

Indiana I LEARN

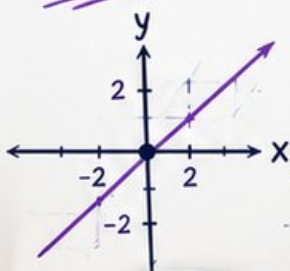
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

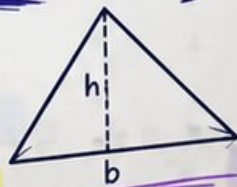
$$y = mx + b$$



**BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!**

Practice
Today
Succeed
Tomorrow!

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



7 PRINTED
TESTS



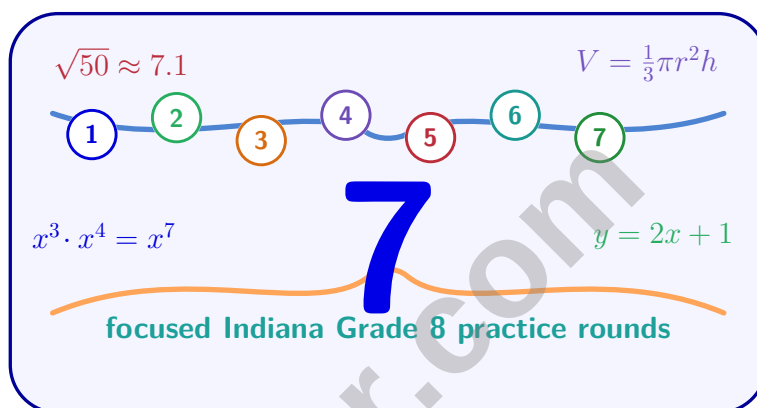
2 ONLINE
TESTS



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

7 Indiana ILEARN Grade 8 Math Practice Tests

Grade 8 ILEARN Practice for Stronger Algebra and Geometry Skills



Seven complete 40-question Grade 8 ILEARN 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, Indiana Grade 8 Problem Solver!

Seven focused rounds for sharper ILEARN math thinking

This book gives you seven full Grade 8 ILEARN 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 Indiana 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.

Indiana 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 ILEARN 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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& answers

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1) To the nearest tenth, which is the best estimate for $\sqrt{56}$?

☐ A. 7.0

☐ C. 8.0

☐ B. 6.0

☐ D. 7.5

2) What is the domain of the relation $\{(1, 2), (3, 4), (5, 6), (7, 8)\}$?

☐ A. $\{2, 4, 6, 8\}$
☐ C. $\{1, 2, 3, 4, 5, 6, 7, 8\}$
☐ B. $\{1, 3, 5, 7\}$
☐ D. $\{3, 6, 9, 12\}$


3)

A patient receives a medication injection. The dosage spikes immediately, then decreases as the body metabolizes it, and stabilizes at a baseline. Which interval shows the body absorbing the drug most rapidly?

☐ A. From 0 to 1 hour (absorption/rise)

☐ D. The rise and decay are equally rapid

☐ B. From 1 to 4 hours (decay)

☐ C. From 4 to 6 hours (plateau)

4) An error was made: a student calculated that if legs are 10 and 10, the hypotenuse is 20. What is the correct hypotenuse?

☐ A. $10\sqrt{2}$
☐ C. 20

☐ B. $\sqrt{200}$
☐ D. 14 (approx)


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5) The sum of exterior angles of any convex polygon is always:

☐ A. 180°

☐ C. 360°

☐ B. 270°

☐ D. Depends on the number of sides

6) Two similar polygons have areas in the ratio $\frac{9}{16}$. What is the scale factor from the smaller to the larger polygon?

☐ A. $\frac{9}{16}$

☐ C. $\frac{4}{3}$

☐ B. $\frac{3}{4}$

☐ D. 2.25

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

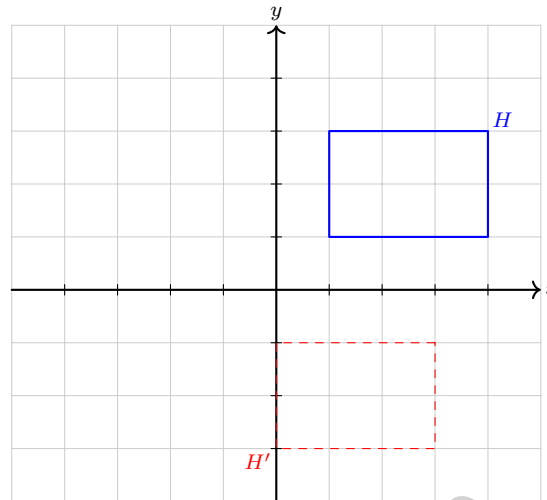
☐ A. $x^2 + 6x - 7$

☐ C. $x^2 + 7x - 1$

☐ B. $x^2 - 7$

☐ D. $x^2 + 8x - 7$

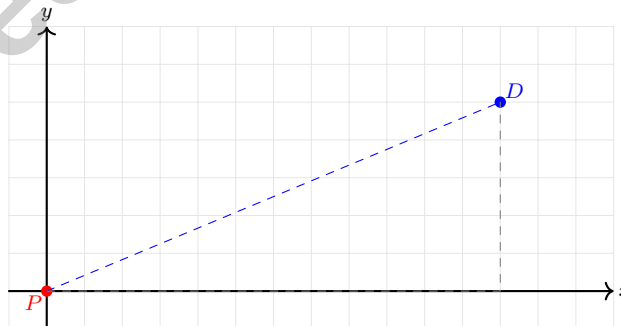




9)

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
- 10) A sailing boat travels from port $P = (0, 0)$ to destination $D = (12, 5)$ on a map. Each unit represents 1 nautical mile. What is the distance traveled (in nautical miles)?



- ☐ A. 17 nm
☐ B. 13 nm
☐ C. 7 nm
☐ D. 25 nm



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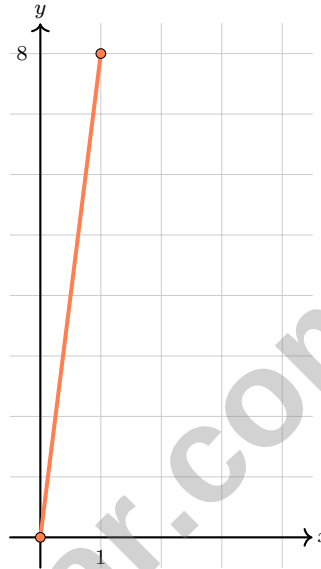
1) What is $\sqrt[3]{216}$?

☐ A. 5

☐ C. 7

☐ B. 8

☐ D. 6



2)

What is the slope?

☐ A. 1

☐ C. 8

☐ B. 4

☐ D. $\frac{1}{8}$

3) Consider the equation $2x + 5 = 2x + 5$. How many solutions does this have?

☐ A. One solution

☐ C. Infinitely many solutions

☐ B. No solution

☐ D. Two solutions



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4) If $x - 8 \leq -2$, what is the solution?

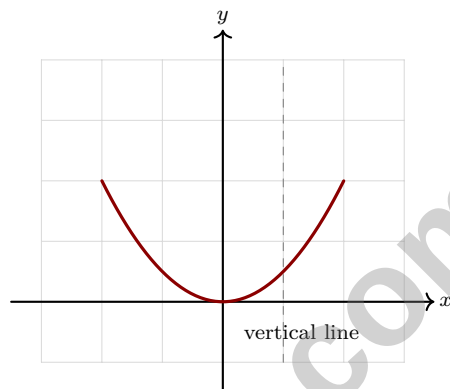
☐ A. $x \leq 6$

☐ C. $x \leq -10$

☐ B. $x \geq 6$

☐ D. $x \geq -10$

5) A vertical line test is performed on the graph below. How many times does a vertical line intersect the curve?



☐ A. Zero times (the line misses the curve). ☐ C. Twice (the line intersects at two points).

☐ B. Once (the line intersects at one point). ☐ D. More than twice.



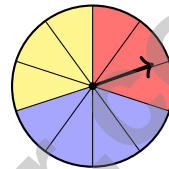
1) A figure is reflected across a line and then rotated. Which statement is always true?

- ☐ A. The figure changes size
- ☐ B. The angles are no longer equal
- ☐ C. The resulting figure is congruent to the original
- ☐ D. The perimeter increases

2) Find the Mean Absolute Deviation (MAD) of the data set $\{2, 4, 6, 8, 10\}$.

- ☐ A. 2
- ☐ B. 2.4
- ☐ C. 3
- ☐ D. 6

3) A spinner has 10 equal sections: 3 red, 4 blue, and 3 yellow. What is the probability of landing on red OR blue?



3 red, 4 blue, 3 yellow

- ☐ A. $\frac{4}{10}$
- ☐ B. $\frac{12}{10}$
- ☐ C. $\frac{7}{10}$
- ☐ D. $\frac{3}{10}$

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

- ☐ A. $9 + 8 + 7 = 24$
- ☐ B. $9 \times 8 \times 7 = 504$
- ☐ C. $\binom{9}{3} = 84$
- ☐ D. $9^3 = 729$



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5)



Based on the number line, which decimal is closest to $\sqrt{60}$?

☐ A. 7.5

☐ C. 7.8

☐ B. 7.9

☐ D. 7.7

6) Which of the following equals 3.8×10^2 ?

☐ A. 38

☐ C. 3,800

☐ B. 38,000

☐ D. 380

7) A rectangular garden is 20 m long and 12 m wide. A triangular flower bed (base 8 m, height 5 m) is added. What is the total area?

8) If r is a nonzero rational number and i is an irrational number, which expression is definitely rational?

☐ A. $r + i$
☐ C. $\frac{r}{r}$ (where $r \neq 0$)

☐ B. $r \times i$
☐ D. $i - r$


Indiana ILEARN 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 Indiana ILEARN practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** (8.NS.2) $7^2 = 49$ and $8^2 = 64$. Since 56 is near the midpoint between 49 and 64, $\sqrt{56} \approx 7.48$, closest to 7.5.
- 2) **Choice B is correct.** (8.AF.3) The domain is the set of all inputs (x -coordinates). From the pairs, the inputs are 1, 3, 5, 7.
- 3) **Choice A is correct.** (8.AF.4) The graph shows a spike from 0 to 5 mg in 1 hour, then a gradual decrease from 5 to 2 mg over 3 hours. The steepest positive slope is in the first hour.
- 4) **Choice A is correct.** (8.GM.3) Correct calculation: $10^2 + 10^2 = 100 + 100 = 200$, so $c = \sqrt{200} = \sqrt{100 \cdot 2} = 10\sqrt{2} \approx 14.14$. The student added the legs directly instead of using the Pythagorean Theorem.
- 5) **Choice C is correct.** (8.GM.2) The sum of exterior angles of any convex polygon is always 360° , regardless of the number of sides.
- 6) **Choice C is correct.** (8.GM.1) The area ratio smaller:larger is $\frac{9}{16}$. The linear ratio is $\sqrt{\frac{9}{16}} = \frac{3}{4}$, so the scale factor from the smaller polygon to the larger polygon is the reciprocal, $\frac{4}{3}$.
- 7) **Choice A is correct.** (8.AF.1) "Product of a number and -2 " is $-2x$; "greater than 8" is > 8 .
- 8) **Choice A is correct.** (8.AF.2) FOIL: $(x + 7)(x - 1) = x^2 - x + 7x - 7 = x^2 + 6x - 7$.
- 9) **Choice C is correct.** (8.GM.1) Reflecting $(1, 1) \rightarrow (1, -1)$, then translating left 1 gives $(0, -1)$. This matches a vertex of H' , and the same rule maps the whole rectangle correctly.
- 10) **Choice B is correct.** (8.GM.3) Distance $= \sqrt{12^2 + 5^2} = \sqrt{144 + 25} = \sqrt{169} = 13$ nm. (This is a 5-12-13 Pythagorean triple.)
- 11) **Choice D is correct.** (8.GM.2) Use $V = \frac{1}{3}\pi r^2 h$: $392.5 = \frac{1}{3} \times 3.14 \times r^2 \times 15$. Since $\frac{1}{3} \times 15 = 5$, $392.5 = 15.7r^2$, so $r^2 = 25$ and $r = 5$ cm.
- 12) **Choice C is correct.** (8.GM.3) If the angles are $2k$ and $3k$, then $2k + 3k = 90$, so $5k = 90$ and $k = 18^\circ$. The angles are 36° and 54° .
- 13) **Choice B is correct.** (8.AF.7) First base cost: \$5. Second base cost: \$7. Since $7 > 5$, second is higher.
- 14) **Choice C is correct.** (8.AF.6) Line 1 slope: $\frac{5-1}{4-0} = 1$. Line 2 slope: $\frac{6-2}{4-0} = 1$. Same slope; different intercepts.
- 15) **Choice B is correct.** (8.GM.1) Congruent figures have equal corresponding sides. The congruent trapezoid has the same parallel sides: 8 cm and 12 cm.
- 16) **Choice C is correct.** (8.GM.1) In a right triangle, the two acute angles are complementary: $38 + x = 90$, so $x = 52^\circ$.
- 17) **Choice B is correct.** (8.GM.2) Volume of a pyramid: $V = \frac{1}{3} \cdot B \cdot h = \frac{1}{3} \times (6 \times 6) \times 9 = \frac{1}{3} \times 36 \times 9 = 108 \text{ in}^3$.
- 18) **The correct answer is A,D.** (8.AF.2) The line goes through $(0, 0)$ and $(8, 4)$, so the slope and constant of proportionality are $\frac{4}{8} = 0.5$. A point on the line must have $y = 0.5x$; when $x = 6$, $y = 3$, so $(6, 3)$ is on the line.
- 19) **Choice D is correct.** (8.GM.1) Rectangle area $= 12 \times 8 = 96 \text{ ft}^2$. Each triangle area $= \frac{1}{2} \times 6 \times 4 = 12 \text{ ft}^2$. Two triangles $= 24 \text{ ft}^2$. Total $= 96 + 24 = 120 \text{ ft}^2$.
- 20) **Choice B is correct.** (8.DSP.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.
- 21) **Choice A is correct.** (8.DSP.1) This is a column-conditional frequency. Among tea drinkers (90 total), afternoon drinkers are 40. Relative frequency: $\frac{40}{90} \approx 0.44$.
- 22) **The correct answer is $m = 25$.** (8.AF.1) Add 2 to both sides: $\frac{m}{5} = 5$. Multiply both sides by 5: $m = 25$. Verify: $\frac{25}{5} - 2 = 5 - 2 = 3 \checkmark$.
- 23) **Choice A is correct.** (8.AF.7) Smaller MAD (1.5) indicates more consistent performance near the mean. Player A's scores vary less, making him more predictably reliable.
- 24) **Choice A is correct.** (8.DSP.3) $P(\text{black first}) = \frac{6}{10}$; $P(\text{black second} \mid \text{black first}) = \frac{5}{9}$. Product: $\frac{6}{10} \times \frac{5}{9} = \frac{30}{90} = \frac{1}{3}$.
- 25) **Choice B is correct.** (8.DSP.5) Seat 1: 8 choices. Seat 2: 7 remaining. Seat 3: 6 remaining. Using permutation notation: $\frac{8!}{5!} = 8 \times 7 \times 6 = 336$.



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You Know More Than You Think

Hi, Skilled Learner!

◇ After working through Grade 8 practice, you now have more tools than you may realize: models, formulas, graphs, equations, and reasoning habits. ◇

★ **Remember this:** The next step is learning when to use each tool. That comes from practice, review, and the courage to try a method even when you are unsure. This version gave you 7 opportunities to rehearse test-day habits. ★

Tools You Can Use

- **Models:** Make relationships visible.
- **Equations:** Represent unknowns clearly.
- **Graphs:** Show change and location.
- **Formulas:** Organize measurement problems.

Grade 8 test-day tip: Before solving, name the tool you plan to use. That small choice makes your work more intentional.

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

Jay Daie

Your Skill-Building Coach

PRACTICE TODAY SUCCEED TOMORROW!

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

Practice
Today
Succeed
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 |
| ✓ Measurement & Data | ✓ And More! |



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