12 Missouri MAP Grade 8 Math Practice Tests

The Complete Coached Test Prep with Tips & Detailed Answer Keys

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PREVIEW

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12 Practice Tests

Welcome!

*This book contains **12 full-length practice tests** — the ultimate preparation program for your Grade 8 math assessment. Each test covers all six major topics:*

📖 *Irrational Numbers* 📖 *Powers & Scientific Notation*

📖 *Linear Equations* 📖 *Functions*

📖 *Geometry* 📖 *Data & Relationships*

Twelve tests give you unmatched depth and repetition. By the time you finish, there won't be any surprises on test day.

Champions aren't born — they're prepared.

How to Use This Book

Your complete 12-test championship program

What's Inside

- ***12 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 12 tests and monitor your progress from start to finish.*

Your 12-Test Championship Plan

PHASE 1: Foundation (Tests 1–3)

Untimed. Learn the format, discover your strengths and weak spots. Focus on understanding, not speed.

PHASE 2: Building (Tests 4–6)

Soft-timed. Practice showing full solutions, and study the topics you missed between each test.

PHASE 3: Sharpening (Tests 7–9)

Timed (70 minutes). Build pacing and accuracy under real-time constraints. Review every mistake.

PHASE 4: Championship (Tests 10–12)

Full test conditions: strict timing, quiet space, no notes. These are your final dress rehearsals.

Schedule: *Take one test every 3–4 days. Use study days between tests to review and improve.*

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: *Twelve tests is a true championship program. Don't rush — the power is in what you do between tests. Study, review, and master your weak areas before moving on.*

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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.*

"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."

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Grade 8 Formula Reference

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

x^1 Exponent Rules

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

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

Lines & Linear Equations

Slope: $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{rise}}{\text{run}}$

m = slope $\quad b$ = y-intercept

Slope-intercept: $y = mx + b$

Parallel lines: same slope

Proportional: $y = mx$

Proportional: passes through origin

Scientific Notation

$a \times 10^n$ *where* $1 \leq |a| < 10$

Multiply: *add exponents*

Divide: *subtract exponents*

Roots & Number Sense

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

Perfect cubes: $1,\ 8,\ 27,\ 64,\ 125$

$\sqrt{2} \approx 1.414$ $\quad \sqrt{3} \approx 1.732$ $\quad \pi \approx 3.14159$

Pythagorean Theorem & Distance

$a^2 + b^2 = c^2$ $\quad c$ = *hypotenuse (longest side of a right triangle)*

Distance: $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Volume Formulas

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

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.

PREVIEW

PRACTICE TEST

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. *Which best explains why $\sqrt{\frac{1}{9}}$ is a rational number?*

(A) *Because the fraction $\frac{1}{9}$ is less than 1*

(B) *Because $\sqrt{\frac{1}{9}} = \frac{1}{3}$, which is a ratio of two integers*

(C) *Because the square root of any fraction is always rational*

(D) *Because 9 is a single-digit number*

2. *What is $0.\overline{3}$ written as a fraction?*

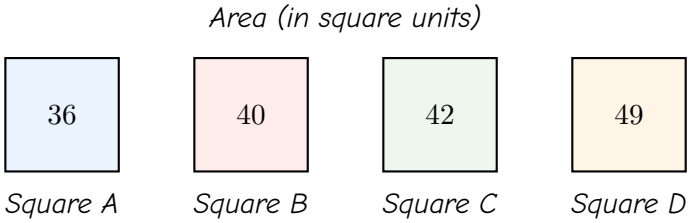
(A) $\frac{3}{10}$

(B) $\frac{3}{99}$

(C) $\frac{1}{3}$

(D) $\frac{3}{100}$

3. *The diagram shows four squares with their areas labeled. Which square has a side length closest to 6.5?*



(A) *Square A (area 36)*

(B) *Square B (area 40)*

(C) *Square C (area 42)*

(D) *Square D (area 49)*

4. *What is the exact value of $(\sqrt{3})^2$?*

(A) 1.73

(B) 3

(C) 9

(D) $\sqrt{9}$

5. *Evaluate* $\sqrt[3]{-64}$.

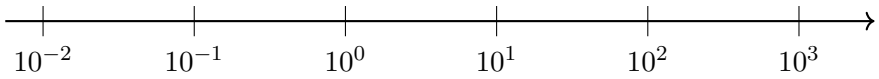
(A) -4

(B) 4

(C) -8

(D) *Not a real number*

6. *The number line below shows powers of* 10. *Where does* 5×10^1 *fall on this number line?*



(A) *Between* 10^{-1} *and* 10^{0}

(B) *Between* 10^{0} *and* 10^{1}

(C) *Between* 10^{1} *and* 10^{2}

(D) *Between* 10^{2} *and* 10^{3}

7. *A farm produces* 4.5×10^6 *kilograms of wheat. Each bag holds* 5×10^1 *kilograms. How many bags can be filled?*

(A) 9×10^5

(B) 9×10^4

(C) 9×10^7

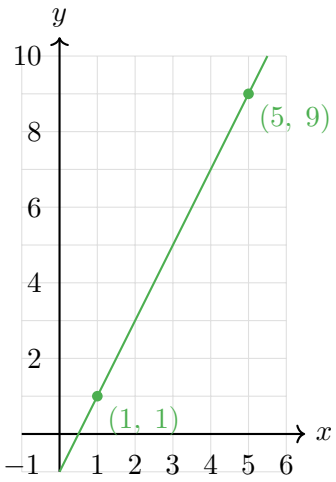
(D) 0.9×10^5

8. *A table for a proportional relationship is shown below. What is the constant of proportionality?*

x	5	10	15
y	17.5	35	52.5

Your Answer:

9. *The graph below shows a line passing through two labeled points. Find the slope.*



Your Answer:

10. *Solve* $\frac{x}{2} - 3 = \frac{x}{5} + 3$.

(A) $x = 6$

(B) $x = 10$

(C) $x = 15$

(D) $x = 20$

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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!

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Answer Key & Explanations

Answer Key

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

Practice Test 1 — Answer Key

1 B	2 C	3 C	4 B	5 A	6 C	7 B	8 3.5	9 2
10 D								

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 $\sqrt{\frac{1}{9}} = \frac{\sqrt{1}}{\sqrt{9}} = \frac{1}{3}$, which can be written as a fraction of integers. Choice C is false: $\sqrt{\frac{1}{2}}$ is irrational.

2 Let $x = 0.333\ldots$. Then $10x = 3.333\ldots$. Subtracting: $9x = 3$, so $x = \frac{3}{9} = \frac{1}{3}$.

3 *Side lengths:* $\sqrt{36} = 6$, $\sqrt{40} \approx 6.32$, $\sqrt{42} \approx 6.48$, $\sqrt{49} = 7$. *Since* 6.48 *is closest to* 6.5, *Square C is the answer.*

4 *By definition,* $(\sqrt{3})^2 = 3$ *exactly. Squaring a square root undoes the operation.*

5 $(-4)^3 = (-4)(-4)(-4) = -64$, *so* $\sqrt[3]{-64} = -4$. *Cube roots of negative numbers are real and negative.*

6 $5 \times 10^1 = 50$. *Since* $10^1 = 10$ *and* $10^2 = 100$, *the value* 50 *falls between* 10^1 *and* 10^2.

7 *To divide in scientific notation, divide the coefficients and subtract the exponents.* $\frac{4.5}{5} = 0.9$ *and* $10^{6-1} = 10^5$. *Then adjust:* $0.9 \times 10^5 = 9 \times 10^4 = 90{,}000$ *bags.*

8 *The constant of proportionality is* $k = \frac{y}{x}$. *Using the first pair:* $k = \frac{17.5}{5} = 3.5$. *The other ratios* $\frac{35}{10} = 3.5$ *and* $\frac{52.5}{15} = 3.5$ *confirm this.*

9 *Use the slope formula* $m = \frac{y_2 - y_1}{x_2 - x_1}$. *From the labeled points:* $m = \frac{9-1}{5-1} = \frac{8}{4} = 2$.

10 *To clear fractions, multiply every term by the LCD (10):* $5x - 30 = 2x + 30$. *Collect variable terms:* $3x = 60$, *so* $x = 20$.

Well done checking your answers!

Keep practicing to strengthen your skills.

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THANK YOU

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*

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