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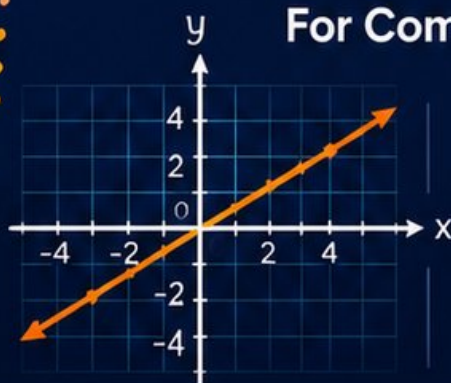
Indiana
ILEARN

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$
$$C = 2\pi r$$
$$V = \frac{1}{3}\pi r^2 h$$



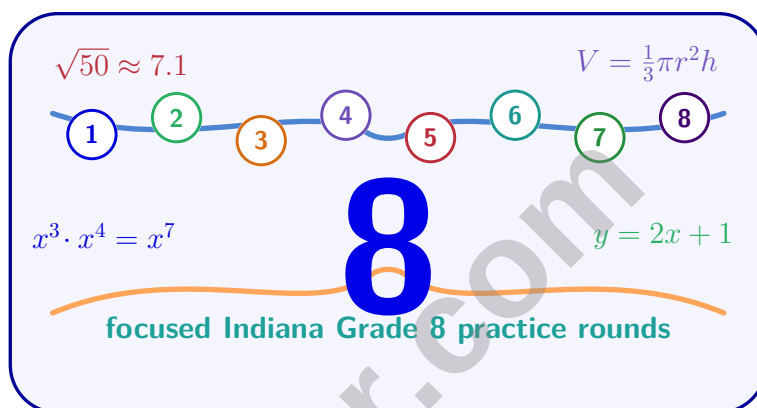
$$V = \frac{1}{3}b^2 h$$

**8** PRINTED
TESTS**2** ONLINE
TESTS

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

8 Indiana ILEARN Grade 8 Math Practice Tests

Indiana Grade 8 Review for Equations, Functions, Geometry, and Statistics



Eight 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!

Eight focused rounds for sharper ILEARN math thinking

This book gives you eight 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

An eight-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?

Eight ILEARN tests, 320 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.
Tests 7–8	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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- 1) A two-way table categorizes 150 households by income level and internet access:

	Has Internet	No Internet	Total
Low Income	40	50	90
High Income	55	5	60
Total	95	55	150

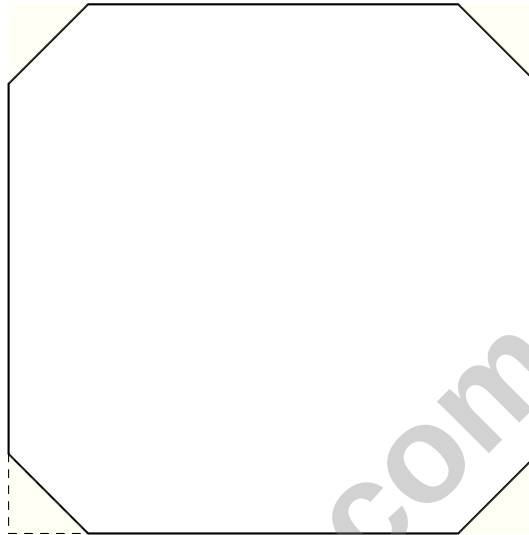
Among high-income households, what is the relative frequency of those without internet, as a decimal?

- ☐ A. 0.033 ☐ C. 0.367
☐ B. 0.083 ☐ D. 0.917
- 2) A scientist collected data on plant height (cm) versus days of growth. Which scatter plot shows a trend line that is a POOR fit?
- ☐ A. Points spread far from the line with large vertical distances ☐ C. Line passes through the center of the data cloud
☐ B. Half the points are above the line and half are below ☐ D. Points clustered tightly around the line with minimal scatter



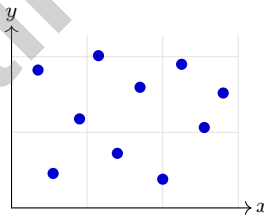
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- 3) An art installation is a regular octagon formed by cutting isosceles right triangles from each corner of a 20 m by 20 m square (each cut triangle has legs 3 m). What is the area of the octagon?



- ☐ A. 282 m^2
☐ C. 342 m^2
☐ B. 382 m^2
☐ D. 400 m^2

4)



A scatter plot shows the relationship between hours worked per week and hourly wage at a factory. The 40 points are widely spread out with no clear upward or downward trend. This suggests:

- ☐ A. Strong positive correlation between hours and wage
 ☐ C. Perfect linear relationship on a straight line
☐ B. Strong negative correlation between hours and wage
 ☐ D. Weak or no correlation between hours and wage



5) A student finds that their homework scores have a mean of 85 and MAD of 4. Which interval is one MAD from the mean?

☐ A. 81 to 89

☐ C. 80 to 90

☐ B. 75 to 95

☐ D. 70 to 100

6) The probability of rain tomorrow is $\frac{2}{5}$. What is the probability that it will NOT rain?

☐ A. $\frac{3}{5}$

☐ C. $\frac{1}{5}$

☐ B. $\frac{5}{2}$

☐ D. $\frac{2}{5}$

7) A sandwich shop offers 2 types of bread and 7 topping options. How many different one-topping sandwiches can be made?

☐ A. $2 + 7 = 9$

☐ C. $7^2 = 49$

☐ B. $2 \times 7 = 14$

☐ D. $2 \times 7 \times 7 = 98$

8) Use the table below to find the y -intercept of the linear function:

x	1	3	5
y	9	17	25

9) A student claims $\sqrt{50}$ is between 5 and 6 because 50 is between 5 and 6. What is the student's error?

☐ A. Correct reasoning

☐ D. Should compare 50 to perfect squares, not integers

☐ B. Should use 7 and 8 instead

☐ C. $\sqrt{50}$ is actually an integer



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1) Triangle P has sides 8, 15, 17. Triangle Q has sides 12, 22.5, 25.5. Are they similar?

- ☐ A. No, the sides are not equal
☐ B. No, the ratios are 1.5, 1.5, 1.5 which is not constant
☐ C. Yes, all sides have the same ratio 1.5 to Q 's sides
☐ D. Only if corresponding angles equal 90°

2) Table 1: (0, 1), (2, 5), (4, 9). Table 2: (0, -2), (1, -1), (2, 0). Which table represents a function with steeper rate of change?

x	0	2	4
Table 1	1	5	9

x	0	1	2
Table 2	-2	-1	0

- ☐ A. Table 1
☐ B. Table 2
☐ C. Both have same rate.
☐ D. Cannot be determined.
- 3) The relationship between Celsius (C) and Fahrenheit (F) is linear. When $C = 0$, $F = 32$; when $C = 100$, $F = 212$. What is the slope of the line?

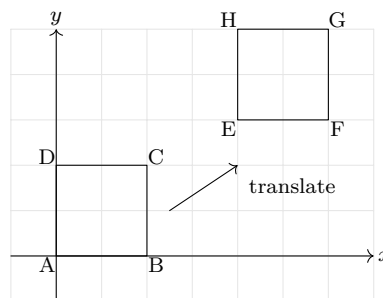
- ☐ A. 1.8
☐ B. $\frac{5}{9}$
☐ C. 0.56
☐ D. $\frac{100}{180}$

4) Pyramid A has dimensions: base edge 4 cm, height 6 cm. Pyramid B has all linear dimensions scaled by a factor of $\frac{3}{2}$. How does the volume of Pyramid B compare to Pyramid A?

- ☐ A. $\frac{3}{2}$ times larger
☐ B. $\frac{9}{4}$ times larger
☐ C. $\frac{27}{8}$ times larger
☐ D. 3 times larger



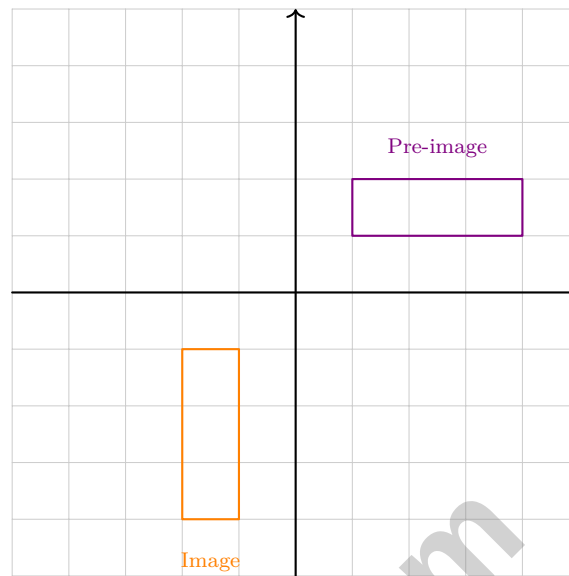
- 5) A teacher plots the relationship between attendance and test scores. The trend line shows a positive slope. What does this tell you?
- ☐ A. Attendance directly causes higher test scores
- ☐ B. All students with perfect attendance pass the test
- ☐ C. Test scores determine how often students attend
- ☐ D. As attendance increases, test scores tend to increase on average
- 6) A triangular prism has a right triangular base with legs 3 cm and 4 cm, and hypotenuse 5 cm. The height (length) of the prism is 7 cm. What is the total surface area?
- ☐ A. 12 cm^2
- ☐ B. 60 cm^2
- ☐ C. 72 cm^2
- ☐ D. 96 cm^2
- 7) A distance formula for a moving object is $d = 45t$, where d is distance in miles and t is time in hours. What is the slope, and what does it represent?
- ☐ A. Slope is 45; represents the speed in mph
- ☐ B. Slope is 45; represents the distance traveled
- ☐ C. Slope is 1; represents constant velocity
- ☐ D. Slope is 0; the object is stationary
- 8) Which sequence of rigid motions would map square ABCD onto square EFGH positioned elsewhere on the coordinate plane?



- ☐ A. Rotation only
- ☐ B. Translation only
- ☐ C. Reflection and translation
- ☐ D. Dilation and rotation



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1)

Which sequence of transformations was applied?

- | | |
|--|---|
| ☐ A. Translate 5 units down, then rotate 90° | ☐ C. Rotate 90° counterclockwise, then translate 5 units down |
| ☐ B. Reflect across the x -axis, then rotate | ☐ D. Dilate by scale factor 2, then translate |

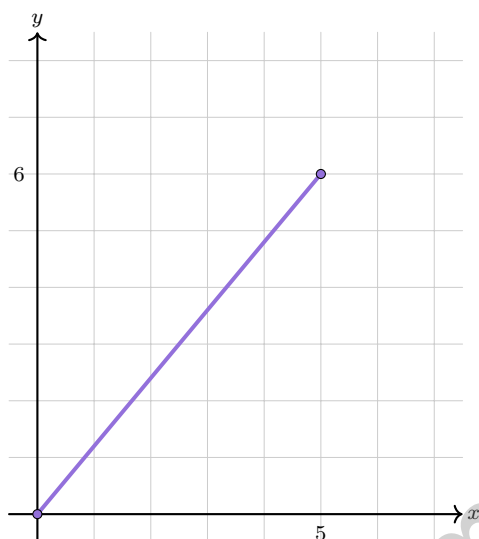
2) For the inequality $-2x + y < 3$, is the point $(-1, 1)$ on the boundary line?

- | | |
|---|---|
| ☐ A. Yes, and it is in the solution region | ☐ C. No, and the point is in the solution region |
| ☐ B. Yes, but it is NOT in the solution region | ☐ D. No, and the point is not in the solution region |



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3)

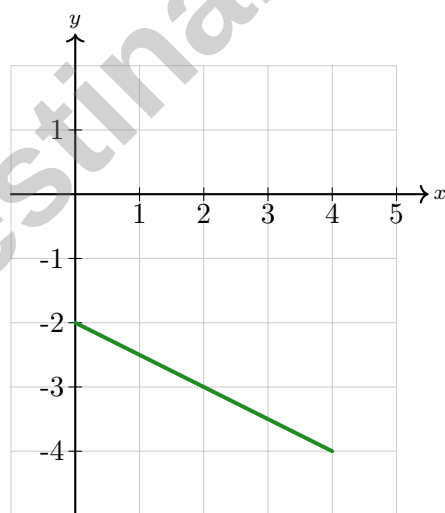


What is the slope?

- ☐ A. $\frac{5}{6}$
☐ B. $\frac{6}{4}$

- ☐ C. 1.1
☐ D. 1.2

4)



What is the equation of the line shown?

- ☐ A. $y = -\frac{1}{2}x - 2$
☐ B. $y = -2x - 2$

- ☐ C. $y = \frac{1}{2}x - 2$
☐ D. $y = 2x - 2$



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 B is correct.** (8.DSP.1) Among high-income households (total 60), those without internet = 5. Relative frequency = $\frac{5}{60} \approx 0.083$.
- 2) **Choice A is correct.** (8.DSP.2) A poor fit means the line fails to capture the pattern in the data. Large gaps (residuals) between points and the line indicate a weak relationship. A good fit minimizes these distances.
- 3) **Choice B is correct.** (8.GM.1) The square area is $20 \times 20 = 400 \text{ m}^2$. Four corner triangles are removed, and each has area $\frac{1}{2} \times 3 \times 3 = 4.5 \text{ m}^2$. The octagon area is $400 - 4(4.5) = 382 \text{ m}^2$.
- 4) **Choice D is correct.** (8.DSP.1) Wide spread with no clear trend (neither upward nor downward) indicates weak or no correlation. The two variables do not show a consistent relationship.
- 5) **Choice A is correct.** (8.AF.7) One MAD from the mean means subtract and add the MAD: $85 - 4 = 81$ and $85 + 4 = 89$, so the interval is 81 to 89.
- 6) **Choice A is correct.** (8.DSP.3) $P(\text{not rain}) = 1 - P(\text{rain}) = 1 - \frac{2}{5} = \frac{3}{5}$.
- 7) **Choice B is correct.** (8.DSP.5) Choose one bread and one topping: $2 \times 7 = 14$ different sandwiches.
- 8) **The correct answer is 5.** (8.AF.6) Slope: $\frac{17-9}{3-1} = \frac{8}{2} = 4$. Using (1, 9): $9 = 4(1) + b \Rightarrow b = 5$.
- 9) **Choice D is correct.** (8.NS.2) The student confused the radicand 50 with the value of $\sqrt{50}$. Since $49 < 50 < 64$ (i.e., $7^2 < 50 < 8^2$), we have $7 < \sqrt{50} < 8$, not $5 < \sqrt{50} < 6$.
- 10) **Choice D is correct.** (8.NS.3) With equal coefficients, smaller exponents give smaller values: $-5 < -3 < 1$.
- 11) **Choice D is correct.** (8.NS.1) Only $\sqrt{5}$ is irrational (a square root of a non-perfect square). The others are rational: $0.5 = \frac{1}{2}$, 2 is an integer, and $3.\bar{3} = \frac{10}{3}$.
- 12) **Choice D is correct.** (8.NS.1) The 6-digit repeating block means multiply by 1,000,000. Let $x = 0.\overline{285714}$. Then $1000000x = 285714.\overline{285714}$, so $999999x = 285714$ and $x = \frac{2}{7}$.
- 13) **Choice A is correct.** (8.AF.1) Expand: $2x + 6 = 3x - 3$. Subtract $2x$ and add 3: $9 = x$, so $x = 9$.
- 14) **Choice D is correct.** (8.NS.4) By the Pythagorean theorem, diagonal = $\sqrt{2^2 + 3^2} = \sqrt{4 + 9} = \sqrt{13} \approx 3.606 \approx 3.6 \text{ cm}$.
- 15) **Choice C is correct.** (8.NS.3) When multiplying powers with the same base, add exponents: $3^2 \cdot 3^5 = 3^{2+5} = 3^7$.
- 16) **Choice D is correct.** (8.NS.3) Solve $x^2 = 144$ by taking the positive square root: $x = \sqrt{144} = 12$.
- 17) **Choice D is correct.** (8.AF.2) Unit rate: $\frac{8}{10} = 0.8 \text{ oz per minute}$. After 45 minutes: $0.8 \times 45 = 36 \text{ ounces}$.
- 18) **Choice D is correct.** (8.AF.2) The slope is the rate of change: $\frac{\Delta y}{\Delta x} = \frac{3}{1} = 3$ (each increase of 1 in x gives 3 more in y).
- 19) **The correct answer is 63.** (8.GM.1) Exterior angle = sum of remote interior angles: $148 = 85 + x \Rightarrow x = 63^\circ$.
- 20) **The correct answer is A, C.** (8.AF.7) A is correct because the coefficient of x is $\frac{2}{3}$. C is correct because $\frac{9-5}{3-1} = 2$. B has slope $\frac{2}{3}$, D has slope $\frac{4}{5}$, and E has slope 2, so those statements are false.
- 21) **Choice A is correct.** (8.AF.1) Solving $-x + 2 > 5$ gives $-x > 3$, so $x < -3$. Only $x = -4$ satisfies this (since $-4 < -3$).
- 22) **Choice C is correct.** (8.AF.2) Difference of squares: $x^2 - 25 = x^2 - 5^2 = (x + 5)(x - 5)$.
- 23) **Choice C is correct.** (8.AF.3) A relation is a function only if each input has exactly one output. If input 5 appears three times but with the same output, it is still a function (just redundantly listed).
- 24) **Choice C is correct.** (8.GM.3) Interest: $I = 1200 \times 0.08 \times 2 = \192 . Total: $A = 1200 + 192 = \$1,392$.
- 25) **Choice D is correct.** (8.NS.3) Divide coefficients: $2.8 \div 7 = 0.4$. Subtract exponents: $10^{7-4} = 10^3$. Rewrite: $0.4 \times 10^3 = 4 \times 10^2$.
- 26) **Choice A is correct.** (8.AF.8) Parallel lines have the same slope but different y -intercepts. Both equations $y = 2x + 1$ and $y = 2x - 3$ have slope 2 but different intercepts (1 and -3). Option D is the same line (infinitely many solutions).
- 27) **Choice B is correct.** (8.AF.5) $y = 10x - 6$ is in the form $y = mx + b$ with $m = 10$ and $b = -6$, making it linear. The others involve exponents, fractions with x , or exponential bases.



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 8 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.

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, SUCCEED TOMORROW!

Give your child the confidence and skills they need with **8 full-length Grade 8** Math practice tests that mirror 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.



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!

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PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better Results.