10 Indiana ILEARN Grade 8 Math Practice Tests

The Ultimate Test Prep Collection with Answer Explanations

Dr. A. Nazari

10 Practice Tests

🏆 *Grade 8 Mathematics* 🏆

10 tests × full coverage

Welcome!

This book contains **10 full-length practice tests** — the most comprehensive preparation you can get for your Grade 8 math assessment. Each test covers all six topics:

📖 Irrational Numbers   📖 Powers & Scientific Notation

📖 Linear Equations   📖 Functions

📖 Geometry   📖 Data & Relationships

Ten tests give you the practice needed to walk into the real test feeling fully prepared.

Thorough preparation leads to outstanding results.

4

❝ *Ten full tests! By the time you finish, there won't be any surprises on test day.* ❞

1

📖 How to Use This Book 📖

A complete 10-test preparation program

📋 What's Inside

- **10 Full-Length Practice Tests** — each covers all 6 chapters of Grade 8 math: irrational numbers, exponents & scientific notation, linear equations, functions, geometry, and data analysis.

- **Detailed Answer Explanations** — every question includes a step-by-step solution so you learn from every mistake.

- **Formula Reference Sheet** — all the key Grade 8 formulas you need, organized and ready for quick review.

- **Test Tracker** — log your scores across all 10 tests and monitor your progress from start to finish.

🕐 Your 10-Test Training Plan

⭐ PHASE 1: Foundation (Tests 1–3)

Untimed or soft-timed. Focus on understanding the format, identifying strengths and weaknesses, and building good study habits.

⭐⭐ PHASE 2: Building Skills (Tests 4–7)

Timed (70 minutes each). Work on pacing, accuracy, and showing complete solutions. Review weak topics between tests.

⭐⭐⭐ PHASE 3: Test-Day Ready (Tests 8–10)

Full test conditions: strict timing, quiet space, no notes. Compare scores with your early tests to see your growth.

Schedule: *Take one test every 3–4 days, or one per week. Use study days between tests to review.*

✏️ Types of Questions

🔘 **Multiple Choice:** *Four options — work the problem first, then match. Eliminate obviously wrong answers to narrow your choices.*

✏️ **Short Answer & Constructed Response:** *Show every step: equations, substitutions, simplifications. Partial credit rewards correct reasoning even if the final answer is off.*

📈 **Graphing & Data Analysis:** *Plot points, draw lines, interpret graphs. Label axes clearly.*

🐘 **Tip:** *Ten tests is a full preparation program. Don't rush. The key is what you do between tests — study, review, and understand your mistakes before moving forward.*

💡 *Test-Taking Tips* 💡

Your complete test-day toolkit

🕐 *Before the Test*

- *Review your notes from the previous test — focus on your weak topics*
- *Set up a quiet, clean workspace with all your materials ready*
- *Start with a positive mindset: you've prepared for this*

✏️ *During the Test*

- *Read each problem fully before calculating anything*
- *Write the formula or set up the equation first, then substitute values*
- *Show all your work — every step, every operation*
- *If stuck for more than 2 minutes, mark it and move on*
- *Use estimation to check if your answers are reasonable*

📖 *After the Test*

- *Read the full explanation for every question you got wrong*
- *Write down which topics gave you trouble (not just question numbers)*
- *Study those topics before taking the next test*
- *Record your score in the Test Tracker*

⚠️ Common Mistakes in Grade 8 Math

⚠️ **Exponents:** $(ab)^n = a^n b^n$, but $a^m + a^n \neq a^{m+n}$. Only multiply/divide to combine.

⚠️ **Slope formula:** $m = \frac{y_2 - y_1}{x_2 - x_1}$ — keep the order consistent.

⚠️ **Systems of equations:** The solution must satisfy both equations.

⚠️ **Transformations:** Rotations and reflections change position; dilations change size.

⚠️ **Volume:** Use $\pi \approx 3.14$ or leave as π — match what the question asks.

> 66 *The students who improve the most aren't the ones who take the most tests — they're the ones who carefully review every mistake. Make that your priority.* 99

Find more at
ViewMath.com/Grade8

Get Online

ViewMath.com

Grade 8 Formula Reference

Keep this page handy — you may use it during your practice tests!

X¹ Exponent Rules

$$a^m \cdot a^n = a^{m+n} \qquad (a^m)^n = a^{mn} \qquad (ab)^n = a^n \cdot b^n$$

$$\frac{a^m}{a^n} = a^{m-n} \qquad a^0 = 1 \; (a \neq 0) \qquad a^{-n} = \frac{1}{a^n}$$

📈 Lines & Linear Equations

Slope: $m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{rise}{run}$ **Slope-intercept:** $y = mx + b$ **Proportional:** $y = mx$

m = slope b = y-intercept *Parallel lines: same slope* *Proportional: passes through origin*

⚙ Scientific Notation

$a \times 10^n$ *where* $1 \leq |a| < 10$ **Multiply:** *add exponents* **Divide:** *subtract exponents*

√x Roots & Number Sense

Perfect squares: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144

Perfect cubes: 1, 8, 27, 64, 125 $\sqrt{2} \approx 1.414$ $\sqrt{3} \approx 1.732$ $\pi \approx 3.14159$

📏 Pythagorean Theorem & Distance

$a^2 + b^2 = c^2$ *c = hypotenuse (longest side of a right triangle)* **Distance:** $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

📦 Volume Formulas

Cylinder $V = \pi r^2 h$ **Cone** $V = \dfrac{1}{3}\pi r^2 h$ **Sphere** $V = \dfrac{4}{3}\pi r^3$

⬡ Angle Relationships

Triangle angle sum: $180°$ **Exterior angle** = sum of two remote interior angles

Parallel lines + transversal: Alternate interior angles are equal   •   Co-interior angles sum to $180°$

Functions

Each input → exactly one output   **Vertical line test:** if any vertical line hits graph more than once ⇒ not a function

Linear: constant rate of change $(y = mx + b)$ **Nonlinear:** rate of change varies

↻ Transformations

Translation: slide   **Reflection:** flip   **Rotation:** turn   **Dilation:** resize

Congruent = same shape & size   Similar = same shape, proportional size

Tip: Bookmark this page! Review it before each test so these formulas become second nature.

1

Practice Test 1

📋 *10 Questions*

✏️ Before You Start ✏️

- ✔ **Read each question carefully** *before choosing your answer.*
- ✔ **Show your work** *on scratch paper when you need to.*
- ✔ **Skip hard questions** *and come back to them later.*
- ✔ **Check your answers** *when you're done.*
- ✔ **Take your time** *— there's no rush!*
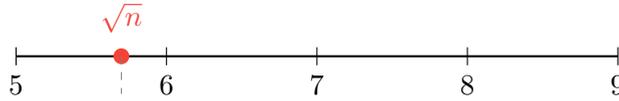
⭐ *You've Got This!* ⭐

Do your best and show what you know!

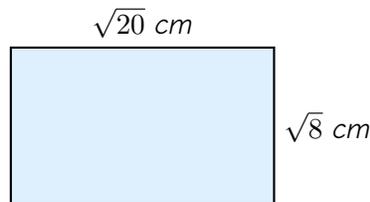1. True or false: The number $\frac{22}{7}$ is equal to π.

Your Answer:

2. The number line below shows $\sqrt{n}$ placed between two tick marks. Based on the position, what could n be?

$$\sqrt{n}$$

5 ┊ 6   7   8   9

(A) $n = 28$ (B) $n = 33$

(C) $n = 40$ (D) $n = 55$

3. The diagram below shows a rectangle with irrational side lengths. Which is the best estimate of the area?

$\sqrt{20}$ cm

$\sqrt{8}$ cm

(A) $\sqrt{28} \approx 5.3 \ cm^2$ (B) $\sqrt{160} \approx 12.6 \ cm^2$

(C) $28 \ cm^2$ (D) $160 \ cm^2$

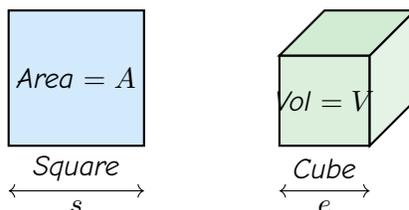4. Simplify $7^5 \cdot 7^{-5}$.

(A) 7^{25} (B) 7^{10}

(C) 0 (D) 1

5. The diagram shows a square and a cube. The square has an area of A square units and the cube has a volume of V cubic units. If $A = V$, which pair of side lengths is correct?

Area $= A$

Square
s

Vol $= V$

Cube
e

(A) $s = 6,\ e = 6$

(B) $s = 8,\ e = 4$

(C) $s = 9,\ e = 3$

(D) $s = 5,\ e = 5$

6. Earth's mass is about 6×10^{24} kg and Jupiter's mass is about 1.9×10^{27} kg. About how many times more massive is Jupiter than Earth? Round to the nearest whole number.

Your Answer:

7. The table and the equation below each describe a proportional relationship.

x	1	2	3	4
y	6	12	18	24

Equation: $y = 5x$

Which relationship has the larger constant of proportionality?

(A) The table

(B) The equation

(C) They are equal.

(D) Not enough information.

8. *A phone plan charges* $0.15 *per text. If you graph total cost vs. number of texts, the slope is:*

(A) 15

(B) 0.15

(C) 1.50

(D) 0.015

9. *A gym charges a* $25 *joining fee plus* $10 *per month. Write an equation for the total cost* y *after* x *months.*

Your Answer:

10. *A school play sold* 200 *tickets. Adult tickets were* $8 *and student tickets were* $5. *Total revenue was* $1,240. *How many adult tickets were sold?*

Your Answer:

⭐ *End of Practice Test 1* ⭐

Great job finishing the test!

☑ *My Score*

I got _____ out of 10 questions right.

*Check your answers in the **Answer Key** at the back of the book.*

💡 *Review any questions you missed. That's how we learn!*

Answer Key & Explanations

Answer Key

First try each test on your own, then check your work here.

✅ Practice Test 1 — Answer Key

1 False **2** A **3** B **4** D **5** B **6** 317 *times* **7** A **8** B

9 $y = 10x + 25$ **10** 80

💡 Time to Learn! 💡

*Review the explanations below, **especially for the questions you missed**.*

Understanding why each answer is correct builds stronger problem-solving skills.

***Tip:** Circle any questions you got wrong, then read their explanation carefully.*

📖 Practice Test 1 — Detailed Explanations

1 $\frac{22}{7} \approx 3.142857\dots$ *is a rational approximation of* π*, but* $\pi = 3.14159265\dots$ *is irrational. They are close but not equal.*

2 *The point is between* 5 *and* 6*, closer to* 5*.* $\sqrt{28} \approx 5.29$*, which matches this position.* $\sqrt{33} \approx 5.74$ *would be closer to* 6*, and* $\sqrt{40} \approx 6.32$ *and* $\sqrt{55} \approx 7.42$ *would be beyond* 6*.*

Find more at
ViewMath.com/Grade8

👉

🌐 **ViewMath.com**

3 Area $= \sqrt{20} \times \sqrt{8} = \sqrt{160}$. $\sqrt{160} \approx 12.65 \ cm^2$. (Note: $\sqrt{160} = 4\sqrt{10} \approx 12.65$.) Choices A and C confuse addition with multiplication.

4 $7^5 \cdot 7^{-5} = 7^{5+(-5)} = 7^0 = 1$.

5 If $s = 8$, then $A = 8^2 = 64$. If $e = 4$, then $V = 4^3 = 64$. Since $A = V = 64$, the pair $s = 8, e = 4$ works.

6 $\frac{1.9 \times 10^{27}}{6 \times 10^{24}} = \frac{1.9}{6} \times 10^3 \approx 0.317 \times 10^3 = 317$.

7 Table: $k = \frac{6}{1} = 6$. Equation: $k = 5$. The table has the larger constant of proportionality.

8 The slope equals the cost per text, which is $0.15.

9 Slope (rate) $= 10$ and y-intercept (initial fee) $= 25$: $y = 10x + 25$.

10 $a + s = 200$ and $8a + 5s = 1240$. From first: $s = 200 - a$. Substitute: $8a + 5(200 - a) = 1240$, so $3a + 1000 = 1240$, $3a = 240$, $a = 80$.

✓

Well done checking your answers!

Keep practicing to strengthen your skills.

Enjoyed This Preview?

Get the Full Book!

This preview shows just a small sample of what's inside.

The complete book includes:

- ✅ All chapters and topics
- ✅ Hundreds of practice problems
- ✅ Complete answer key with explanations
- ✅ Colorful visuals and step-by-step examples
- ✅ Reference sheets and progress trackers

Available on Amazon and Teachers Pay Teachers

🌐 Visit us at **ViewMath.com** for free resources and more books!