

10 Iowa ISASP

GRADE
8
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

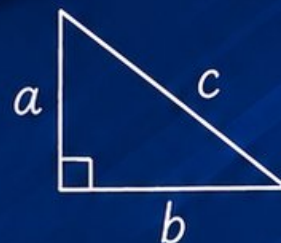
10 PRINTED
TESTS



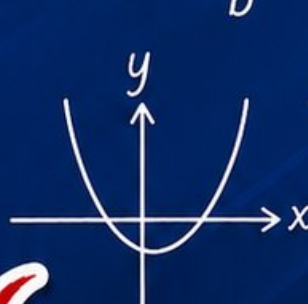
2 ONLINE
TESTS



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



$$y = mx + b$$



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

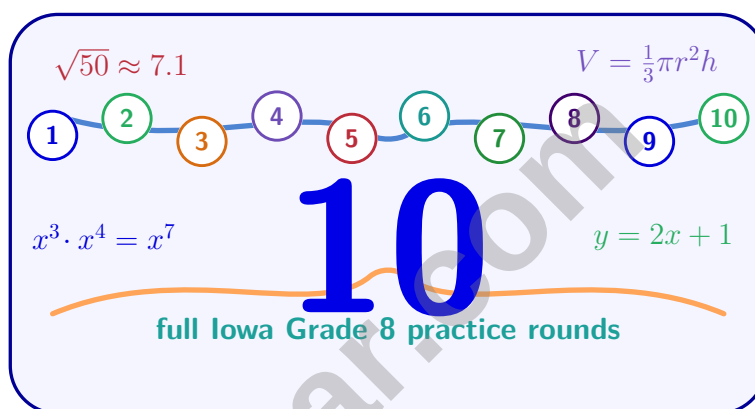


USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.

10 Iowa ISASP Grade 8 Math Practice Tests

Iowa Grade 8 ISASP Practice for steady Grade 8 growth in linear reasoning, scientific-notation applications, algebra, geometry, and data



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

Ten focused rounds for sharper Iowa ISASP math thinking

This book gives you ten full Grade 8 ISASP 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 **Graphing Proportional Relationships** (8.EE.B.5): Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. You will also meet **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.

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 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 **Solving Linear Equations in One Variable** (8.EE.C.7): Solve linear equations in one variable, including equations with one solution, infinitely many solutions, or no solutions. A second useful connection is **Angle Relationships** (8.G.B.7): Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two- and three-dimensions.

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?

Ten Iowa ISASP 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 Iowa 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 **What Is a Function?**

(8.F.A.1): Understand that a function is a rule that assigns to each input exactly one output.

It also prepares you for **Mean Absolute Deviation** (8.G.B.8): Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.



Scan me!

For more practice
& answers

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1) 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

☐ C. 300 mL

☐ B. 200 mL

☐ D. 400 mL

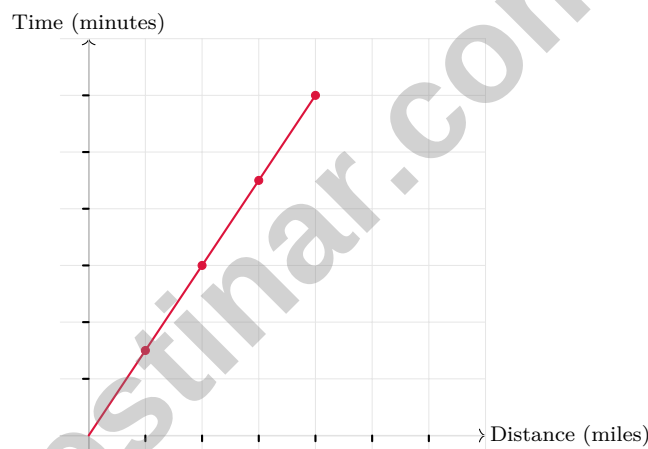
2) A rectangular prism has dimensions $2\text{ m} \times 3\text{ m} \times 4\text{ m}$ with surface area 52 m^2 . If all dimensions are doubled to $4\text{ m} \times 6\text{ m} \times 8\text{ m}$, by what factor does the surface area increase?

☐ A. Multiplied by 2

☐ C. Multiplied by 4

☐ B. Multiplied by 3

☐ D. Multiplied by 8



3)

Using the linear model, which distance-time pair should be predicted MOST reliably?

☐ A. 5 miles in about 7.5 minutes

☐ C. 2.5 miles in about 3.75 minutes

☐ B. 0.5 miles in about 0.75 minutes

☐ D. 10 miles in about 15 minutes



4) What is the value of 8^0 ?

☐ A. 0

☐ B. Undefined

☐ C. 8

☐ D. 1

5) Factor $x^2 + 5x - 36$.

☐ A. $(x + 9)(x - 4)$

☐ B. $(x - 9)(x + 4)$

☐ C. $(x + 12)(x - 3)$

☐ D. $(x + 6)(x - 6)$

6) The boundary line is $3x + 2y = 12$. If the origin $(0, 0)$ is in the solution region and the boundary is included, what is the inequality?

☐ A. $3x + 2y \leq 12$

☐ B. $3x + 2y \geq 12$

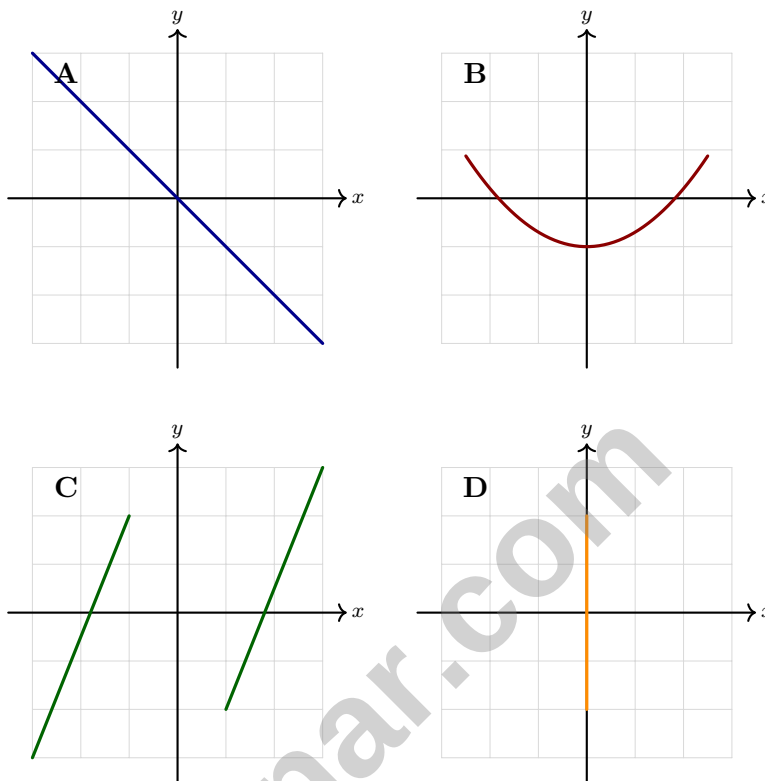
☐ C. $3x + 2y < 12$

☐ D. $3x + 2y > 12$



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7) Which graph shows a single linear function?



☐ A. Graph A (diagonal line).

☐ B. Graph B (parabola).

☐ C. Graph C (two disconnected segments).

☐ D. Graph D (vertical line segment).

8) Table: $(1, 2)$, $(2, 6)$, $(3, 10)$; and $z(x) = 3x + 1$. Which crosses the y -axis higher?

x	1	2	3
y	2	6	10

☐ A. Table function

☐ B. $z(x)$

☐ C. Both have same y -intercept.

☐ D. Cannot be determined.



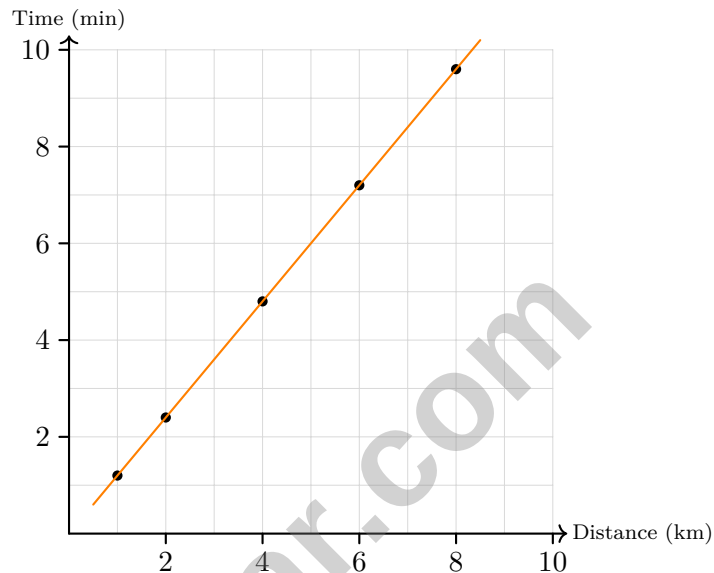
1) Which value is closest to $\sqrt{35}$?

☐ A. 5

☐ C. 6

☐ B. 7

☐ D. 5.8



2)

A delivery company tracks distance versus delivery time. The trend line shows an almost perfect fit with points nearly aligned. What can you conclude?

☐ A. Distance and time are unrelated

☐ C. The trend line should not be trusted

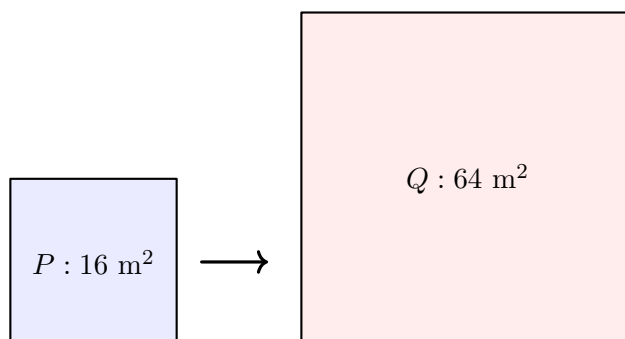
☐ B. There is a strong linear relationship with very small residuals

☐ D. The data contains measurement errors



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- 3) Figure P has area 16 m^2 and Figure Q (similar to P) has area 64 m^2 . What is the scale factor from P to Q ?



- ☐ A. 2 ☐ C. 8
☐ B. 4 ☐ D. 16
- 4) Given $f(x) = 2x - 5$, what is $f(4)$?
- ☐ A. 11 ☐ C. -1
☐ B. 3 ☐ D. 13
- 5) A chemist combines a 25% salt solution with an 80% salt solution to make 100 mL of a 50% solution. How many mL of the 25% solution are used?

- 6) If you divide an irrational number by a nonzero rational number, the result is:
- ☐ A. Always rational ☐ C. Always a whole number
☐ B. Could be either ☐ D. Always irrational



1) Which table represents a NONLINEAR function?

x	0	1	2	3
y	1	2	4	8

- ☐ A. No, y increases
☐ B. Yes, the first differences are not constant
☐ C. Yes, the y -values are doubling
☐ D. No, the x -values are equally spaced
- 2) A rectangle MNOP undergoes a 90-degree clockwise rotation about its center. Which statement is true about rectangle M'N'O'P'?

- ☐ A. The area increases by half
☐ B. The shape is no longer a rectangle
☐ C. The area doubles
☐ D. The rectangle is congruent to the original
- 3) Two points on a line are $(-3, 2)$ and $(3, -4)$. What is the slope?

- ☐ A. -1
☐ B. 1
☐ C. $-\frac{1}{6}$
☐ D. 6
- 4) A grandmother is 42 years old. Her grandson is 10 years old. In how many years will the grandmother be exactly 3 times as old as her grandson?
- ☐ A. 6 years
☐ B. 8 years
☐ C. 10 years
☐ D. 12 years
- 5) A spring stretches when weights are attached. The table shows the length L (in cm) for a spring with w weights attached.

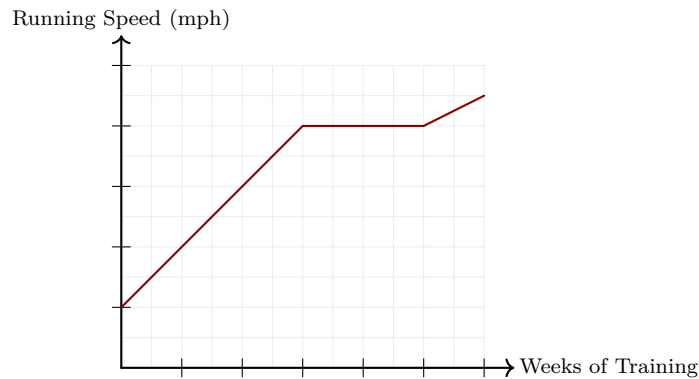
Number of Weights (w)	0	2	4	6
Length (L, cm)	10	14	18	22

Which equation describes the relationship?

- ☐ A. $L = 2w + 10$
☐ B. $L = 10w + 2$
☐ C. $L = 4w + 10$
☐ D. $L = w + 10$



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& answers



6)

A runner trains for 6 weeks. Speed increases for the first 3 weeks, stays constant for 2 weeks (maintenance phase), then improves slightly. During weeks 3–5, what is the runner's speed trend?

- | | |
|---|---|
| ☐ A. Speed continues to increase | ☐ C. Speed decreases |
| ☐ B. Speed remains constant | ☐ D. Speed fluctuates randomly |

7) A dilation with center at the origin and scale factor $\frac{1}{2}$ is applied to point $B(8, -6)$. What are the coordinates of B' ?

- | | |
|---|---------------------------------------|
| ☐ A. $(4, -3)$ | ☐ C. $(8, -3)$ |
| ☐ B. $(16, -12)$ | ☐ D. $(4, -6)$ |

8) A triangle has angles measuring 55° , 68° , and x° . Find x .

- | | |
|--|--|
| ☐ A. 57° | ☐ C. 77° |
| ☐ B. 67° | ☐ D. 87° |

9) For $y \leq -\frac{1}{3}x + 2$, what is the y -intercept of the boundary line?



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.C) Let $x = \text{mL of } 100\% \text{ alcohol solution}$. The 500 mL of 20% solution contains 100 mL of alcohol. Set up $\frac{x+100}{x+500} = 0.50$. Then $x + 100 = 0.5x + 250$, so $0.5x = 150$ and $x = 300$.
- 2) **Choice C is correct.** (8.G.C.9) Original: $SA = 2(6 + 8 + 12) = 52 \text{ m}^2$. Scaled: $SA = 2(24 + 32 + 48) = 208 \text{ m}^2$. Ratio: $208/52 = 4$. When dimensions scale by $k = 2$, surface area scales by $k^2 = 4$.
- 3) **Choice C is correct.** (8.SP.A.3) Predictions are most reliable within or near the observed data range (1–4 miles). Option (C) uses 2.5 miles, which is centered in this range; (D) is far extrapolation.
- 4) **Choice D is correct.** (8.EE.A.1) Any nonzero number raised to the power 0 equals 1: $8^0 = 1$.
- 5) **Choice A is correct.** (8.EE.C.7) Find two numbers that multiply to -36 and add to 5: 9 and -4 . Verify: $9 \cdot (-4) = -36$ and $9 - 4 = 5$.
- 6) **Choice A is correct.** (8.EE.B.6) Test $(0, 0)$: $3(0) + 2(0) = 0 \leq 12$ TRUE. The boundary is included, so use $\leq$.
- 7) **Choice A is correct.** (8.F.A.1) Graph A is one nonvertical straight line, so it is a linear function. Graph B is a function but not linear. Graph C is made of two separate segments, not one single linear function. Graph D is a vertical line segment, so it is not a function.
- 8) **Choice B is correct.** (8.F.A.2) Table slope: $(6 - 2)/(2 - 1) = 4$. From $(1, 2)$: $2 = 4(1) + b \Rightarrow b = -2$. So y -intercept is -2 . For z : y -intercept is 1. Since $1 > -2$, z is higher.
- 9) **Choice A is correct.** (8.F.B.4) The sign-up fee \$25 is a one-time cost (the y -intercept, the value when $m = 0$). The monthly rate \$15 is the slope (rate of change per month). Therefore, $C = 15m + 25$. The slope tells how much additional cost per month; the intercept tells the starting cost.
- 10) **Choice B is correct.** (8.F.B.5) The change in slope (from $3/4$ to $(4.5 - 3)/(7 - 4) = 0.5$ per meter) indicates a change in the rate structure. Option B explains why: different geological layers can cost differently. A is wrong because the slope changes, C is wrong because the line continues, and D is wrong because the slope stays positive.
- 11) **Choice A is correct.** (8.G.A.3) The blue rectangle has width 3; the red has width 1.5. Scale factor is $\frac{1.5}{3} = \frac{1}{2}$.
- 12) **Choice B is correct.** (8.G.B.8) $d = \sqrt{(8 - 2)^2 + (12 - 4)^2} = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$.
- 13) **Choice C is correct.** (8.G.B.7) If the angles are $3k$ and $7k$, then $3k + 7k = 90$, so $10k = 90$ and $k = 9^\circ$. The smaller angle is $3 \times 9 = 27^\circ$.
- 14) **Choice C is correct.** (8.G.C.9) If height triples, volume triples (linear relationship with h in $V = \frac{1}{3}Bh$). New volume: $3 \times 240 = 720 \text{ ft}^3$.
- 15) **Choice A is correct.** (8.EE.B.6) Garden = $25 \times 10 = 250 \text{ m}^2$. Path $\approx 26.9 \times 1.5 = 40.35 \text{ m}^2$. Remaining $\approx 250 - 40.35 = 209.65 \text{ m}^2$, which rounds to about 209.7 m^2 .
- 16) **Choice B is correct.** (8.SP.A.1) As speed increases, time to reach a destination decreases—a clear negative correlation. The other choices show positive or no clear correlation.
- 17) **Choice B is correct.** (8.SP.A.4) Row-conditional frequencies correctly compare completion within each group: salaried employees complete at 80%, hourly at 70%. Option B divides by the row total for each group, which is the proper method for conditional comparison.
- 18) **The correct answer is 1×10^6 .** (8.EE.A.4) Multiply coefficients: $2.5 \times 4 = 10$. Add exponents: $10^{3+2} = 10^5$. Result: $10 \times 10^5 = 1 \times 10^6$.
- 19) **Choice C is correct.** (8.G.B.8) Group 1's smaller MAD (2) shows less spread and more consistent performance. Group 2's larger MAD (10) indicates greater variability in scores.
- 20) **Choice D is correct.** (8.G.C.9) Monthly rate: $18\%/12 = 1.5\%$. Month 1: $800 \times 0.015 = \$12$. Month 2: $812 \times 0.015 = \$12.18$. Month 3 uses the new balance, about $\$824.18$, so the interest is $824.18 \times 0.015 \approx \12.36 .
- 21) **The correct answer is A,C.** (8.G.C.9) A is correct: $P(\text{heads}) = \frac{1}{2}$. C is correct: $P(\text{heads and } 4) = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$. B is wrong: $P(4) = \frac{1}{6}$. D is wrong: total outcomes = 12. E is wrong: $P(\text{not heads}) = \frac{1}{2}$.
- 22) **Choice D is correct.** (8.EE.A.2) If the volume is 343 cubic units, then $e^3 = 343$, so $e = \sqrt[3]{343} = 7$ units.
- 23) **Choice D is correct.** (8.EE.B.5) Constant of proportionality $k = \frac{y}{x} = \frac{2}{4} = \frac{1}{2}$. The line passes through $(0, 0)$ and $(4, 2)$.
- 24) **Choice B is correct.** (8.F.A.3) $y = \frac{3}{4}x + 2$ perfectly matches the linear form $y = mx + b$ with $m = \frac{3}{4}$ and $b = 2$. Fractional slopes do not make a function nonlinear.



Hi, Detail Champion!

◇ In Grade 8, small details can change an entire answer: a negative sign, a decimal place, a unit, an exponent, or an inequality symbol. ◇

★ **Remember this:** You practiced noticing those details. That is a serious test skill, and it gets better with every careful review. This version gave you 10 opportunities to rehearse test-day habits. ★

Detail Checks

- **Signs:** Circle negatives before simplifying.
- **Symbols:** Read inequality signs carefully.
- **Decimals:** Line up place values.
- **Units:** Match the unit the question asks for.

Grade 8 test-day tip: Use the final minute on each section for a detail scan, not a full redo.

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

Jay Daie

Your Detail-Check 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