

6 Indiana ILEARN

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



2 ONLINE
TESTS



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

6 Indiana ILEARN Grade 8 Math Practice Tests

Focused Grade 8 Math Tests with Review, Keys, and Clear Explanations



Six 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!

Six focused rounds for sharper ILEARN math thinking

This book gives you six 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 six-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?

Six ILEARN tests, 240 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 4–6	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

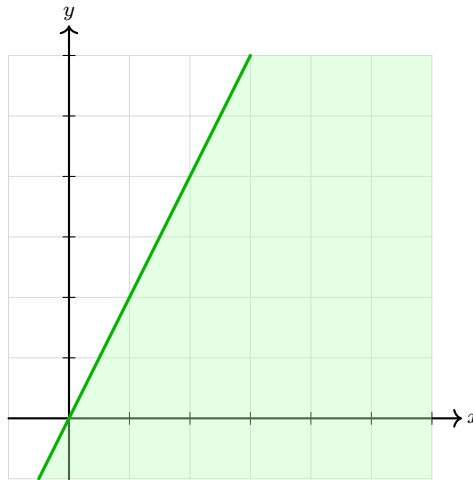
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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1)

The graph shows which inequality?

☐ A. $y > 2x$

☐ C. $y \geq 2x$

☐ B. $y < 2x$

☐ D. $y \leq 2x$

2) Which set correctly separates rational and irrational numbers?

☐ A. Rational: all decimals; Irrational: all square roots

☐ C. Rational: π , $0.101001\dots$; Irrational: $\frac{7}{2}$, $\sqrt{16}$

☐ B. Rational: $\sqrt{2}$, $\frac{1}{3}$; Irrational: $0.\bar{3}$, $\sqrt{9}$

☐ D. Rational: $\sqrt{4}$, 0.5 ; Irrational: π , $\sqrt{10}$

3) Two lines are parallel. If one line has equation $y = 4x - 2$, which could be the equation of the other line?

☐ A. $y = -4x + 7$

☐ C. $y = -\frac{1}{4}x + 5$

☐ B. $y = 2x + 4$

☐ D. $y = 4x + 9$



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- 4) A residual plot has residuals 1, -2, 1, 2, -1, 0. What is the greatest absolute residual?

- 5) A student estimates $\sqrt{99} \approx 9.9$. Is this estimate above or below the actual value?

- ☐ A. Too high ☐ C. Exactly correct
☐ B. Cannot be determined ☐ D. Too low

- 6) Is $\sqrt{7} + 2$ greater than, less than, or equal to 4.6?

- ☐ A. Cannot be determined ☐ C. Exactly 4.6
☐ B. Less than 4.6 ☐ D. Greater than 4.6

- 7) A savings account earns 2% simple interest annually. If you deposit \$6,000, how much will you have after 2 years?

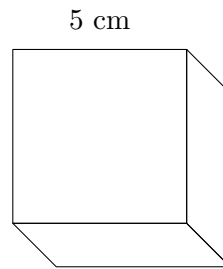
- ☐ A. \$6,120 ☐ C. \$6,240
☐ B. \$6,180 ☐ D. \$6,300

- 8) Simplify $\left(\frac{x}{y}\right)^2$ where $y \neq 0$.

- ☐ A. $\frac{2x}{2y}$ ☐ C. $\frac{x^2}{y^2}$
☐ B. $\frac{x}{y^2}$ ☐ D. $\frac{x^2}{y}$



9) If a cube has a side length of 5 cm, what is its volume?



☐ A. 15 cm^3

☐ B. 25 cm^3

☐ C. 75 cm^3

☐ D. 125 cm^3

10) Convert 950 to scientific notation.

☐ A. 9.5×10^1

☐ B. 95×10^1

☐ C. 9.5×10^3

☐ D. 9.5×10^2

11) $(5.8 \times 10^6) - (2.3 \times 10^5) = ?$

☐ A. 3.5×10^6

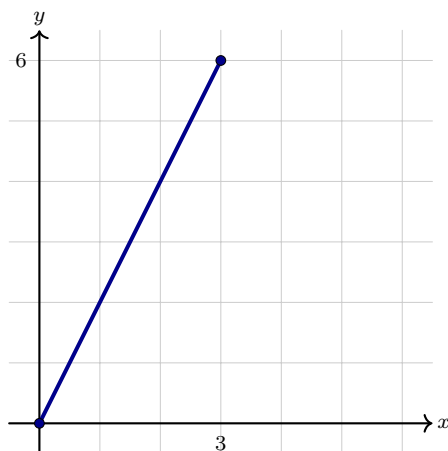
☐ B. 8.1×10^6

☐ C. 3.5×10^5

☐ D. 5.57×10^6



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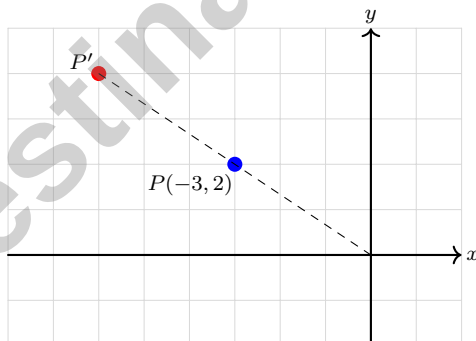


1)

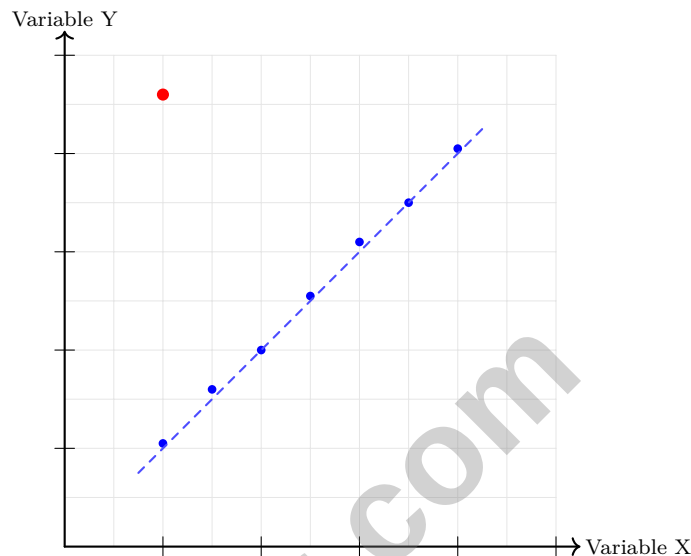
What is the slope of the line shown in the graph?

☐ A. $\frac{1}{2}$ ☐ C. 3☐ B. 6☐ D. 2

- 2) Point $P(-3, 2)$ is dilated by scale factor 2 from the origin. What are the coordinates of P' ?

☐ A. $(-6, 4)$ ☐ C. $(6, -4)$ ☐ B. $(-3, 4)$ ☐ D. $(-6, -4)$ 

- 3) Two scatter plots compare the same dataset. Plot A omits one extreme outlier; Plot B includes it. How do you expect the correlation coefficient to change when the outlier is added?



- ☐ A. Increase dramatically ☐ C. Remain unchanged
☐ B. Decrease (become weaker) ☐ D. Become undefined
- 4) From the table below, which statement correctly compares completion rates between employee types?

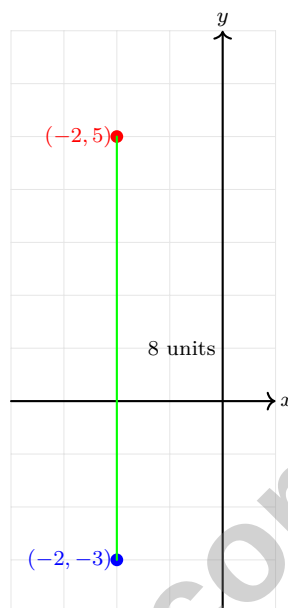
	Completed	Incomplete	Total
Salaried	96	24	120
Hourly	56	24	80
Total	152	48	200

- ☐ A. Salaried: $\frac{96}{152}$; Hourly: $\frac{56}{152}$ (both use column total).
☐ B. Salaried: $\frac{96}{120} = 0.80$; Hourly: $\frac{56}{80} = 0.70$.
☐ C. Salaried: $\frac{96}{200} = 0.48$; Hourly: $\frac{56}{200} = 0.28$.
☐ D. Salaried: $\frac{96}{120} = 0.80$; Hourly: $\frac{56}{152} \approx 0.37$.



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1) What is the vertical distance between $(-2, 5)$ and $(-2, -3)$?



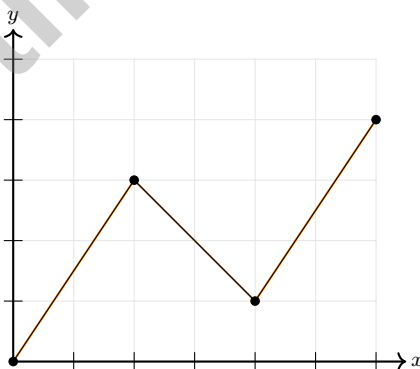
☐ A. 3

☐ C. 2

☐ B. 8

☐ D. 5

2)



Over which interval is the function decreasing most rapidly?

☐ A. From $x = 0$ to $x = 2$

☐ C. From $x = 4$ to $x = 6$

☐ B. From $x = 2$ to $x = 4$

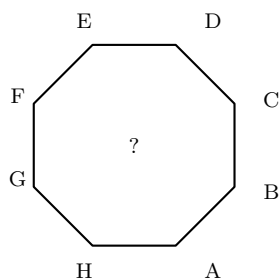
☐ D. The function never decreases



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- 3) A right triangle has legs of 15 and 20. How much longer is the hypotenuse than the shorter leg?

- ☐ A. 10 ☐ C. 25
☐ B. 20 ☐ D. 35



4)

A regular octagon $ABCDEFGH$ is shown. Each interior angle measures:

- ☐ A. 120° ☐ C. 135°
☐ B. 125° ☐ D. 140°
- 5) Triangles MNO and PQR are similar. If $MN = 6$, $NO = 8$, and $PQ = 9$, find QR .
- ☐ A. 10 ☐ C. 6.75
☐ B. 12 ☐ D. 9.5



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.AF.2)** SOLID line (includes boundary) and shading BELOW the line indicates $y \leq 2x$.
- 2) **Choice D is correct.** **(8.NS.1)** $\sqrt{4} = 2$ (rational), $0.5 = \frac{1}{2}$ (rational), π (irrational), $\sqrt{10}$ (irrational, non-perfect square). All classifications are correct.
- 3) **Choice D is correct.** **(8.AF.2)** Parallel lines have the same slope. Since the first line has slope 4, the parallel line must also have slope 4.
- 4) **The correct answer is 2.** **(8.DSP.2)** The largest absolute value among the residuals is 2.
- 5) **Choice D is correct.** **(8.NS.2)** $9.9^2 = 98.01 < 99$, so $9.9 < \sqrt{99}$. The estimate is slightly below the actual value.
- 6) **Choice D is correct.** **(8.NS.4)** $\sqrt{7} \approx 2.646$, so $\sqrt{7} + 2 \approx 4.646 > 4.6$.
- 7) **Choice C is correct.** **(8.GM.3)** Interest: $I = 6000 \times 0.02 \times 2 = \240 . Total: $6000 + 240 = \$6,240$.
- 8) **Choice C is correct.** **(8.NS.3)** Apply power to numerator and denominator: $\left(\frac{x}{y}\right)^2 = \frac{x^2}{y^2}$.
- 9) **Choice D is correct.** **(8.NS.3)** Volume of a cube $= s^3 = 5^3 = 125 \text{ cm}^3$.
- 10) **Choice D is correct.** **(8.NS.3)** Move the decimal 2 places left to get 9.5; the exponent is 2.
- 11) **Choice D is correct.** **(8.NS.3)** Rewrite with common exponent: $5.8 \times 10^6 - 0.23 \times 10^6 = (5.8 - 0.23) \times 10^6 = 5.57 \times 10^6$.
- 12) **Choice C is correct.** **(8.AF.8)** The marked point where the two lines meet is $(2, -2)$, so that ordered pair is the solution.
- 13) **The correct answer is 0.7.** **(8.DSP.3)** Total: 10 marbles. Not blue: $5 + 2 = 7$. $P(\text{not blue}) = \frac{7}{10} = 0.7$.
- 14) **Choice B is correct.** **(8.AF.5)** A linear function is represented by a straight line on a coordinate plane. This graph shows a straight line, so the function is linear.
- 15) **Choice A is correct.** **(8.AF.2)** Using $(2, 60)$ and $(5, 150)$: slope $= \frac{150 - 60}{5 - 2} = \frac{90}{3} = \30 per session.
- 16) **The correct answer is 60.** **(8.DSP.5)** Apply the Counting Principle: $3 \times 5 \times 4 = 60$ different sandwiches.
- 17) **Choice C is correct.** **(8.AF.8)** Let n = nickels, d = dimes. Then $n + d = 25$ and $0.05n + 0.10d = 1.70$. From the first equation, $d = 25 - n$. Substituting: $0.05n + 0.10(25 - n) = 1.70$, so $0.05n + 2.5 - 0.10n = 1.70$, giving $-0.05n = -0.8$, so $n = 16$.
- 18) **The correct answer is A, C.** **(8.GM.1)** Correct: (A) Corresponding angles are congruent — definition of similarity. (C) Corresponding sides are proportional — they scale by a constant factor k . Incorrect: (B) Equal length is congruence, not similarity. (D) Congruence requires equality; similarity allows scaling. (E) Scale factor can be any positive number; $k < 1$ is a reduction, still similarity.
- 19) **Choice B is correct.** **(8.AF.3)** Locate $x = -1$ and read the corresponding y -value from the graph: $y = 2$. So $f(-1) = 2$.
- 20) **Choice B is correct.** **(8.GM.2)** $6s^2 = 96$, so $s^2 = 16$, giving $s = 4$ cm. Check: $6(4)^2 = 6(16) = 96$ ✓.
- 21) **Choice C is correct.** **(8.GM.1)** Reflections reverse orientation (flip the figure). All side lengths, angles, and perimeter are preserved; only the direction of labeling changes.
- 22) **Choice A is correct.** **(8.AF.1)** Total cost is adult tickets plus child tickets. If a adults, then $(6 - a)$ children. Equation: $12a + 8(6 - a) = 60$.
- 23) **Choice A is correct.** **(8.AF.1)** Add 6: $2x \leq 16$. Divide by 2: $x \leq 8$.
- 24) **Choice A is correct.** **(8.AF.2)** FOIL: $(x + 2)(x + 6) = x^2 + 6x + 2x + 12 = x^2 + 8x + 12$.
- 25) **Choice B is correct.** **(8.GM.2)** $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 216 = 904.32 \text{ mm}^3$.
- 26) **Choice B is correct.** **(8.GM.3)** Vertical angles are congruent. So $s = 87^\circ$.
- 27) **Choice D is correct.** **(8.DSP.2)** Set $P = 0$: $0 = 4.5s - 200 \Rightarrow 4.5s = 200 \Rightarrow s \approx 44.4$ slices.
- 28) **Choice C is correct.** **(8.AF.2)** Substitute $x = 7$ into $y = 2x$: $y = 2(7) = 14$. The cost is \$14.
- 29) **Choice B is correct.** **(8.AF.3)** Base fare is \$5. Charge per mile is \$3. Total charge $= 3m + 5$.
- 30) **Choice A is correct.** **(8.AF.7)** The slope of f is 4. For g : $\Delta y / \Delta x = 3/1 = 3$. Since $4 > 3$, f has the greater rate of change.



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Hi, Future Algebra Thinker!

◇ Grade 8 practice builds a bridge to high school mathematics through exponents, linear systems, functions, transformations, geometry, and data models. This deep and steady book gave you six full 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

PRACTICE TODAY. ACHIEVE TOMORROW.

6

Give your child the confidence and skills they need with **6 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!

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



6 PRINTED TESTS



2 ONLINE TESTS



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