 3$, and Class B has $MAD = 8$. What does this tell us?

☐ A. Class B has higher individual scores

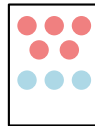
☐ B. Class A has more students

☐ C. Class A has more consistent scores

☐ D. Class B performed better overall



- 6) An angle is 12° less than three times its supplement. Write and solve an equation to find the angle's measure.



5 red, 3 blue

7)

A bag contains 5 red and 3 blue marbles. A marble is drawn, its color noted, replaced, then another marble is drawn. What is the probability both marbles are red?

- ☐ A. $\frac{10}{64}$ ☐ C. $\frac{10}{16}$
☐ B. $\frac{25}{64}$ ☐ D. $\frac{5}{8}$
- 8) Points C and D are on a coordinate grid with $C = (0, 0)$ and $D = (7, 24)$. What is the distance from C to D ?
- ☐ A. 25 ☐ C. $\sqrt{600}$
☐ B. 31 ☐ D. 17
- 9) A square pyramid has a base edge of 12 cm and a volume of 576 cm^3 . What is the height of the pyramid in centimeters?



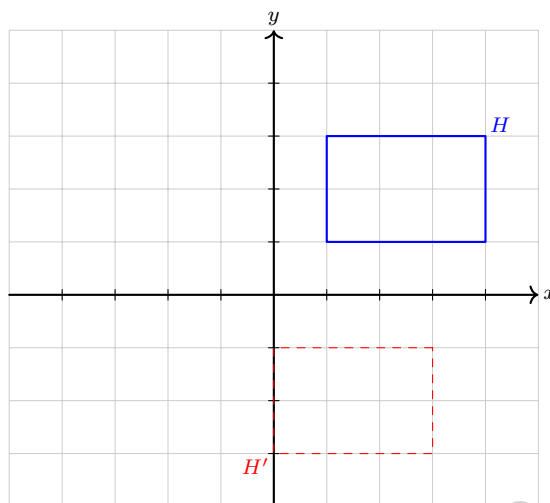
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- 1) A student evaluated $f(x) = 3x + 2$ at $x = 4$ and wrote $f(4) = 3 + 2 + 4 = 9$. What error did the student make?
- ☐ A. Did not multiply x by the coefficient 3
- ☐ B. Multiplied 3 by 4 correctly but made an arithmetic mistake
- ☐ C. Added the constant instead of substituting correctly
- ☐ D. The answer is correct
- 2) Factor $x^2 - 13x + 42$.
- ☐ A. $(x - 6)(x - 7)$
- ☐ B. $(x - 14)(x + 1)$
- ☐ C. $(x - 21)(x - 2)$
- ☐ D. $(x - 3)(x - 14)$
- 3) Which scenario describes a negative slope?
- ☐ A. Population increases each year
- ☐ B. Temperature increases over time
- ☐ C. Your bank account grows with deposits
- ☐ D. Water drains from a tank over time
- 4) A chemist mixes a 30% acid solution with an 80% acid solution to make 100 mL of a 50% solution. Let x = volume of 30% solution (mL). Which equation represents the acid content?
- ☐ A. $0.3x + 0.8(100 - x) = 0.5(100)$
- ☐ B. $0.3(100 - x) + 0.8x = 50$
- ☐ C. $30x + 80x = 50 \cdot 100$
- ☐ D. $0.3x + 0.8x = 50$



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5)

Rectangle H (blue) is transformed to rectangle H' (red). Which sequence of transformations applies?

- ☐ A. Reflect across y -axis, translate right 3
☐ B. Rotate 180° about the origin, translate right 3
☐ C. Reflect across x -axis, translate left 1
☐ D. Translate down 4, reflect across y -axis

6) An exterior angle of a triangle is 117° . If one of the remote interior angles is 68° , what is the other remote interior angle?

- ☐ A. 49°
☐ B. 68°
☐ C. 112°
☐ D. 180°

7) A student claims that sides 5, 10, and $\sqrt{125}$ form a right triangle. Is this correct?

- ☐ A. Yes, because $5^2 + 10^2 = (\sqrt{125})^2$
☐ B. No, because $\sqrt{125} \approx 11.2$, which is too large
☐ C. Yes, because 5 and 10 are factors of $\sqrt{125}$
☐ D. No, because $5 + 10 \neq \sqrt{125}$



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.NS.A.1)** $0.\overline{99} = 0.999\ldots = 1$. This repeating decimal is rational and equals exactly 1. (Algebraically, if $x = 0.999\ldots$, then $10x = 9.999\ldots$, so $10x - x = 9$, giving $x = 1$.)
- 2) **Choice D is correct.** **(8.EE.B.5)** An undefined slope occurs when $\Delta x = 0$, meaning the line is vertical. Dividing by zero (run = 0) is undefined.
- 3) **Choice B is correct.** **(8.G.B.8)** Correct: $c^2 = 7^2 + 24^2 = 49 + 576 = 625$, so $c = 25$. The student mistakenly added the legs instead of squaring them.
- 4) **Choice B is correct.** **(8.SP.A.1)** A scattered plot with no linear trend only means there is no simple straight-line relationship. There could be a curved relationship, effects that appear only at high or low values, or time-delayed effects. Absence of linear correlation does not prove no relationship exists.
- 5) **Choice B is correct.** **(8.NS.A.2)** President: 9 choices. Vice-president: 8 remaining. Treasurer: 7 remaining. Total: $9 \times 8 \times 7 = 504$.
- 6) **Choice A is correct.** **(8.SP.A.2)** At cost \$60, the trend line is a little below the \$80 mark and clearly above \$60. The closest choice is about \$80.
- 7) **Choice A is correct.** **(8.G.A.4)** $20 \times 0.4 = 8$ cm. A scale factor between 0 and 1 creates a reduction.
- 8) **Choice B is correct.** **(8.F.A.1)** From the graph, at $x = 1$ the point is at $(1, 1)$, so $h(1) = 1$. Options A, C, and D are incorrect based on the plotted points.
- 9) **Choice D is correct.** **(8.NS.A.1)** Let $x = 0.\overline{18}$. Then $100x = 18.\overline{18}$. Subtracting: $99x = 18$, so $x = \frac{18}{99} = \frac{2}{11}$.
- 10) **Choice C is correct.** **(8.NS.A.2)** $6^2 = 36$ and $7^2 = 49$. Since $36 < 45 < 49$, we have $6 < \sqrt{45} < 7$.
- 11) **Choice D is correct.** **(8.NS.A.2)** Since $3.9^2 = 15.21 \approx 15$ and $3.87^2 \approx 15$, we estimate $\sqrt{15} \approx 3.9$. Distractor 3.2 confuses with $\sqrt{10}$; 4.2 is too high; 7.5 is nonsense.
- 12) **The correct answer is 11.** **(8.G.C)** Let n be the number of nickels. Then the number of dimes is $2n$, so $0.05n + 0.10(2n) = 2.75$. Thus $0.25n = 2.75$, and $n = 11$.
- 13) **Choice D is correct.** **(8.EE.A.3)** With equal coefficients, smaller exponents give smaller values: $-5 < -3 < 1$.
- 14) **Choice C is correct.** **(8.G.C.9)** A cube has 6 faces. Each face has area $3^2 = 9$ in². Total = $6 \times 9 = 54$ in².
- 15) **Choice D is correct.** **(8.G.A.1)** A full 360° rotation completes one full turn, bringing the figure back unchanged. This is the identity transformation.
- 16) **Choice D is correct.** **(8.EE.B.6)** Using any two points: $\frac{7-3}{2-0} = \frac{4}{2} = 2$. Same slope for all pairs confirms collinearity.
- 17) **Choice D is correct.** **(8.EE.C.7)** Eq. 1: Expand $2x + 6 = 2x + 6$ (identity, infinitely many). Eq. 2: Expand $2x + 6 = 2x + 5 \Rightarrow 6 = 5$ (false, no solution).
- 18) **The correct answer is B,C.** **(8.EE.C.7)** $(x + 6)^2 = (x + 6)(x + 6) = x^2 + 12x + 36$. Choice B is the expanded form, and choice C is the factored form. Choice A ignores the middle term. Choice D has an error. Choice E is a different factorization that does not equal $(x + 6)^2$.
- 19) **Choice A is correct.** **(8.EE.C.7)** Subtract 2: $5x > -10$. Divide by 5: $x > -2$.
- 20) **Choice A is correct.** **(8.G.B.8)** Substitute $(0, 0)$: $2(0) + 3(0) = 0$ ✓. The origin is on the line.
- 21) **Choice A is correct.** **(8.G.C.9)** Cone: $V = \frac{1}{3} \times 3.14 \times 4 \times 6 = 25.12$ cm³. Sphere: $V = \frac{4}{3} \times 3.14 \times 8 = 33.49$ cm³. Cylinder: $V = 3.14 \times 4 \times 6 = 75.36$ cm³. Order: Cone < Sphere < Cylinder.
- 22) **Choice D is correct.** **(8.SP.A.3)** Set $P = 0$: $0 = 4.5s - 200 \Rightarrow 4.5s = 200 \Rightarrow s \approx 44.4$ slices.
- 23) **Choice C is correct.** **(8.G.B.7)** Interest: $I = 6000 \times 0.02 \times 2 = \240 . Total: $6000 + 240 = \$6,240$.
- 24) **Choice D is correct.** **(8.EE.A.1)** $(b^3)^2 = b^6$; then $b^6 \cdot b^4 = b^{10}$; then $\frac{b^{10}}{b^5} = b^5$.
- 25) **Choice C is correct.** **(8.EE.A.2)** $12 \times 12 \times 12 = 1728$, so $\sqrt[3]{1728} = 12$.
- 26) **Choice C is correct.** **(8.EE.A.4)** Divide: $\frac{3 \times 10^5}{5 \times 10^4} = \frac{3}{5} \times 10^{5-4} = 0.6 \times 10^1 = 6$. So 3×10^5 is about 6 times larger.
- 27) **Choice C is correct.** **(8.EE.B.5)** $k = \frac{10}{1} = 10$. The line is very steep, passing through $(0, 0)$ and $(1, 10)$.



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Hi, Number Sense Builder!

◇ Grade 8 mathematics connects numbers, algebra, geometry, and data. It helps you model linear change, compare functions, estimate irrational values, measure distance, and explain patterns. ◇

★ **Remember this:** You practiced listening to that story. When the answer makes sense in the situation, your math becomes much stronger. This version gave you 4 opportunities to rehearse test-day habits. ★

Number Sense Checks

- **Too Big?:** Compare with an estimate.
- **Too Small?:** Use the context to judge.
- **Right Sign?:** Positive and negative values matter.
- **Right Unit?:** A number needs meaning.

Grade 8 test-day tip: Before choosing an answer, ask whether it fits the story of the problem.

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

Jay Daie

Your Number-Sense Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

Give your child the confidence and skills they need with **4 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!

4



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.



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!



4 PRINTED TESTS

+



2 ONLINE TESTS



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