

12 Oklahoma OSTP Grade 8 Math Practice Tests

The Complete Coached Test Prep with Tips & Detailed Answer Keys

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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!

Exponent Rules

$$a^m \cdot a^n = a^{m+n} \quad (a^m)^n = a^{mn} \quad (ab)^n = a^n \cdot b^n$$
$$\frac{a^m}{a^n} = a^{m-n} \quad a^0 = 1 \quad (a \neq 0) \quad a^{-n} = \frac{1}{a^n}$$

Lines & Linear Equations

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

m = slope 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 $\sqrt{2} \approx 1.414$ $\sqrt{3} \approx 1.732$ $\pi \approx 3.14159$

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** $V = \frac{1}{3} \pi r^2 h$ **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 $\rightarrow$ exactly one output **Vertical line test:** if any vertical line hits graph more than once $\Rightarrow$ 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.



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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 pair of numbers has one from the rational set and one from the irrational set?

(A) $\frac{1}{3}$ and $\frac{2}{3}$

(B) $\sqrt{2}$ and $\sqrt{3}$

(C) 0.5 and $\sqrt{5}$

(D) π and e

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

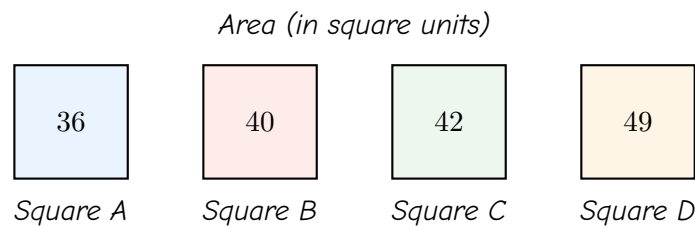
(A) $\frac{3}{10}$

(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) $\sqrt{9}$



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5. A restaurant bill is \$62. If the sales tax rate is 8%, what is the total amount owed?

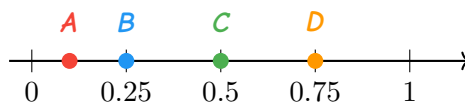
(A) \$66.96

(B) \$70.00

(C) \$4.96

(D) \$57.04

6. The number line below shows four labeled points between 0 and 1. Which point best represents 4^{-1} ?



(A) Point A

(B) Point B

(C) Point C

(D) Point D

7. The speed of light is approximately 300,000,000 meters per second. What is this speed in scientific notation?

(A) 3×10^7

(B) 3×10^8

(C) 30×10^7

(D) 3×10^9

8. What is $8 \times 10^4 + 6 \times 10^3$? Write your answer in scientific notation.

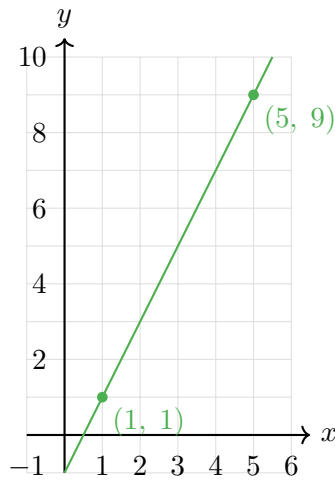
Your Answer:



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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!*

Answer Key & Explanations



Answer Key

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

Practice Test 1 — Answer Key

- | | | | | | | | |
|-----|------|-----|-----|-----|-----|-----|---------------------|
| 1 C | 2 C | 3 C | 4 B | 5 A | 6 B | 7 B | 8 8.6×10^4 |
| 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 $0.5 = \frac{1}{2}$ (rational) and $\sqrt{5}$ (irrational). The other pairs have both numbers in the same set.
- 2 Let $x = 0.333 \dots$. Then $10x = 3.333 \dots$. Subtracting: $9x = 3$, so $x = \frac{3}{9} = \frac{1}{3}$.



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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 To find the total with sales tax, calculate the tax amount and add it to the original price. Tax = $62 \times 0.08 = \$4.96$, so the total is $62 + 4.96 = \$66.96$.

6 By the negative exponent rule, $4^{-1} = \frac{1}{4} = 0.25$. Point B is located at 0.25 on the number line.

7 To write a large number in scientific notation, move the decimal left until the coefficient is between 1 and 10. Move 8 places left: $300,000,000 = 3 \times 10^8$ m/s.

8 To add with different exponents, rewrite to match the larger exponent. $6 \times 10^3 = 0.6 \times 10^4$. Then $8 \times 10^4 + 0.6 \times 10^4 = 8.6 \times 10^4$.

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

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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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