

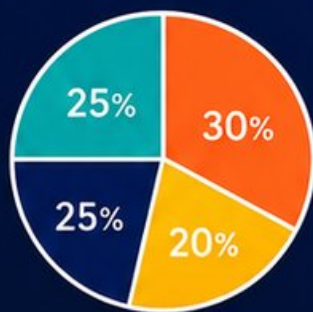
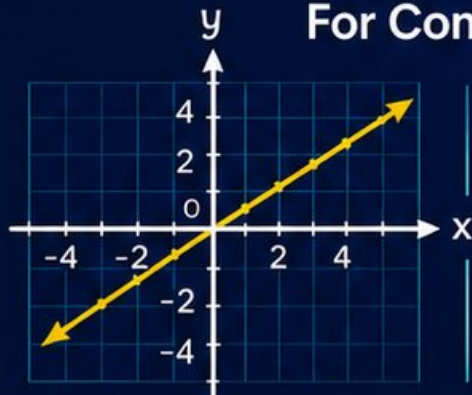
Iowa
ISASP

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

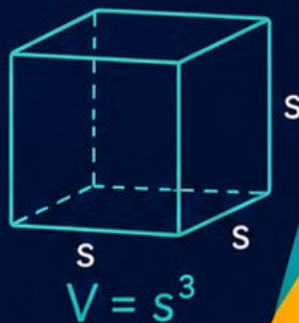


$$y = mx + b$$

$$2x - 3y = 6$$

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

$$A = bh$$



4 PRINTED
TESTS



2 ONLINE
TESTS

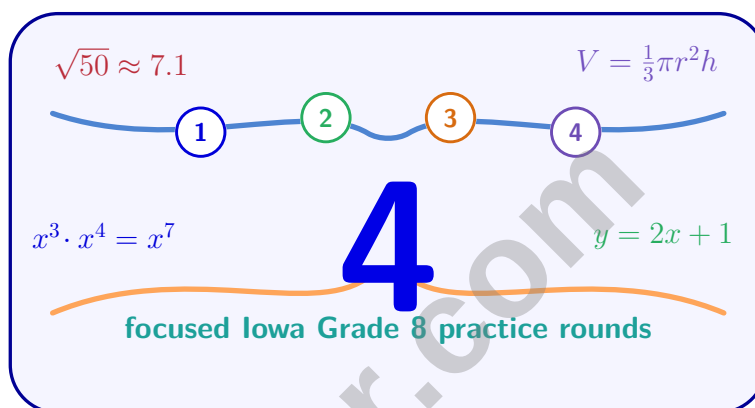


Use these **two additional online practice tests**
for extra review after the printed tests in this book.



4 Iowa ISASP Grade 8 Math Practice Tests

Complete ISASP Practice with Focused Review and Clear Explanations



Four complete 40-question Grade 8 ISASP 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, Iowa Grade 8 Problem Solver!

Four focused rounds for sharper ISASP math thinking

This book gives you four full Grade 8 ISASP 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 Iowa 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.

Iowa 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 ISASP 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) The angles of a triangle are in the ratio 3 : 4 : 5. What is the measure of the smallest angle?

☐ A. 30°

☐ C. 45°

☐ B. 40°

☐ D. 60°

2) A student solves: "A jar has pennies and quarters totaling \$5.00 with 40 coins. How many quarters are there?" The student correctly sets up $p + q = 40$ (coins) and $0.01p + 0.25q = 5.00$ (dollars) and solves to get $q \approx 19.17$. Which statement best describes the issue?

☐ A. The student should have used cents: $p + 25q = 500$ instead.

☐ C. The answer must be a whole number, so the problem statement likely has a typo.

☐ B. The student should use elimination instead of substitution.

☐ D. The system is correct, and 19.17 quarters is a valid final answer.

3) A function displays the pattern: (1, 2), (2, 4), (3, 8), (4, 16). What type of function is this?

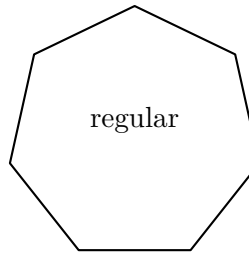
☐ A. Linear, because y increases

☐ D. Nonlinear, but could still be linear with the right data

☐ B. Linear, with slope 2 per x -unit

☐ C. Nonlinear, exponential (doubling pattern)





4)

A regular heptagon is shown. What is the measure of each interior angle (to nearest whole degree)?

☐ A. $\approx 129^\circ$ ☐ C. $\approx 148^\circ$ ☐ B. $\approx 138^\circ$ ☐ D. $\approx 158^\circ$

5) Two different lines are fit to the same scatter plot. Line 1 has residuals of $\pm 2, \pm 1.5, \pm 2$, while Line 2 has residuals of $\pm 5, \pm 4, \pm 6$. Which line is the better fit?

☐ A. Line 1, because it has smaller residuals overall☐ C. Both are equally good fits☐ B. Line 2, because it has larger residuals☐ D. Neither is a good fit

6) A parallelogram has base 6 in and height 4 in. It is dilated by a scale factor of 2.5. What is the new height?

☐ A. 4 in☐ C. 15 in☐ B. 10 in☐ D. 6.5 in

7) Which pair of irrational numbers, when multiplied, produces a rational number?

☐ A. $\sqrt{3} \times \sqrt{5}$ ☐ C. $\sqrt{6} \times \sqrt{10}$ ☐ B. $\sqrt{7} \times \sqrt{11}$ ☐ D. $\sqrt{2} \times \sqrt{8}$ 

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- 8) A menu offers 4 appetizers, 6 entrees, and 3 desserts. How many different meal combinations of one appetizer, one entree, and one dessert are possible?

☐ A. 13 ☐ C. 72
☐ B. 24 ☐ D. 120

- 9) Points $(-1, 5)$ and $(2, 14)$ lie on a line. Find the slope.

- 10) If $x = 0.\overline{36}$, which shows the first equation in the standard method?

☐ A. $10x = 0.36$ ☐ C. $36x = 0.\overline{36}$
☐ B. $1000x = 360.\overline{36}$ ☐ D. $100x = 36.\overline{36}$

- 11) Which expression is irrational?

☐ A. $\sqrt{4} + \sqrt{9}$ ☐ C. $\sqrt{36} - 2$
☐ B. $\sqrt{2} \cdot \sqrt{8}$ ☐ D. $\sqrt{3} + 1$

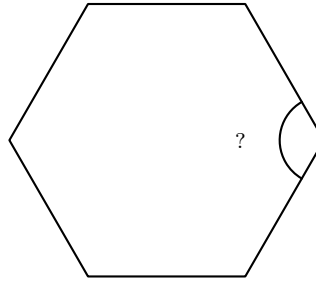
- 12) Convert 950 to scientific notation.

☐ A. 9.5×10^1 ☐ C. 9.5×10^3
☐ B. 95×10^1 ☐ D. 9.5×10^2

- 13) Which is the best estimate of $\pi + \sqrt{10}$?

☐ A. $3.1 + 3.1 = 6.2$ ☐ C. $4 + 4 = 8$
☐ B. $\pi + 10 = 13.14$ ☐ D. $3.14 + 3.16 = 6.30$





1)

A regular hexagon is shown with one interior angle marked. What is the measure of the marked interior angle?

☐ A. 100° ☐ C. 120° ☐ B. 110° ☐ D. 130°

2) A stock price drops from \$45 to \$30 over 10 days. What is the slope (rate of change per day)?

☐ A. $-\$1.50$ per day☐ C. $\$1.50$ per day☐ B. $-\$3$ per day☐ D. $\$0.50$ per day

3) Tickets cost \$4 for children and \$7 for adults. The theater sold 200 tickets for a total of \$1,100. How many children's tickets were sold?

☐ A. 100☐ C. 50☐ B. 150☐ D. 120

4) 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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- 5) When two parallel lines are cut by a transversal, two co-interior angles are $(2x + 15)^\circ$ and $(x + 45)^\circ$. What is x ?

☐ A. 40 ☐ C. 80
☐ B. 60 ☐ D. 120

- 6) A two-way table shows that 30 students like pizza and 20 like sandwiches. 15 of those who like pizza are girls. What is the relative frequency of girls among pizza-likers?

	Girls	Total
Pizza	15	30
Sandwiches	–	20

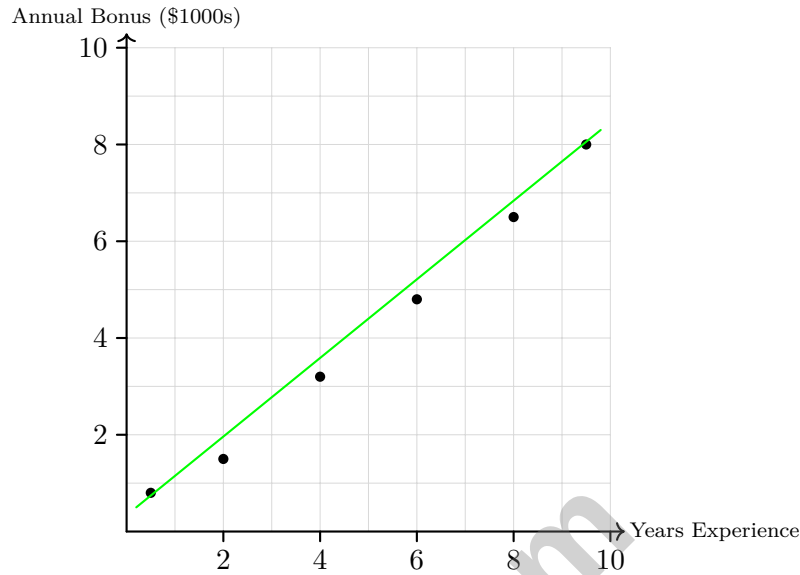
☐ A. 50% ☐ C. 30%
☐ B. 60% ☐ D. 75%

- 7) Two classes took the same test (mean = 75 for both): Class P: {73, 74, 75, 76, 77} Class Q: {60, 70, 75, 80, 90} Which class should receive more targeted instruction?

☐ A. Class P (more consistent) ☐ C. Both equally
☐ B. Class Q (higher variation in understanding) ☐ D. Neither (both have mean 75)

- 8) Two lines intersect. One angle is 82° . What is the measure of an adjacent angle?





1)

An employee compensation analysis shows experience versus bonuses. If the trend line predicts a \$3,000 bonus at 4 years of experience, and an employee with 4 years actually gets \$3,500, what is the residual?

☐ A. -500☐ C. 3000☐ B. 500☐ D. 3500

2) Which equation is LINEAR?

☐ A. $y = 3x^2$ ☐ C. $y = 6x - 9$ ☐ B. $y = \frac{2}{x}$ ☐ D. $y = \sqrt{2x}$

3) A cyclist travels at a constant speed. After 1.5 hours, they have traveled 22.5 miles. After 3 hours, they have traveled 45 miles. What is the slope (speed in mph)?

☐ A. 15 mph☐ C. 30 mph☐ B. 22.5 mph☐ D. 45 mph

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4) A farmer's market charges \$2 for apples and \$3 for oranges. On Saturday, the vendor sold 120 pieces of fruit for \$310. How many apples were sold?

☐ A. 40☐ C. 50☐ B. 60☐ D. 80

5) If $f(x) = -3x + 10$, what is $f(2)$?

☐ A. 4☐ C. -6☐ B. 16☐ D. 6

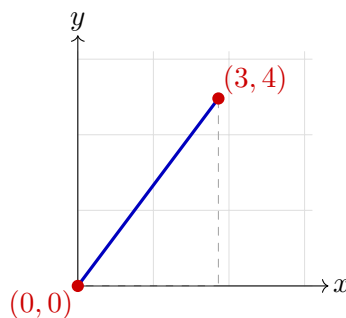
6) What is the rule for a translation that moves point (x, y) left 5 units and up 8 units?

☐ A. $(x, y) \rightarrow (x + 5, y + 8)$ ☐ C. $(x, y) \rightarrow (x + 5, y - 8)$ ☐ B. $(x, y) \rightarrow (x - 5, y + 8)$ ☐ D. $(x, y) \rightarrow (x - 5, y - 8)$

7) In triangle ABC , angle $A = (2m+5)^\circ$, angle $B = (3m-10)^\circ$, and angle $C = (m+35)^\circ$. Find angle A .

☐ A. 45° ☐ C. 65° ☐ B. 55° ☐ D. 75°

8) Two points on a coordinate plane are located at $(0, 0)$ and $(3, 4)$. What is the distance between these two points?

☐ A. 5☐ C. 12☐ B. 7☐ D. 25

Iowa ISASP 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 Iowa ISASP 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) Let angles be $3x$, $4x$, and $5x$. Sum: $3x + 4x + 5x = 180 \implies 12x = 180 \implies x = 15^\circ$. Smallest angle: $3x = 45^\circ$.
- 2) **Choice C is correct.** (8.G.C) Setting up correctly: $p + q = 40$ and $0.01p + 0.25q = 5.00$. From the first: $p = 40 - q$. Substituting: $0.01(40 - q) + 0.25q = 5.00$, so $0.40 - 0.01q + 0.25q = 5.00$, giving $0.24q = 4.60$ and $q \approx 19.17$. Since the number of coins must be an integer, the problem's numbers are inconsistent.
- 3) **Choice C is correct.** (8.F.A.3) The y -values double with each unit increase in x (2, 4, 8, 16). This exponential growth pattern is nonlinear; first differences are not constant (2, 4, 8).
- 4) **Choice A is correct.** (8.G.A.5) Sum for heptagon: $(7 - 2) \times 180 = 900^\circ$. Each angle: $\frac{900}{7} \approx 128.6^\circ \approx 129^\circ$.
- 5) **Choice A is correct.** (8.SP.A.2) Smaller residuals indicate a line closer to the data points, which is a better fit.
- 6) **Choice B is correct.** (8.G.A.4) $4 \times 2.5 = 10$ in.
- 7) **Choice D is correct.** (8.NS.A.1) $\sqrt{2} \times \sqrt{8} = \sqrt{16} = 4$, which is rational. The other products: $\sqrt{3} \times \sqrt{5} = \sqrt{15}$, $\sqrt{6} \times \sqrt{10} = \sqrt{60} = 2\sqrt{15}$, and $\sqrt{7} \times \sqrt{11} = \sqrt{77}$ are all irrational.
- 8) **Choice C is correct.** (8.NS.A.2) By the Counting Principle, multiply choices: $4 \times 6 \times 3 = 72$.
- 9) **The correct answer is 3.** (8.EE.B.5) Slope = $\frac{14 - 5}{2 - (-1)} = \frac{9}{3} = 3$.
- 10) **Choice D is correct.** (8.NS.A.1) Since the block has 2 digits, multiply x by $10^2 = 100$. This gives $100x = 36.363636 \dots = 36.\overline{36}$.
- 11) **Choice D is correct.** (8.NS.A.2) A: $2 + 3 = 5$ (rational). B: $\sqrt{16} = 4$ (rational). C: $6 - 2 = 4$ (rational). D: $\sqrt{3}$ is irrational, so $\sqrt{3} + 1$ is irrational.
- 12) **Choice D is correct.** (8.EE.A.3) Move the decimal 2 places left to get 9.5; the exponent is 2.
- 13) **Choice D is correct.** (8.NS.A.2) Using $\pi \approx 3.14$ and $\sqrt{10} \approx 3.16$ (since $3.16^2 \approx 9.99$), the sum is approximately 6.30.
- 14) **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 = $6 \times 9 = 54 \text{ cm}^2$.
- 15) **Choice A is correct.** (8.G.A.1) Reflection across the y -axis uses the rule $(x, y) \rightarrow (-x, y)$. Only the sign of x changes; the y -coordinate stays the same. (Coordinate swapping is reflection across $y = x$, not the y -axis.)
- 16) **Choice A is correct.** (8.EE.B.6) The y -intercept is -2 . Using $(4, -4)$: slope = $\frac{-4 - (-2)}{4 - 0} = \frac{-2}{4} = -\frac{1}{2}$.
- 17) **The correct answer is $\frac{1}{2}$.** (8.SP.A.4) Among juniors: $\frac{100}{100 + 100} = \frac{100}{200} = \frac{1}{2} = 0.5$.
- 18) **The correct answer is A, C.** (8.F.A.1) From the table, $g(1) = 5$ and $g(3) = 13$, so A and C are true. The other listed values are incorrect, and the function increases by 4, not 5, for each unit increase in x .
- 19) **The correct answer is 2.4.** (8.G.B.8) Absolute deviations: $|12 - 16| = 4$, $|14 - 16| = 2$, $|16 - 16| = 0$, $|18 - 16| = 2$, $|20 - 16| = 4$. Sum = 12. MAD = $12/5 = 2.4$.
- 20) **Choice D is correct.** (8.EE.C.7) A false statement like $0 = 5$ means no value of the variable satisfies the equation.
- 21) **Choice A is correct.** (8.EE.C.7) Subtract 8: $-3x < -6$. Divide by -3 (FLIP): $x > 2$.
- 22) **Choice D is correct.** (8.G.C.9) Cylinder: $V = 3.14 \times 64 \times 6 = 1205.76 \text{ m}^3$. Cone: $V = \frac{1}{3} \times 3.14 \times 64 \times 6 = 401.92 \text{ m}^3$. Difference: $1205.76 - 401.92 = 803.84 \text{ m}^3$.
- 23) **Choice A is correct.** (8.SP.A.3) The slope is 75, meaning the account increases by \$75 each month.
- 24) **Choice D is correct.** (8.G.C.9) At 5% over 2 years, higher principal earns more interest: $I = P \times 0.05 \times 2 = 0.1P$. Largest P is \$2,500.
- 25) **Choice D is correct.** (8.EE.A.1) Quotient rule for each variable: $\frac{a^4}{a^2} = a^2$ and $\frac{b^3}{b} = b^2$. Result: a^2b^2 .
- 26) **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.
- 27) **Choice D is correct.** (8.EE.A.4) Divide coefficients: $3.6 \div 1.2 = 3$. Subtract exponents: $10^{6-2} = 10^4$. Result: 3×10^4 .



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Hi, Math Hero!

◇ This carefully paced book gave you four steady Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. You showed up for Grade 8 practice again and again. That is what real growth looks like: steady effort, honest review, and a willingness to try. ◇

★ **Remember this:** A math hero is not someone who never misses a question. A math hero learns from the miss and comes back stronger. ★

Hero Habits

- **Courage:** You try problems that are not automatic.
- **Honesty:** You review what needs work.
- **Patience:** You let skills grow over time.
- **Pride:** You recognize the effort you gave.

Grade 8 test-day tip: Save one solved problem you are proud of. Looking back at progress helps motivation stay strong.

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

Jay Daie

Your Math Hero Guide

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.