# 9 Indiana ILEARN

## GRADE 7

# MATH

## PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

**Program**

**9 PRINTED TESTS** + **2 ONLINE TESTS**

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

**BUILT FOR ACAP**
Standards-Aligned

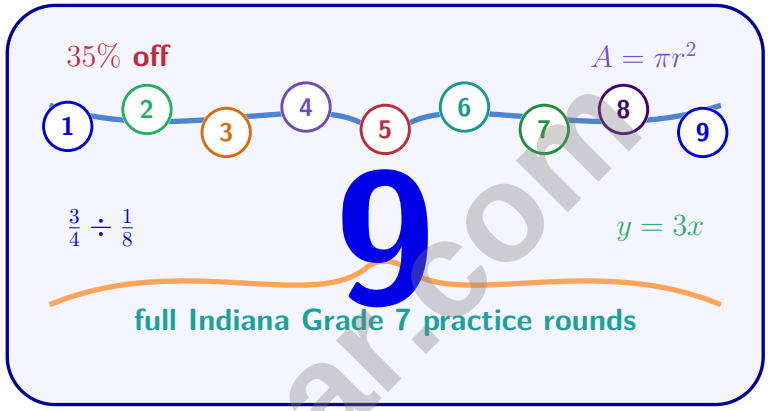
**STRENGTHEN SKILLS**

**SHARPEN THINKING**

**BE TEST-READY**
Improve Performance

# 9 Indiana ILEARN Grade 7 Math Practice Tests

*Standards-Aligned Indiana Practice for Proportional Reasoning, Expressions, Geometry, Statistics, and Probability*






**Nine complete 40-question Grade 7 ILEARN practice rounds with proportional relationships, percents, rational numbers, expressions, equations, geometry, statistics, probability, answer keys, and clear explanations for every item.**

**Jay Daie and Reza Nazari**

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# Welcome, Indiana Grade 7 Problem Solver!

Nine focused rounds for sharper ILEARN math thinking

This book gives you nine full Grade 7 ILEARN math practice tests. Each round is built to help you notice structure, compare quantities, use proportional reasoning, handle rational numbers, 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.



# How to Use This Book

A nine-session plan for confident Grade 7 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.

**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?

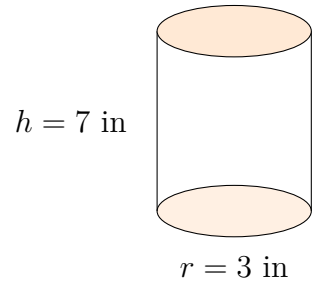
Nine ILEARN tests, 360 questions, and a complete review path

| Part | What You Will Practice |
|---|---|
| Tests 1–3 | Proportional relationships, unit rates, percents, rational-number operations, and careful reading. |
| Tests 4–6 | Expressions, equations, inequalities, scale drawings, geometry, and multi-step problem solving. |
| Tests 7–9 | Statistics, probability, mixed review, stamina, and choosing efficient strategies. |
| Answer Pages | Compact keys and explanations that show why each answer works. |

The tests are mixed on purpose. Grade 7 success means recognizing which idea is being tested even when the next question changes format.

# Table of Contents

1)




Which formula gives the volume of the cylinder shown?

☐ A. $\pi \times 3 \times 7$
☐ B. $\pi \times 3^2 \times 7$
☐ C. $2\pi \times 3 \times 7$
☐ D. $2\pi \times 3^2 \times 7$

2) A fitness trainer earns \$40 per session plus a \$5 facility fee per client per session. If the trainer has 8 clients in a week (each attending one session), what is the total earnings including facility fees?

☐ A. \$320
☐ B. \$400
☐ C. \$380
☐ D. \$360

3) A researcher rolled a number cube 500 times and recorded the results:

| **Face** | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **Times** | 82 | 88 | 79 | 85 | 90 | 96 |

Which face has an experimental probability closest to the theoretical probability of $\frac{1}{6}$?

☐ A. Face 1
☐ B. Face 3
☐ C. Face 5
☐ D. Face 6

4) A scientist measures plant stem diameters (mm) and displays them in a stem-and-leaf plot:

| Stem | Leaves |
|---|---|
| 1 | 4, 7 |
| 2 | 1, 5, 8 |
| 3 | 2, 4, 6, 9 |

The lower quartile (Q1) falls between which two values?

☐ A. 17 and 21
☐ B. 21 and 25
☐ C. 25 and 28
☐ D. 28 and 32

5) Which of the following is always true about a chord?

☐ A. It must pass through the center
☐ B. It has both endpoints on the circle
☐ C. It is always shorter than the radius
☐ D. It is parallel to a diameter

6) A survey shows that the probability a student likes pizza is $\frac{7}{8}$. How many students out of 80 would you expect to NOT like pizza?

☐ A. 7
☐ B. 10
☐ C. 70
☐ D. 73

7) A scuba diver is at a depth of $-45$ feet (below sea level). She ascends 15 feet. What is her new depth?

☐ A. $-60$ feet
☐ B. $-30$ feet
☐ C. 30 feet
☐ D. 60 feet

8) A punch recipe has a ratio of juice to water of 2 : 5. If you use 14 cups of juice, how many cups of water are needed?

9) A river is 50 meters wide. On a map with scale 1 cm : 10 m, how wide does the river appear?

☐ A. 0.5 cm
☐ C. 50 cm
☐ B. 500 cm
☐ D. 5 cm

10) An item that originally costs $200 is discounted by $50. What is the percent discount?

☐ A. 20%
☐ C. 40%
☐ B. 33%
☐ D. 25%

11) An investor earns $450 in simple interest from a $3000 investment over 3 years. What is the annual interest rate?

☐ A. 4%
☐ C. 6%
☐ B. 7%
☐ D. 5%

12) A basketball player made 16 shots. This represents 80% of her attempts. How many shots did she attempt?

☐ A. 18
☐ C. 22
☐ B. 24
☐ D. 20

1) Which of the following statements is true about cross-sections of a cube?

☐ A. All cross-sections are squares
☐ B. A cross-section can be a triangle, rectangle, or hexagon
☐ C. Cross-sections are always congruent to the cube's faces
☐ D. No cross-section can have more than 4 sides

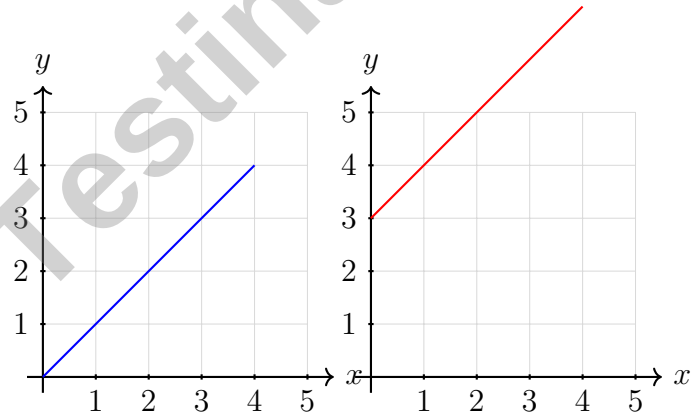
2) What is $-5-(-9)$?

☐ A. $-14$
☐ B. 14
☐ C. $-4$
☐ D. 4

3) A store sells $\frac{3}{5}$ pound of cheese for \$6. What is the unit price per pound?

☐ A. \$9
☐ B. \$3.60
☐ C. \$4
☐ D. \$10

4) Two graphs are shown. Graph 1 has a line from $(0,0)$ to $(4,4)$. Graph 2 has a line from $(0,3)$ to $(4,7)$. Which is proportional?




Graph 1 Graph 2

☐ A. Neither is proportional
☐ B. Graph 2 is proportional
☐ C. Both are proportional
☐ D. Graph 1 is proportional

5) A distance-time table shows a runner's proportional pace.

| Time (min) | Distance (mi) |
|---|---|
| 5 | 1 |
| 10 | 2 |
| 15 | 3 |
| 20 | 4 |

What is the constant of proportionality (miles per minute)?

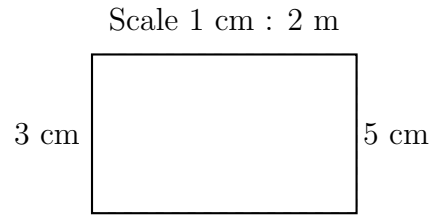
☐ A. 0.1 mi/min
☐ B. 5 mi/min
☐ C. 10 mi/min
☐ D. 0.2 mi/min

6) A student claims: $\frac{-4}{5} \div \frac{2}{3} = \frac{-8}{15}$ because "you multiply the numerators and denominators." What is the correct quotient?

7) A researcher runs two independent simulations of the same event. Simulation 1 uses 100 trials and estimates probability 0.48. Simulation 2 uses 500 trials and estimates probability 0.52. Which simulation is likely to be a more reliable estimate of the true probability?

☐ A. Simulation 1, because it has fewer trials
☐ B. Simulation 1, because the estimate is closer to 0.50
☐ C. Simulation 2, because it has more trials
☐ D. Both are equally reliable

1)




What is the perimeter of the actual rectangle?

- ☐ A. 16 m
- ☐ B. 32 m
- ☐ C. 64 m
- ☐ D. 128 m

2) Solve: $\frac{2x-1}{3} \leq 5$

- ☐ A. $x \leq 8$
- ☐ B. $x \leq \frac{16}{2}$
- ☐ C. $x \leq 7$
- ☐ D. $x > 8$

3) Solve for $x$: $4(x-3) = 12$

- ☐ A. $x = 0$
- ☐ B. $x = 3$
- ☐ C. $x = 6$
- ☐ D. $x = 9$

4) A rectangular blueprint shows a hallway as 3.6 cm by 5.4 cm at scale 1 cm : 0.8 m. If the drawing is reduced to 2.4 cm by 3.6 cm, what is the new scale?

- ☐ A. 1 cm : 0.8 m
- ☐ B. 1 cm : 1.2 m
- ☐ C. 1 cm : 0.53 m
- ☐ D. 1 cm : 1.6 m

5) A cone with base radius 10 cm is sliced by a plane parallel to the base at a distance of 8 cm from the apex. If the cone's height is 12 cm, what is the radius of the circular cross-section?

- ☐ A. $\frac{20}{3}$ cm
- ☐ B. $\frac{16}{3}$ cm
- ☐ C. 8 cm
- ☐ D. 6 cm

6) Three angles form a straight line and measure $35°$, $62°$, and $x°$. What is $x$?

☐ A. $27°$
☐ B. $83°$
☐ C. $97°$
☐ D. $180°$

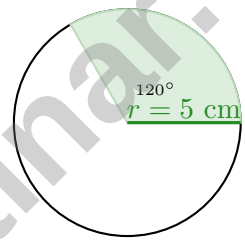
7) A rectangle with corners at $(0, 0)$, $(5, 0)$, $(5, 3)$, and $(0, 3)$ is translated by the vector $(-2, 4)$. What is one of the new corners?

☐ A. $(-2, 4)$
☐ B. $(3, 4)$
☐ C. $(5, 7)$
☐ D. $(2, -1)$

8) A recipe calls for $2\frac{1}{2}$ cups of flour, written as $(2 + 0.5)$ cups. A baker triples the recipe. Which expression best shows the distributive property being applied?

☐ A. $3 \times 2.5 = 7.5$
☐ B. $3(2 + 0.5)$
☐ C. $3(2) + 3(0.5)$
☐ D. 7.5 cups total

9)




A sector of a circle has a central angle of $120°$ and radius 5 cm. What is its area? (Use $\pi \approx 3.14$.)

☐ A. 13.08 $cm^2$
☐ B. 26.17 $cm^2$
☐ C. 39.25 $cm^2$
☐ D. 78.5 $cm^2$

# Indiana ILEARN Grade 7 Practice Test Answer Keys

**How to use this section with a Grade 7 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.**

# Practice Test Answers and Explanations

## Practice Test 1 Answers and Explanations

1) **Choice B is correct.** 7.G.4-7.G.6 The volume formula is $V = \pi r^2 h$. With $r = 3$ and $h = 7$, this is $\pi \times 3^2 \times 7$.
2) **Choice D is correct.** 7.RP.3 Per client: $40 + 5 = \$45$. Total for 8 clients: $45 \times 8 = \$360$.
3) **Choice B is correct.** 7.SP.6 Face 3: $\frac{79}{500} = 0.158$. Theoretical: $\frac{1}{6} \approx 0.167$. Difference: $|0.158 - 0.167| \approx 0.009$, smallest among all faces.
4) **Choice A is correct.** 7.SP.1-7.SP.4 Nine values: $14, 17, 21, 25, 28, 32, 34, 36, 39$. Lower half: $14, 17, 21, 25$ (4 values). Q1 is median of lower half: $(17 + 21)/2 = 19$, which falls between 17 and 21.
5) **Choice B is correct.** 7.G.4-7.G.6 By definition, a chord connects two points on the circle. It need not pass through the center.
6) **Choice B is correct.** 7.SP.5-7.SP.8 $P(\text{not like}) = 1 - \frac{7}{8} = \frac{1}{8}$. Expected: $\frac{1}{8} \times 80 = 10$.
7) **Choice B is correct.** 7.NS.1-7.NS.3 Ascending (moving up) is the opposite of depth change. New depth: $-45 - (-15) = -45 + 15 = -30$ feet.
8) **The correct answer is 35 .** 7.RP.1-7.RP.3 Ratio 2 : 5: if juice = 14, then $\frac{2}{5} = \frac{14}{x}$. Cross multiply: $2x = 70$, so $x = 35$ cups water.
9) **Choice D is correct.** 7.RP.1-7.RP.3 Divide actual width by scale: 50 m ÷ 10 m per cm = 5 cm.
10) **Choice D is correct.** 7.RP.3 Percent discount $= \frac{50}{200} \times 100 = 25\%$.
11) **Choice D is correct.** 7.RP.3 $450 = 3000 \times r \times 3 \Rightarrow 450 = 9000r \Rightarrow r = 0.05 = 5\%$.
12) **Choice D is correct.** 7.RP.3 If $16 = 0.80 \times a$, then $a = \frac{16}{0.80} = 20$ attempts.
13) **Choice D is correct.** 7.RP.1-7.RP.3 Unit rate: $\frac{3/4}{1/3} = \frac{3}{4} \times 3 = \frac{9}{4} = 2\frac{1}{4}$ cups per batch.
14) **Choice D is correct.** 7.RP.1-7.RP.3 The constant ratio $y/x = 25$ means 25 gallons per minute (the unit rate).
15) **Choice D is correct.** 7.RP.1-7.RP.3 The constant $k$ in $C = kn$ represents the cost per student. In the first, $k = 15$ (dollars per student); in the second, $k = 20$ (dollars per student). Different constants mean different unit prices.
16) **Choice C is correct.** 7.RP.3 Set up the proportion $\frac{35}{100} = \frac{x}{280}$. Cross-multiply: $35 \times 280 = 100x$, giving $x = 98$.
17) **Choice A is correct.** 7.NS.1-7.NS.3 Average $= \frac{80+84+86+94}{4} = \frac{344}{4} = 86\%$.
18) **Choice B is correct.** 7.EE.4a Distribute: $2x - 10 = 14$. Add 10: $2x = 24$. Divide by 2: $x = 12$.
19) **Choice D is correct.** 7.RP.3 Employee contribution = $6\% \times \$4{,}000 = \$240$. Company match = $50\% \times \$240 = 0.50 \times 240 = \$120$.
20) **The correct answer is A,B.** 7.G.4-7.G.6 A is correct: volume $V = B \times h$ for any prism. B is correct: $V = 4^3 = 64$ cm$^3$. C is false: doubling height doubles volume, not triples it. D is false: a triangular prism can have larger volume than a rectangular prism depending on dimensions.
21) **The correct answer is 2800 .** 7.SP.1-7.SP.4 $\frac{56}{160} = \frac{x}{8000}$. Reduce: $\frac{7}{20} = \frac{x}{8000} \Rightarrow x = 2800$.
22) **Choice B is correct.** 7.NS.1-7.NS.3 $\sqrt{0}$ is defined and equals 0 because $0 \times 0 = 0$.
23) **Choice C is correct.** 7.G.1-7.G.5 Actual side length: $2 \times 3 = 6$ m. Area: $6 \times 6 = 36$ m$^2$.
24) **Choice A is correct.** 7.G.4-7.G.6 From $50.24 = 3.14 \times r^2$, we get $r^2 = 16$, so $r = 4$ meters.
25) **Choice D is correct.** 7.SP.1-7.SP.4 12 stars × 50 students/star = 600 students.
26) **Choice B is correct.** 7.SP.5-7.SP.8 Total beads: $12 + 8 + 5 = 25$. Blue beads: 8. So $P(\text{blue}) = \frac{8}{25} = 0.32$.
27) **Choice C is correct.** 7.NS.2 $-\frac{1}{4} \times 8 = \frac{-8}{4} = -2$.
28) **Choice D is correct.** 7.EE.1-7.EE.2 Both are equivalent: $7(2a + 3b) = 7(2a) + 7(3b)$. However, the first is the standard factored form (GCF factored once). The second form shows distribution but should be simplified.
29) **Choice D is correct.** 7.RP.3 For doubling: $(1 + r)^{10} = 2 \Rightarrow 1 + r = 2^{1/10} \approx 1.0718 \Rightarrow r \approx 7.18\%$. Check: $(1.07)^{10} \approx 1.967 \approx 2.0$.
30) **Choice D is correct.** 7.G.4-7.G.6 Decompose into a rectangle and a triangle. Rectangle: $6 \times 4 = 24$ m$^2$. Triangle: $\frac{1}{2} \times 6 \times 3 = 9$ m$^2$. Add: $24 + 9 = 33$ m$^2$.

## Hi, Confident Learner!

◇ This high-stamina book gave you nine substantial Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 7 math can feel big because it brings together rational numbers, expressions, equations, geometry, probability, and data. ◇

⋆ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ⋆

**Confidence Builders**

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

**Grade 7 test-day tip:** When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

**Jay Daie**
Your Confidence Coach

# PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **9** full-length Math practice tests and **2** online tests to help Grade 7 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:

- **9** Full-Length Printed Tests
- **2** Online Practice Tests
- Detailed Answer Explanations

## MORE PRACTICE. GREATER RESULTS.

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## WHAT YOU'LL GAIN

**Stronger Math Skills**
Build a solid foundation through targeted practice and review.

**Better Problem Solving**
Develop logical thinking and effective solution strategies.

**Deeper Understanding**
Reinforce key concepts with clear explanations and meaningful practice.

**Test Confidence**
Familiarize with test formats and improve accuracy and speed.

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Build confidence and perform your best on test day.

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- Data Analysis
- Measurement & Conversions
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