

12 Texas STAAR 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?

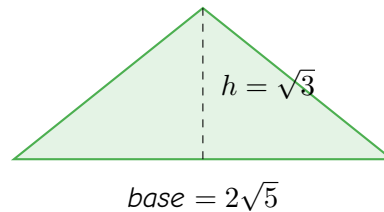
(A) $\frac{3}{10}$

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

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

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

3. The triangle below has base $2\sqrt{5}$ and height $\sqrt{3}$. Which is the best estimate for its area?



(A) About 2.5

(B) About 3.9

(C) About 6.3

(D) About 8.0

4. Jayden wants to leave an 18% tip at a restaurant where the meal costs \$55. How much tip should he leave?

(A) \$7.50

(B) \$9.90

(C) \$11.00

(D) \$18.00



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5. Simplify $\frac{11^6}{11^2}$.

(A) 11^3

(B) 11^4

(C) 11^8

(D) 11^{12}

6. The table below lists the first twelve perfect squares. Which number in the table is also a perfect cube?

1	4	9	16	25	36	49	64	81	100	121	144
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(A) 9

(B) 36

(C) 64

(D) 81

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 shows $(2, 14)$, $(5, 35)$, and $(10, 70)$. What is k ?

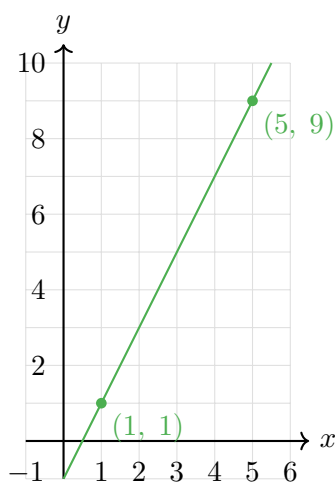
Your Answer:



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



Your Answer:

10. Solve using elimination: $5x + y = 14$ and $3x - y = 2$.

- (A) (1, 9) (B) (2, 4)
(C) (3, -1) (D) (4, -6)



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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 B

4 B

5 B

6 C

7 B

8 7

9 2

10 B

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 $x = \frac{3}{9} = \frac{1}{3}$.

3 Area = $\frac{1}{2} \times 2\sqrt{5} \times \sqrt{3} = \sqrt{5} \times \sqrt{3} = \sqrt{15} \approx 3.87 \approx 3.9$.



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4 A tip is calculated as a percentage of the meal cost. $\text{Tip} = 55 \times 0.18 = \9.90 .

5 Using the quotient rule: $\frac{11^6}{11^2} = 11^{6-2} = 11^4$.

6 $64 = 4^3$, so it is both a perfect square ($8^2 = 64$) and a perfect cube. None of the other choices are perfect cubes (e.g., $\sqrt[3]{9} \approx 2.08$, $\sqrt[3]{81} \approx 4.33$).

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 $\frac{14}{2} = 7$, $\frac{35}{5} = 7$, $\frac{70}{10} = 7$. The constant of proportionality is $k = 7$.

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 use elimination, add the two equations so the y -terms cancel: $8x = 16$, giving $x = 2$. Then $y = 14 - 5(2) = 4$.



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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