

# 3

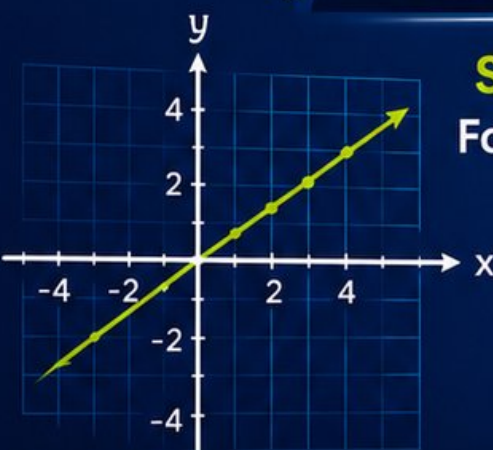
# Indiana ILEARN

## GRADE 8

# MATH

## PRACTICE TESTS

**Standards Aligned Problem Solving**  
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



# 3

**PRINTED  
TESTS**

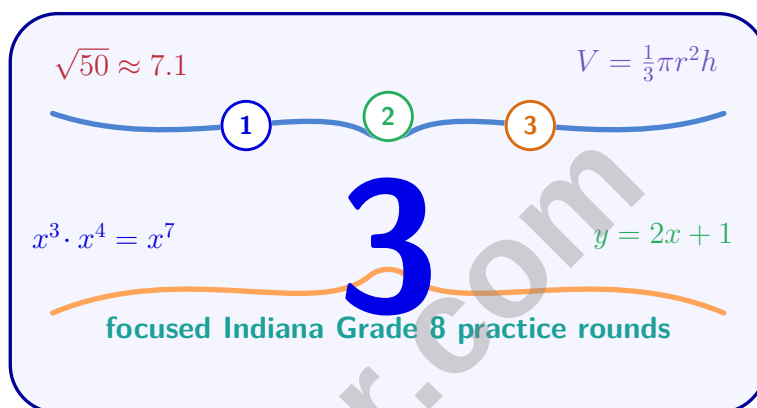
# 2

**ONLINE  
TESTS**

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

# 3 Indiana ILEARN Grade 8 Math Practice Tests

*Three ILEARN Practice Tests for Targeted Grade 8 Review*



Three 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!

Three focused rounds for sharper ILEARN math thinking

This book gives you three 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 three-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?

Three ILEARN tests, 120 questions, and a focused review path

| Part         | What You Will Practice                                                                        |
|--------------|-----------------------------------------------------------------------------------------------|
| Tests 1–2    | Real numbers, exponents, scientific notation, equations, and careful reading.                 |
| Test 3       | 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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For more practice  
& answers

# Table of Contents



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- 1) A taxi charges \$3 to get in the car plus \$0.50 per mile driven. If  $d$  represents the distance in miles and  $C$  represents the cost in dollars, which equation models this situation?

☐ A.  $C = 0.50d + 3$

☐ C.  $C = 3.50d$

☐ B.  $C = 3d + 0.50$

☐ D.  $C = 0.50d - 3$

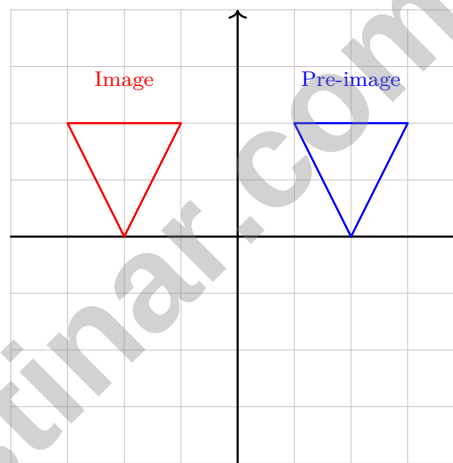
- 2) A cube has an edge length of 3 inches. Find its total surface area.

☐ A.  $9 \text{ in}^2$

☐ C.  $54 \text{ in}^2$

☐ B.  $27 \text{ in}^2$

☐ D.  $81 \text{ in}^2$



3)

The triangle was reflected across which line?

☐ A.  $y = x$

☐ C. The  $y$ -axis

☐ B.  $y = -x$

☐ D. The line  $y = 2$



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- 4) A virus has diameter  $1.2 \times 10^{-7}$  m. Bacteria has diameter  $8 \times 10^{-6}$  m. How many times larger is the bacterium than the virus?

- 5) Solve for  $t$ :  $2(t + 3) = t + 10$

☐ A.  $t = 4$

☐ B.  $t = 16$

☐ C.  $t = 2$

☐ D.  $t = 8$

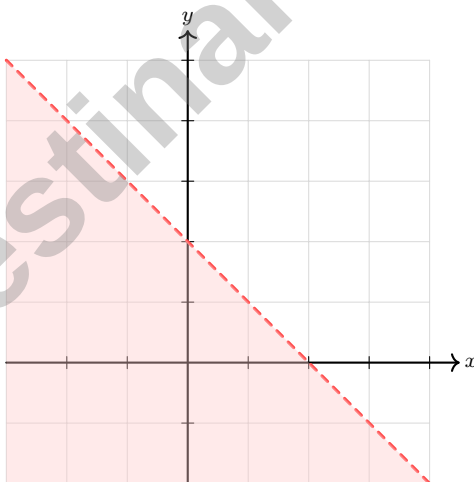
- 6) Solve:  $4x + 1 > 2x + 9$

☐ A.  $x > 4$

☐ B.  $x < 4$

☐ C.  $x > -4$

☐ D.  $x < -4$



7)

Based on the dashed line and shaded region, what inequality is shown?

☐ A.  $y > -x + 2$

☐ B.  $y < -x + 2$

☐ C.  $y \geq -x + 2$

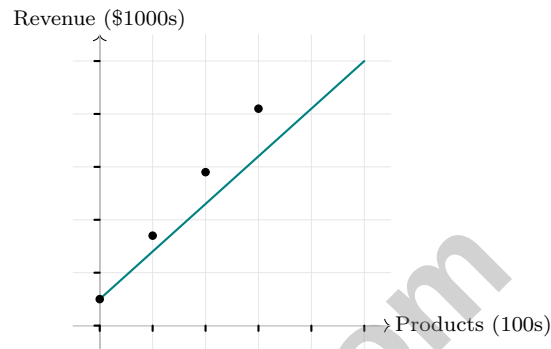
☐ D.  $y \leq -x + 2$



- 8) A cylinder has a volume of  $1256 \text{ cm}^3$  and radius of 10 cm. What is its height? (Use  $\pi \approx 3.14$ .)

☐ A. 4 cm  
☐ B. 6 cm

☐ C. 8 cm  
☐ D. 12 cm



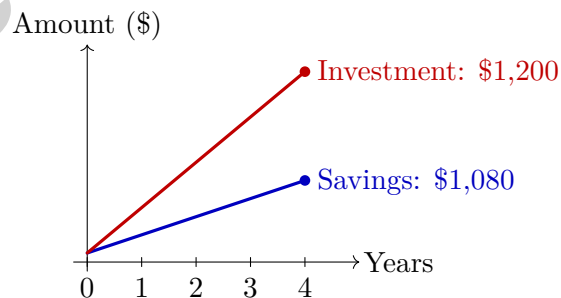
9)

A company's revenue model is  $R = 12x + 500$ , where  $R$  is revenue and  $x$  is the number of products sold. If revenue is \$8,900, how many products were sold?

☐ A. 525  
☐ B. 700

☐ C. 675  
☐ D. 725

- 10) A student invests \$1,000 and compares: saving account at 2% simple interest vs investing at 5% simple interest for 4 years. What is the difference in final amounts?



☐ A. \$60  
☐ B. \$80

☐ C. \$120  
☐ D. \$200



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1) Which of the following is NOT a valid interior angle for a regular polygon?

☐ A.  $162^\circ$

☐ C.  $144^\circ$

☐ B.  $108^\circ$

☐ D.  $130^\circ$

2) Given  $f(x) = 4x - 3$ , find  $f(5)$ .

3) Convert  $0.\overline{7}$  to a fraction.

☐ A.  $\frac{1}{9}$

☐ C.  $\frac{7}{99}$

☐ B.  $\frac{7}{10}$

☐ D.  $\frac{7}{9}$

4) Between which two consecutive integers does  $\sqrt[3]{100}$  lie?

☐ A. 2 and 3

☐ C. 3 and 4

☐ B. 5 and 6

☐ D. 4 and 5

5) Simplify and estimate  $\sqrt{2} \times \sqrt{8}$ .

☐ A. Approximately 4.5

☐ C. Approximately 3.4

☐ B. Exactly 8

☐ D. Exactly 4

6) What is 0.00056 in scientific notation?

☐ A.  $56 \times 10^{-5}$

☐ C.  $5.6 \times 10^4$

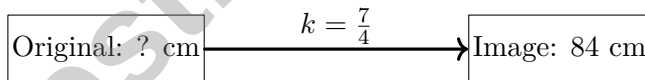
☐ B.  $5.6 \times 10^{-5}$

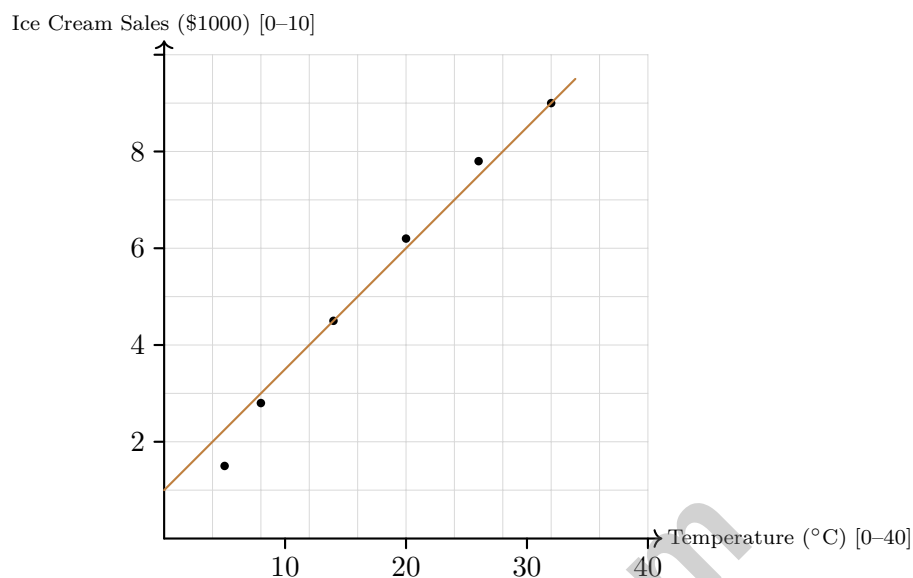
☐ D.  $5.6 \times 10^{-4}$



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- 7) A composite solid consists of a cube with edge 2 cm on top of a rectangular prism base with dimensions  $4 \times 4 \times 3$  cm (where the cube sits on one face of the prism, sharing a  $2 \times 2$  face). Ignoring the shared face, what is the combined surface area?
- ☐ A.  $60 \text{ cm}^2$  ☐ C.  $84 \text{ cm}^2$   
☐ B.  $76 \text{ cm}^2$  ☐ D.  $96 \text{ cm}^2$
- 8) A line segment has endpoints at  $(1, 2)$  and  $(5, 6)$ . After a translation, the endpoints become  $(3, 5)$  and  $(7, 9)$ . What is the translation vector?
- ☐ A.  $(2, 3)$  ☐ C.  $(4, 4)$   
☐ B.  $(-2, -3)$  ☐ D.  $(1, 2)$
- 9) A phone plan costs \$30 per month plus \$0.15 per text message. If Marcus paid \$45 last month, which equation represents the situation, where  $t$  is the number of texts?
- ☐ A.  $30 + 0.15t = 45$  ☐ C.  $45 + 30t = 0.15$   
☐ B.  $30t + 0.15 = 45$  ☐ D.  $0.15t - 30 = 45$
- 10) A dilated figure has a perimeter of 84 cm. The scale factor used was  $\frac{7}{4}$ . What was the perimeter of the original figure?





1)

The scatter plot shows temperature versus ice cream sales. What is the approximate  $y$ -intercept (sales when temperature is  $0^{\circ}\text{C}$ )?

☐ A. \$1000☐ C. \$2000☐ B. \$0☐ D. \$3000

2) Two hikers start from the same point, walking in opposite directions. One walks at 4 mph, the other at 5 mph. After how many hours are they 27 miles apart?



3) A point  $Q(6, 8)$  is dilated to  $Q'(3, 4)$ . If the dilation center is the origin, what is the scale factor?

☐ A. 2

☐ C. 3

☐ B.  $\frac{1}{2}$

☐ D.  $\frac{1}{3}$

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

☐ A. 4

☐ C.  $-6$

☐ B. 16

☐ D. 6

5) Which statement about the square roots of perfect squares is true?

☐ A. They cannot be classified as rational

☐ C. They never equal an integer

☐ B. They are always irrational

☐ D. They can always be written as whole numbers

6)

0.7 $\overline{89}$

Non-repeating digits: 1

Repeating-block digits: 2

Denominator form:  $\frac{?}{990}$

What goes in the numerator when converting  $0.7\overline{89}$ ?

☐ A.  $7 + 89 = 96$

☐ C. 89

☐ B. 789

☐ D.  $789 - 7 = 782$



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For more practice  
& answers

**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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& answers

## Practice Test Answers and Explanations

### Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** **(8.AF.6)** Initial fee is \$3 (intercept), rate per mile is \$0.50 (slope). Equation:  $C = 0.50d + 3$ .
- 2) **Choice C is correct.** **(8.GM.2)** A cube has 6 faces. Each face has area  $3^2 = 9 \text{ in}^2$ . Total =  $6 \times 9 = 54 \text{ in}^2$ .
- 3) **Choice C is correct.** **(8.GM.1)** Reflecting across the  $y$ -axis changes  $(x, y) \rightarrow (-x, y)$ . The pre-image vertex  $(3, 2) \rightarrow (-3, 2)$  and apex  $(2, 0) \rightarrow (-2, 0)$ , matching the image.
- 4) **The correct answer is 66.67.** **(8.NS.3)** Divide:  $\frac{8 \times 10^{-6}}{1.2 \times 10^{-7}} = \frac{8}{1.2} \times 10^1 = 6.67 \times 10^1 \approx 66.67$ .
- 5) **Choice A is correct.** **(8.AF.1)** Distribute:  $2t + 6 = t + 10$ . Subtract  $t$  and 6:  $t = 4$ .
- 6) **Choice A is correct.** **(8.AF.1)** Subtract  $2x$ :  $2x + 1 > 9$ . Subtract 1:  $2x > 8$ . Divide by 2:  $x > 4$ .
- 7) **Choice B is correct.** **(8.AF.2)** DASHED line means  $>$  or  $<$ . Shading BELOW means  $y <$ . Combined:  $y < -x + 2$ .
- 8) **Choice A is correct.** **(8.GM.2)** From  $V = \pi r^2 h$ :  $1256 = 3.14 \times 100 \times h \Rightarrow h = \frac{1256}{314} = 4 \text{ cm}$ .
- 9) **Choice B is correct.** **(8.DSP.2)** Set  $R = 8900$ :  $8900 = 12x + 500 \Rightarrow 12x = 8400 \Rightarrow x = 700$ .
- 10) **Choice C is correct.** **(8.GM.3)** Savings account:  $A = 1000(1 + 0.02 \times 4) = \$1,080$ . Investment:  $A = 1000(1 + 0.05 \times 4) = \$1,200$ . Difference:  $\$1,200 - \$1,080 = \$120$ .
- 11) **Choice D is correct.** **(8.NS.3)** Numerator:  $g^8 \cdot g^{-2} = g^6$ . Then  $\frac{g^6}{g^3} = g^3$ .
- 12) **Choice D is correct.** **(8.NS.3)**  $s = \sqrt{200} = \sqrt{100 \times 2} = 10\sqrt{2} \approx 14.14$  meters.
- 13) **Choice C is correct.** **(8.AF.2)** Slope  $k = \frac{5}{5} = 1$ . The line has a 45-degree angle, so  $y = x$ .
- 14) **Choice A is correct.** **(8.AF.2)** Using points  $(1, -1)$  and  $(5, 3)$ : slope =  $\frac{3 - (-1)}{5 - 1} = \frac{4}{4} = 1$ .
- 15) **The correct answer is  $\frac{37}{300}$ .** **(8.NS.1)** Set  $x = 0.12\bar{3} = 0.12333 \dots$ . Then  $100x = 12.\bar{3}$  and  $1000x = 123.\bar{3}$ . Subtracting:  $900x = 111$ , so  $x = \frac{111}{900} = \frac{37}{300}$ .
- 16) **Choice A is correct.** **(8.AF.2)** Trinomial  $x^2 + 9x + 20$  factors as  $(x + 4)(x + 5)$  (multiply:  $4 \cdot 5 = 20$ , add:  $4 + 5 = 9$ ).
- 17) **Choice A is correct.** **(8.AF.3)** Option A fails the function test: input 3 maps to both 1 and 2. The other options each have unique input-output pairs.
- 18) **The correct answer is A,C.** **(8.NS.1)** Statement A is true because rational numbers are closed under addition. Statement C is true because any terminating decimal, such as  $0.75 = \frac{3}{4}$ , is rational. Statement B is false because two irrational numbers can multiply to a rational number, for example  $\sqrt{2} \times \sqrt{8} = 4$ . Statement D is false because integers are rational. Statement E is false because perfect squares have rational square roots, not irrational ones.
- 19) **Choice A is correct.** **(8.AF.7)**  $T_{\text{oven}}(10) = 15(10) + 70 = 220$  degrees. Slope of freezer:  $(-15 - (-5))/2 = -5$ , so  $T_{\text{freeze}}(10) = -5 - 5(10) = -55$  degrees. Oven at 220 is much warmer.
- 20) **Choice A is correct.** **(8.AF.5)** A straight line represents a linear function. A parabola (curved) represents a nonlinear function.
- 21) **Choice B is correct.** **(8.AF.4)** 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.
- 22) **Choice A is correct.** **(8.GM.1)** Subtract 6 from the  $x$ -coordinate and add 8 to the  $y$ -coordinate:  $(3 - 6, -2 + 8) = (-3, 6)$ .
- 23) **Choice A is correct.** **(8.GM.1)** The blue rectangle has width 3; the red has width 1.5. Scale factor is  $\frac{1.5}{3} = \frac{1}{2}$ .
- 24) **Choice D is correct.** **(8.GM.1)** Use the triangle angle sum:  $50 + 30 + \angle ACB = 180$ . So  $\angle ACB = 180 - 50 - 30 = 100^\circ$ .
- 25) **Choice C is correct.** **(8.GM.3)**  $d = \sqrt{(13 - 1)^2 + (6 - 1)^2} = \sqrt{12^2 + 5^2} = \sqrt{144 + 25} = \sqrt{169} = 13$ . (This is a 5-12-13 Pythagorean triple.)
- 26) **Choice B is correct.** **(8.GM.3)** Alternate interior angles are congruent when a transversal cuts parallel lines. So  $q = 89^\circ$ .
- 27) **The correct answer is  $\sqrt{10}$ .** **(8.NS.2)** Since square root is an increasing function, compare the radicands:  $10 < 19 < 35$ . Therefore  $\sqrt{10} < \sqrt{19} < \sqrt{35}$ .



## Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

### What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

**Grade 8 test-day tip:** Before test day, review the questions that made you pause. Those are the best teachers.

If you want to share something or ask a question, please email me at [jay@testinar.com](mailto:jay@testinar.com).

**Jay Daie**

Your Grade 8 Math Friend

# PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE  
**8**

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for success on test day!



## 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
- ✓ 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!



### 2 Extra Online Practice Tests Included!

Use these two additional online practice tests for extra review after the printed tests.

[testinar.com/math8](https://testinar.com/math8)

## PRACTICE. PREPARE. SUCCEED.



**Testinar**

More Practice. More Confidence.  
Better **Results**.