

7

Iowa
ISASP

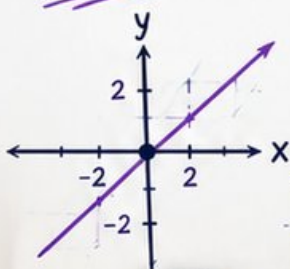
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

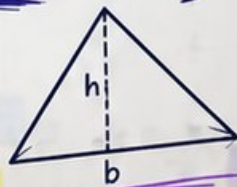
$$y = mx + b$$



BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!

Practice
Today
Succeed
Tomorrow!

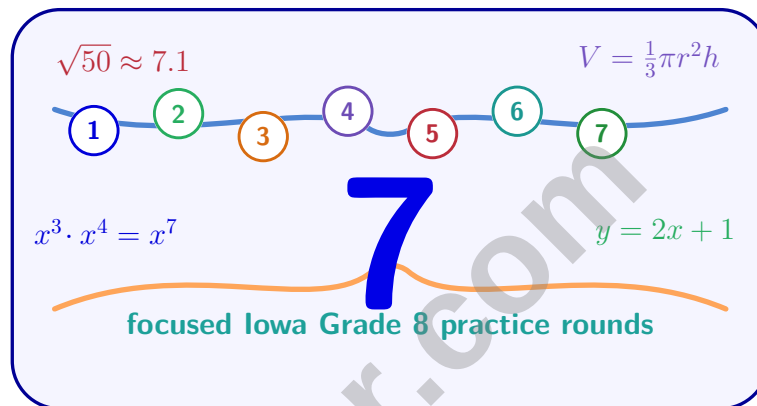
$$A = \frac{1}{2}bh$$

7 PRINTED
TESTS2 ONLINE
TESTS

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

7 Iowa ISASP Grade 8 Math Practice Tests

Seven Focused ISASP Tests for Grade 8 Math Confidence



Seven 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!

Seven focused rounds for sharper ISASP math thinking

This book gives you seven 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 seven-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?

Seven ISASP tests, 280 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.
Test 7	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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Table of Contents

★ Practice Test 1	_____	13
★ Practice Test 2	_____	28
★ Practice Test 3	_____	44
★ Practice Test 4	_____	61
★ Practice Test 5	_____	77
★ Practice Test 6	_____	93
★ Practice Test 7	_____	110
Practice Test Answer Keys	_____	126
Practice Test Answers and Explanations	_____	131

1) Which relation is NOT a function?

☐ A. $\{(3, 1), (3, 2), (4, 1)\}$

☐ C. $\{(0, 0), (1, 1), (2, 2)\}$

☐ B. $\{(1, 5), (2, 6), (3, 7)\}$

☐ D. $\{(2, 8), (3, 8), (4, 8)\}$

2) $\frac{5 \times 10^{-2}}{2.5 \times 10^{-5}} = ?$

☐ A. 0.2×10^3

☐ C. 2×10^3

☐ B. 2.5×10^{-7}

☐ D. 7.5×10^{-7}

3) A car's fuel consumption shows: rapid decrease at first, then slowing. Which behavior does this match?

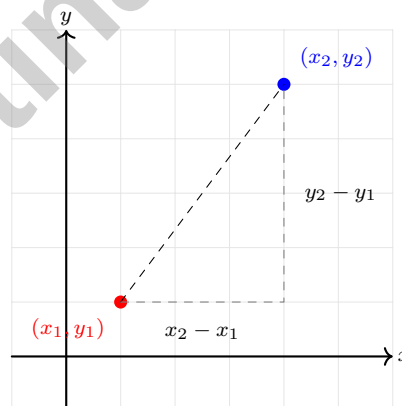
☐ A. Draining a pool with a pump

☐ C. Linear fuel burn

☐ B. Radioactive decay (initial sharp drop, then levels off)

☐ D. Exponential growth

4) Which of the following represents the distance formula between two points (x_1, y_1) and (x_2, y_2) ?



☐ A. $d = |x_2 - x_1| + |y_2 - y_1|$

☐ C. $d = (x_2 - x_1)^2 + (y_2 - y_1)^2$

☐ B. $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

☐ D. $d = x_2 - x_1 + y_2 - y_1$



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5) If each interior angle of a regular polygon is 144° , how many sides does it have?

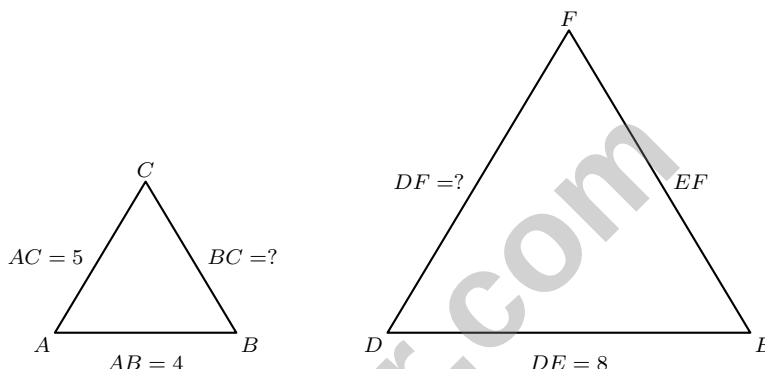
☐ A. 8

☐ C. 10

☐ B. 9

☐ D. 12

6) Two similar triangles are shown. Triangle ABC has sides 4 cm and 5 cm. Triangle DEF has a corresponding side of 8 cm. Find the length of the side in DEF corresponding to the 5 cm side in ABC .



☐ A. 10 cm

☐ C. 9 cm

☐ B. 6.5 cm

☐ D. 2.5 cm

7) Which inequality represents “the product of a number and -2 is greater than 8 ”?

☐ A. $-2x > 8$

☐ C. $-2x < 8$

☐ B. $2x > 8$

☐ D. $x > -4$

8) Solve for m : $\frac{m}{5} - 2 = 3$. Show all work and verify your solution.



9) Factor $x^2 + 7x + 12$.

☐ A. $(x + 3)(x + 4)$

☐ C. $(x + 1)(x + 12)$

☐ B. $(x + 2)(x + 6)$

☐ D. $(x + 4)(x + 4)$

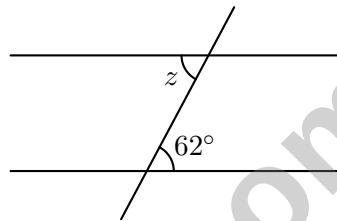
10) Is the point $(2, 4)$ in the solution region of $y \leq x + 1$?

☐ A. Yes, because $4 \leq 2 + 1$

☐ C. No, because $4 > 3$

☐ B. Yes, because $4 < 2 + 1$

☐ D. No, because $4 = 3$



11)

Two parallel lines are cut by a transversal. The angle marked 62° and angle z are alternate interior angles. What is z ?

☐ A. 28°

☐ C. 118°

☐ B. 62°

☐ D. 148°

12) Solve by substitution:
$$\begin{cases} y = 3x \\ x + y = 12 \end{cases}$$

☐ A. $(2, 6)$

☐ C. $(4, 12)$

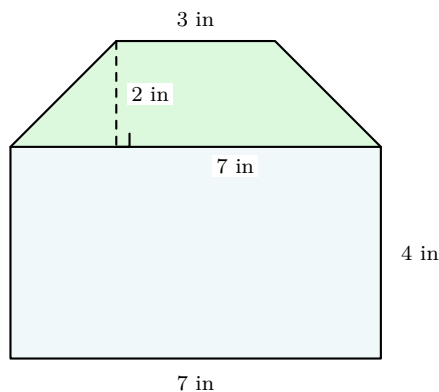
☐ B. $(6, 18)$

☐ D. $(3, 9)$



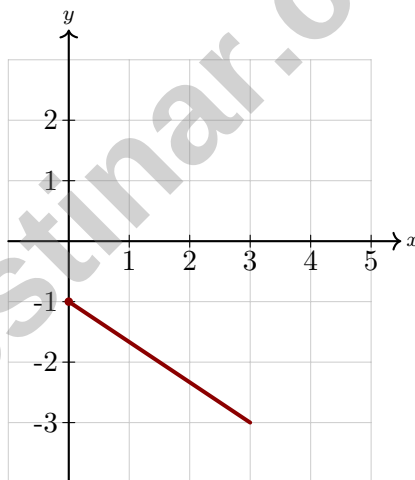
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- 1) An irregular polygon is decomposed into a rectangle (7 in by 4 in) and a trapezoid (bases 7 in and 3 in, height 2 in). Find the total area.



- ☐ A. 28 in^2
☐ B. 38 in^2

- ☐ C. 42 in^2
☐ D. 50 in^2



2)

What is the y -intercept of the line shown?

- ☐ A. -3
☐ B. 0

- ☐ C. -2
☐ D. -1



3) Solve for y : $\frac{y-3}{2} = 5$

☐ A. $y = 13$

☐ B. $y = 7$

☐ C. $y = 4$

☐ D. $y = 10$

4) Which value of x satisfies $-x + 2 > 5$?

☐ A. $x = -4$

☐ B. $x = 0$

☐ C. $x = 4$

☐ D. $x = 8$

5) $\frac{8 \times 10^{-3}}{2 \times 10^{-7}} = ?$

☐ A. 6×10^4

☐ B. 4×10^{-10}

☐ C. 4×10^4

☐ D. 10×10^4

- 6) A proportional relationship passes through $(0, 0)$ and $(3, 12)$. What is the constant of proportionality k ? (Give your answer as a simplified fraction or decimal.)



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1) Which is equivalent to 8.2×10^{-2} ?

☐ A. 820

☐ C. 0.82

☐ B. 82

☐ D. 0.082

2) The mean of the data set $\{3, 5, 7, 9\}$ is 6. What is the Mean Absolute Deviation?

☐ A. 1

☐ C. 3

☐ B. 2

☐ D. 4

3) A bag contains 4 white socks and 6 black socks. If two socks are drawn without replacement, what is the probability that both are black?

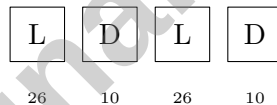
☐ A. $\frac{1}{3}$

☐ C. $\frac{6}{10}$

☐ B. $\frac{3}{10}$

☐ D. $\frac{6}{25}$

4) A password has 4 character positions: [Letter] [Digit] [Letter] [Digit]. There are 26 letters and 10 digits, and characters may repeat. How many passwords are possible?



☐ A. $26 + 10 + 26 + 10 = 72$

☐ C. $(26 + 10)^4 = 1,679,616$

☐ B. $26 \times 10 \times 26 \times 10 = 676,000$

☐ D. $26^2 + 10^2 = 776$

5) To the nearest tenth, $\sqrt{35} \approx$?

☐ A. 5.7

☐ C. 6.1

☐ B. 6.3

☐ D. 5.9



- 6) An exterior angle of a triangle measures 148° . If one of the remote interior angles is 85° , find the other remote interior angle.

- 7) If $x = \sqrt{144}$, is x rational or irrational?

- ☐ A. Irrational; $x = 144$ ☐ C. Irrational; $x = 12$
☐ B. Rational; $x = 144$ ☐ D. Rational; $x = 12$

- 8) 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)?

- 9) What is $0.\overline{3}$ as a fraction?

- ☐ A. $\frac{1}{10}$ ☐ C. $\frac{3}{99}$
☐ B. $\frac{3}{10}$ ☐ D. $\frac{3}{9} = \frac{1}{3}$

- 10) Which is the best estimate of $\sqrt{2}$?

- ☐ A. 1.2 ☐ C. 2.0
☐ B. 2.8 ☐ D. 1.4



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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 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.
- 2) **Choice C is correct.** (8.EE.A.4) Divide coefficients: $5 \div 2.5 = 2$. Subtract exponents: $10^{-2-(-5)} = 10^3$. Result: 2×10^3 .
- 3) **Choice B is correct.** (8.F.B.5) Exponential decay starts steep and flattens, like fuel tank levels as the engine runs less frequently. A is linear, C is linear, D grows.
- 4) **Choice B is correct.** (8.G.B.8) The distance formula comes from the Pythagorean Theorem applied to the horizontal and vertical legs of a right triangle.
- 5) **Choice C is correct.** (8.G.A.5) For a regular polygon, each interior angle is $\frac{(n-2) \times 180}{n} = 144$. Solving: $(n-2) \times 180 = 144n \Rightarrow 180n - 360 = 144n \Rightarrow 36n = 360 \Rightarrow n = 10$.
- 6) **Choice A is correct.** (8.G.A.4) Scale factor from ABC to DEF is $\frac{8}{4} = 2$. The corresponding side is $5 \times 2 = 10$ cm.
- 7) **Choice A is correct.** (8.EE.C.7) "Product of a number and -2 " is $-2x$; "greater than 8" is > 8 .
- 8) **The correct answer is $m = 25$.** (8.EE.C.7) Add 2 to both sides: $\frac{m}{5} = 5$. Multiply both sides by 5: $m = 25$. Verify: $\frac{25}{5} - 2 = 5 - 2 = 3 \checkmark$.
- 9) **Choice A is correct.** (8.EE.C.7) Find two numbers that multiply to 12 and add to 7: 3 and 4. So $x^2 + 7x + 12 = (x+3)(x+4)$.
- 10) **Choice C is correct.** (8.EE.B.6) Test: $4 \leq 2 + 1 \Rightarrow 4 \leq 3$ FALSE. So $(2, 4)$ is NOT in the solution region.
- 11) **Choice B is correct.** (8.G.B.7) Alternate interior angles formed by a transversal cutting parallel lines are congruent. So $z = 62^\circ$.
- 12) **Choice D is correct.** (8.EE.C) Substitute $y = 3x$ into $x + y = 12$: $x + 3x = 12$, so $4x = 12$, giving $x = 3$. Then $y = 3(3) = 9$. Solution: $(3, 9)$.
- 13) **The correct answer is $(-2, 2)$.** (8.G.A.1) Step 1: Reflect across y -axis: $(2, 5) \rightarrow (-2, 5)$. Step 2: Translate 3 down: $(-2, 5) \rightarrow (-2, 2)$.
- 14) **Choice B is correct.** (8.F.A.2) $f(10) = 20 + 1.5(10) = 35$. $g(10) = 25 + 2(10) = 45$. Since $45 > 35$, g is larger at $t = 10$.
- 15) **The correct answer is 3.** (8.G.C.9) $h = \frac{942}{3.14 \times 10^2} = \frac{942}{3.14 \times 100} = \frac{942}{314} = 3$ m.
- 16) **Choice B is correct.** (8.F.B.4) Equation: $C = 35h + 50$. Set $C = 225$: $225 = 35h + 50 \Rightarrow 175 = 35h \Rightarrow h = 5$ hours.
- 17) **Choice D is correct.** (8.G.A.3) Original length: $\sqrt{9^2 + 12^2} = \sqrt{81 + 144} = \sqrt{225} = 15$. Dilated: $15 \times \frac{2}{3} = 10$.
- 18) **Choice B is correct.** (8.G.A.5) Triangle angle sum: $180 - 35 - 62 = 83^\circ$.
- 19) **Choice A is correct.** (8.G.B.6, 8.G.B.7) The ramp surface is the hypotenuse of a right triangle: $\sqrt{3^2 + 4^2} = \sqrt{9 + 16} = \sqrt{25} = 5$ feet (the 3-4-5 triple).
- 20) **Choice A is correct.** (8.EE.B.6) Decompose using subtraction: circle minus rectangle. Circle area $= \pi r^2 = 3.14 \times 4^2 = 50.24$ m². Rectangle area $= 8 \times 3 = 24$ m². Remaining $= 50.24 - 24 = 26.24$ m².
- 21) **Choice C is correct.** (8.SP.A.1) Relatively balanced distribution above and below a line with many points on or near it indicates moderate to strong correlation.
- 22) **The correct answer is B,E.** (8.EE.B.6) The equation has slope $-\frac{2}{3}$ and y -intercept 5, so B and E are correct. The point $(5, 0)$ is not on the line because $-\frac{2}{3}(5) + 5 = \frac{5}{3}$, not 0. A perpendicular line would have slope $\frac{3}{2}$, not $-\frac{3}{2}$.
- 23) **Choice B is correct.** (8.SP.A.4) Repeat beach-lovers: $130 - 91 = 39$. Relative frequency among beach-lovers: $\frac{39}{130} = 0.30$.
- 24) **Choice A is correct.** (8.G.B.8) Deviations: $|50 - 60| = 10$, $|60 - 60| = 0$, $|55 - 60| = 5$, $|65 - 60| = 5$, $|70 - 60| = 10$. Sum $= 30$. MAD $= 30/5 = 6$.
- 25) **Choice A is correct.** (8.G.C.9) $P(\text{both}) = 0.8 \times 0.7 = 0.56$.
- 26) **Choice B is correct.** (8.NS.A.2) First prize: 20 ticket choices. Second prize: 19 remaining tickets. Total: $20 \times 19 = 380$.



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◇ Grade 8 practice builds a bridge to high school mathematics through exponents, linear systems, functions, transformations, geometry, and data models. This broad and demanding book gave you seven strong 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

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Give your child the confidence and skills they need with **7 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!

GRADE 8

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Tomorrow!

Algebra

Geometry

Statistics

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 | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
| ✓ Functions | ✓ Inequalities |
| ✓ Geometry | ✓ Data Analysis & Graphing |
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