

3

Tennessee

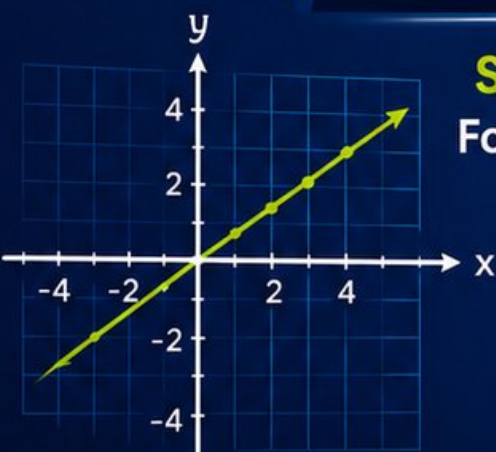
TCAP

GRADE 8

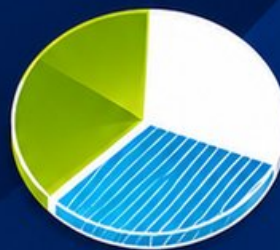
MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$V = s^3$$



$$y = mx + b$$
$$2x + 5 = 13$$
$$x = 4$$



3

**PRINTED
TESTS**



2

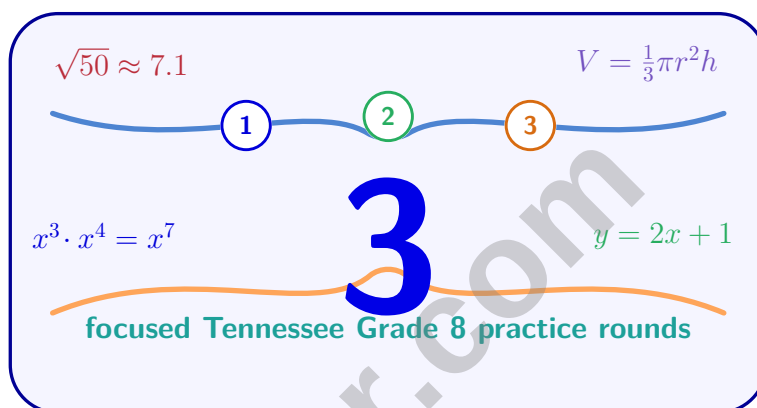
**ONLINE
TESTS**



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

3 Tennessee TCAP Grade 8 Math Practice Tests

Targeted TCAP Review for Algebra, Geometry, and Data Skills



Three complete 40-question Grade 8 TCAP practice rounds with real numbers, exponents, scientific notation, equations, functions, transformations, geometry, data analysis, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Tennessee Grade 8 Problem Solver!

Three focused rounds for sharper TCAP math thinking

This book gives you three full Grade 8 TCAP math practice tests. Each round is built to help you recognize structure, reason with real numbers and exponents, analyze linear relationships, connect equations with graphs, and explain your thinking with care.

Your Tennessee 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.

Read

Model

Verify

How to Use This Book

A three-session plan for confident Grade 8 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 an exponent rule, equation, graph, transformation, diagram, 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.

Tennessee 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?

Three TCAP tests, 120 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Test 3	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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Table of Contents



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- 1) Explain: Why must the inequality symbol be flipped when solving $-3x \leq 12$?
- ☐ A. Multiplying by a negative reverses the direction of the inequality
- ☐ B. It is a rule you must always follow, regardless of the sign
- ☐ C. Dividing by any negative number requires flipping
- ☐ D. Flipping prevents getting a negative variable
- 2) A student calculates the lateral surface area of a square pyramid with base side 10 cm and altitude (height) 8 cm as: $\text{Lateral} = 4 \times \frac{1}{2}(10)(8) = 160 \text{ cm}^2$. What is the error?
- ☐ A. Used altitude instead of slant height
- ☐ B. Forgot to multiply by 4 triangles
- ☐ C. Used diameter instead of radius
- ☐ D. The calculation is correct
- 3) When point (a, b) is rotated 180° about the origin, it maps to:
- ☐ A. (a, b)
- ☐ B. $(-a, -b)$
- ☐ C. (b, a)
- ☐ D. $(-b, -a)$
- 4) Explain why 10^5 is 100 times greater than 10^3 . Use exponents in your reasoning.
-
- 5) What is the slope of the line that passes through $(5, 2)$ and $(5, 7)$?
- ☐ A. 0
- ☐ B. 1
- ☐ C. Undefined
- ☐ D. 5



6) Solve for y : $\frac{y-3}{2} = 5$

☐ A. $y = 13$

☐ C. $y = 4$

☐ B. $y = 7$

☐ D. $y = 10$

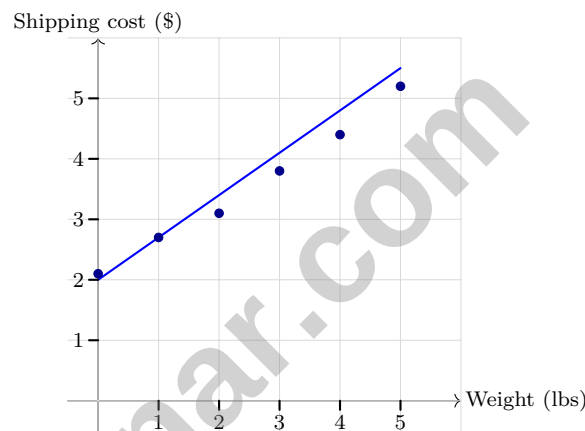
7) A sphere has a radius of 3 inches. What is its volume in cubic inches? (Use $\pi \approx 3.14$.)

☐ A. 56.52 in^3

☐ C. 169.56 in^3

☐ B. 113.04 in^3

☐ D. 339.12 in^3



8)

What is the y -intercept of the best-fit line?

☐ A. \$0

☐ C. \$2.50

☐ B. \$2

☐ D. \$5

9) Between which two consecutive integers does $\sqrt[3]{50}$ lie?



☐ A. 2 and 3

☐ C. 4 and 5

☐ B. 5 and 6

☐ D. 3 and 4



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10) Convert $0.\overline{34}$ to a fraction in simplest form.

11) Compute $(3.6)^2$ for comparison with $\sqrt{13}$.

12) $(8 \times 10^4) \times (9 \times 10^5) = ?$

☐ A. 72×10^7

☐ B. 0.72×10^{10}

☐ C. 17×10^9

☐ D. 7.2×10^{10}

13) A proportional relationship is described by $y = 4x$. What is the unit rate?

☐ A. 1

☐ B. 2

☐ C. 4

☐ D. 8

14) Solve by elimination:
$$\begin{cases} 4x + 3y = 18 \\ 2x - 3y = 6 \end{cases}$$

☐ A. (2, 2)

☐ B. (3, 2)

☐ C. (4, 2/3)

☐ D. (4, 1)

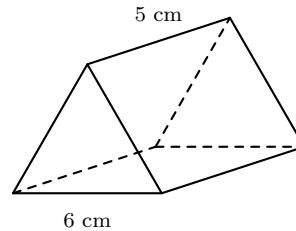


- 1) An area model for $(x + 6)(x - 2)$ shows four rectangular regions. What is their total area?

	x	6
x	x^2	$6x$
-2	$-2x$	-12

- ☐ A. $x^2 + 4x - 12$
☐ C. $x^2 + 8x - 12$
- ☐ B. $x^2 - 12$
☐ D. $x^2 + 6x - 2$
- 2) Complete the conversion: $0.\overline{5}$ equals...
- ☐ A. $\frac{1}{2}$
☐ C. $\frac{5}{10}$
- ☐ B. $\frac{1}{5}$
☐ D. $\frac{5}{9}$
- 3) Is $\sqrt{22}$ closer to 4.6 or 4.7?
- ☐ A. 4.6
☐ C. Equally close
- ☐ B. Cannot determine
☐ D. 4.7
- 4) Which is the best estimate of $\sqrt{2}$?
- ☐ A. 1.2
☐ C. 2.0
- ☐ B. 2.8
☐ D. 1.4
- 5) A student incorrectly wrote 56,200 in scientific notation as 56.2×10^3 . What is the correct form?
- ☐ A. 562×10^2
☐ C. 56.2×10^3
- ☐ B. 5.62×10^3
☐ D. 5.62×10^4





6)

An equilateral triangular prism has triangular bases with side length 6 cm and prism length (height) 5 cm. The height of each equilateral triangle is approximately 5.2 cm. What is the approximate total surface area?

☐ A. 31.2 cm^2

☐ C. 121.2 cm^2

☐ B. 46.8 cm^2

☐ D. 141 cm^2

7) A point (p, q) is reflected across the y -axis, giving $(-p, q)$. Then it is reflected across the x -axis, giving $(-p, -q)$. What single transformation produces the same result?

☐ A. 90° rotation about the origin

☐ C. 270° rotation about the origin

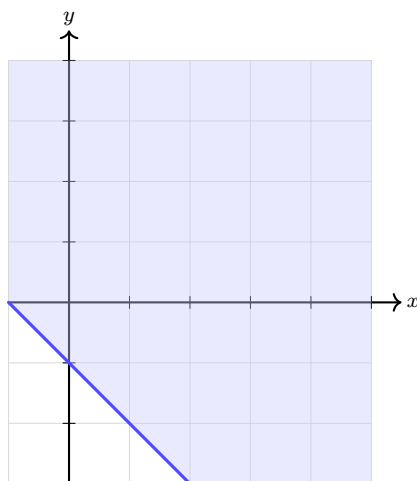
☐ B. 180° rotation about the origin

☐ D. Reflection across the line $y = x$

8) The height of a ball (in meters) t seconds after being thrown is $h(t) = 20t - 5t^2$. Find $h(2)$.



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1)

The line shown has equation $y = -x - 1$. With shading above, the inequality is:

☐ A. $y > -x - 1$

☐ C. $y \geq -x - 1$

☐ B. $y < -x - 1$

☐ D. $y \leq -x - 1$

2) When sketching a line of best fit by eye, the line should:

☐ A. Pass through every single point

☐ D. Have approximately equal numbers
of points above and below it

☐ B. Have the steepest possible slope

☐ C. Avoid all outliers completely
3) Triangle X is similar to Triangle Y . In Triangle X , one angle measures 60° . What is the measure of the corresponding angle in Triangle Y ?

☐ A. 30°

☐ C. 120°

☐ B. 60°

☐ D. Cannot be determined



- 4) A rectangle's length is 4 cm more than its width. If the perimeter is 32 cm, what is the length?

- 5) The temperature $T(h)$ in degrees Celsius at height h km above sea level is $T(h) = 25 - 6h$. What is $T(2)$?

☐ A. 37

☐ C. 19

☐ B. 13

☐ D. 50

- 6) If x is a whole number and $\sqrt{x}$ is rational, then x must be:

☐ A. Irrational

☐ C. A perfect square

☐ B. Odd

☐ D. Greater than 10

- 7) Which pair correctly matches the repeating block length to the multiplier used in the conversion method?

☐ A. Block length $n \rightarrow$ multiply by $10n$.

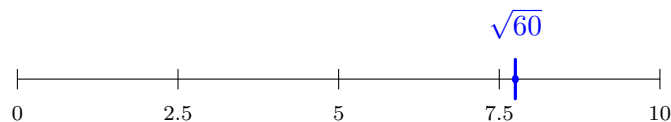
☐ C. All blocks $\rightarrow$ multiply by 10 regardless.

☐ B. 1-digit block $\rightarrow$ multiply by 100;

 2-digit block $\rightarrow$ multiply by 10.

☐ D. 1-digit block $\rightarrow$ multiply by 10; 2-digit block $\rightarrow$ multiply by 100.

8)



Based on the number line, which decimal is closest to $\sqrt{60}$?

☐ A. 7.5

☐ C. 7.8

☐ B. 7.9

☐ D. 7.7


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Tennessee TCAP Grade 8 Practice Test Answer Keys**How to use this section with a Grade 8 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 Tennessee TCAP practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (8.EE.C.9) When dividing (or multiplying) both sides of an inequality by a negative number, the inequality symbol must flip to preserve the truth of the statement. For example, if $2 > 1$ (true), multiplying by -1 gives $-2 > -1$ (false), so we flip to get $-2 < -1$ (true).
- 2) **Choice A is correct.** (8.G.C.6) Lateral surface area requires the slant height (from apex to midpoint of base edge), not the altitude (perpendicular distance from apex to base center). The altitude is 8 cm, but the slant height is $\sqrt{8^2 + 5^2} = \sqrt{89} \approx 9.4$ cm. Using altitude is a common error.
- 3) **Choice B is correct.** (8.G.A.1) A 180° rotation about the origin maps $(x, y) \rightarrow (-x, -y)$. Distractor E is reflection across the x -axis.
- 4) **The correct answer is 100.** (8.EE.A.3) When dividing powers with the same base, subtract the exponents. $10^{5-3} = 10^2$, and $10^2 = 100$, so 10^5 is 100 times larger than 10^3 .
- 5) **Choice C is correct.** (8.EE.B.6) Both points have the same x -coordinate, making this a vertical line. Vertical lines have undefined slope.
- 6) **Choice A is correct.** (8.EE.C.7) Multiply by 2: $y - 3 = 10$. Add 3: $y = 13$.
- 7) **Choice B is correct.** (8.G.C.6) $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 27 = \frac{4}{3} \times 84.78 = 113.04$ in³.
- 8) **Choice B is correct.** (8.SP.A.3) The line crosses the y -axis at approximately $y = 2$, representing the base shipping cost.
- 9) **Choice D is correct.** (8.EE.A.2) $3^3 = 27$ and $4^3 = 64$. Since $27 < 50 < 64$, we have $3 < \sqrt[3]{50} < 4$.
- 10) **The correct answer is $\frac{34}{99}$.** (8.NS.A.1) Set $x = 0.\overline{34}$, so $100x = 34.\overline{34}$. Subtracting: $100x - x = 34$, giving $99x = 34$ and $x = \frac{34}{99}$.
- 11) **The correct answer is 12.96.** (8.NS.A.2) $(3.6)^2 = 12.96$, which is slightly less than 13.
- 12) **Choice D is correct.** (8.EE.A.4) Multiply coefficients: $8 \times 9 = 72 = 7.2 \times 10^1$. Add exponents: $10^{4+5} = 10^9$. Combine: $7.2 \times 10^1 \times 10^9 = 7.2 \times 10^{10}$.
- 13) **Choice C is correct.** (8.EE.B.5) In $y = kx$, the constant of proportionality k is the unit rate. Here $k = 4$, so the unit rate is 4 units of y per 1 unit of x .
- 14) **Choice C is correct.** (8.EE.C.8) Add the equations: $(4x + 3y) + (2x - 3y) = 18 + 6$, so $6x = 24$, giving $x = 4$. Substitute: $4(4) + 3y = 18$, so $16 + 3y = 18$, and $y = 2/3$. Solution: $(4, 2/3)$.
- 15) **Choice D is correct.** (8.EE.C.9) SOLID line (includes boundary) and shading BELOW the line indicates $y \leq 2x$.
- 16) **Choice C is correct.** (8.F.A.1) For each time of day, there is exactly one temperature reading. Options A, B, and D can give more than one output for the same input.
- 17) **Choice C is correct.** (8.F.A.3) $y = x^4 - 3$ contains an exponent of 4, making it nonlinear. Options A, B, and D all have the form $y = mx + b$, so they are linear.
- 18) **Choice A is correct.** (8.F.B.4) Initial length is 10 cm (when $w = 0$). Change from 2 to 4 weights: length goes from 14 to 18 cm, a change of 4 cm for 2 weights, so slope is 2. Equation: $L = 2w + 10$.
- 19) **Choice B is correct.** (8.G.A.2) Comparing the two squares: ABCD (lower left on the grid) and EFGH (upper right) have identical side lengths and the same orientation. The vertices align: A is at $(0,0)$ and E is at $(4,3)$, indicating a translation 4 units right and 3 units up. Translation is a rigid motion that preserves all distances and angles, so no rotation or reflection is needed.
- 20) **Choice D is correct.** (8.G.A.1) Dilation scales all lengths by the scale factor. Perimeter: $24 \times 0.5 = 12$.
- 21) **Choice B is correct.** (8.G.A.2) The two acute angles in a right triangle sum to 90° . So $p + (2p + 18) = 90$, which gives $3p = 72$ and $p = 24^\circ$.
- 22) **The correct answer is A,C.** (8.NS.A.1) Statement A is true because rational numbers are closed under addition. Statement C is true because any terminating decimal, such as $0.75 = \frac{3}{4}$, is rational. Statement B is false because two irrational numbers can multiply to a rational number, for example $\sqrt{2} \times \sqrt{8} = 4$. Statement D is false because integers are rational. Statement E is false because perfect squares have rational square roots, not irrational ones.
- 23) **Choice D is correct.** (8.G.B.3, 8.G.B.4) Check option D: $7^2 + 8^2 = 49 + 64 = 113 \neq 81 = 9^2$. The other options are all known Pythagorean triples.
- 24) **Choice A is correct.** (8.G.B.5) Using the Pythagorean Theorem: $c = \sqrt{8^2 + 6^2} = \sqrt{64 + 36} = \sqrt{100} = 10$ units.



Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 3 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

PRACTICE TODAY, ACHIEVE TOMORROW!

GRADE
8

Give your child the edge they need with **3 full-length** Grade 8 Math practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, boosting confidence, and preparing for success on test day!



WHAT'S INSIDE?



Standards-Aligned Practice

Questions designed to cover essential Grade 8 math standards.



Variety of Question Types

Multiple-choice, short answer, and more to build well-rounded skills.



Real-World Applications

Engaging problems that connect math to everyday life.



Step-by-Step Progress

Track improvement and build confidence with every test.



Build Skills & Boost Confidence

Strengthen understanding and feel prepared for test day.

COVERS ALL ESSENTIAL TOPICS

- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Ratios & Proportional Relationships
- ✓ Linear Equations
- ✓ Functions
- ✓ Geometry
- ✓ Measurement & Data
- ✓ Statistics & Probability
- ✓ Pythagorean Theorem
- ✓ Volume & Surface Area
- ✓ Transformations
- ✓ Inequalities
- ✓ Data Analysis & Graphing
- ✓ And More!



2 Extra Online Practice Tests Included!

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PRACTICE. PREPARE. SUCCEED.



Testinar

More Practice. More Confidence.
Better **Results.**