

Tennessee

TCAP

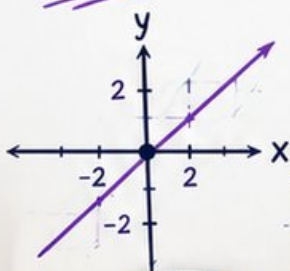
GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

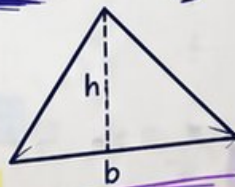
$$y = mx + b$$



**BUILD
CONFIDENCE.
SHARPEN SKILLS.
ACE YOUR
EXAM!**

Practice
Today
Succeed
Tomorrow!

$$A = \frac{1}{2}bh$$



7 PRINTED
TESTS



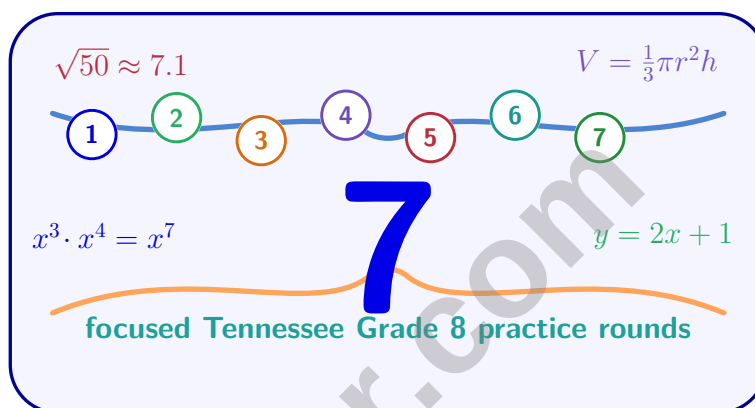
2 ONLINE
TESTS



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

7 Tennessee TCAP Grade 8 Math Practice Tests

Grade 8 TCAP Prep for Equations, Transformations, and Probability



Seven 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!

Seven focused rounds for sharper TCAP math thinking

This book gives you seven 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 seven-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?

Seven TCAP tests, 280 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real and irrational numbers, integer exponents, scientific notation, equations, and careful reading.
Tests 4–6	Slope, systems of equations, functions, inequalities, transformations, congruence, and similarity.
Test 7	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
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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For more practice
& answers

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1) The function $f(x)$ represents postage cost based on weight in ounces: $f(x) =$

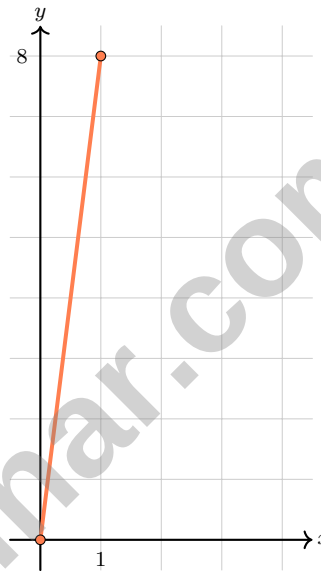
$$\begin{cases} 0.55 & \text{if } 0 < x \leq 1 \\ 0.75 & \text{if } 1 < x \leq 2 \\ 0.95 & \text{if } 2 < x \leq 3 \end{cases}$$
 What is $f(1.5)$?

☐ A. \$0.55

☐ C. \$0.95

☐ B. \$0.75

☐ D. \$1.50



2)

What is the slope?

☐ A. 1

☐ C. 8

☐ B. 4

☐ D. $\frac{1}{8}$



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3) A student's test score shows: starts at 60, increases to 90 by question 5, then stays at 90 for questions 6-10, where 90 is the maximum possible score. Which is true?

- ☐ A. The student answered 30 consecutive questions correctly
- ☐ B. The rate of improvement was constant throughout
- ☐ C. The student's score increased from question 5 to 10
- ☐ D. The student improved in the first half but was already at the ceiling in the second half

4) Estimate the value of $\sqrt{6} \times \sqrt{4}$ to the nearest tenth.

5) A right triangle has a hypotenuse of 10 and one leg of 6. What is the other leg?

- ☐ A. 4
- ☐ B. 8
- ☐ C. 16
- ☐ D. 100

6) A polygon has an interior angle sum of 1260° . How many sides does it have?

- ☐ A. 9
- ☐ B. 8
- ☐ C. 7
- ☐ D. 10

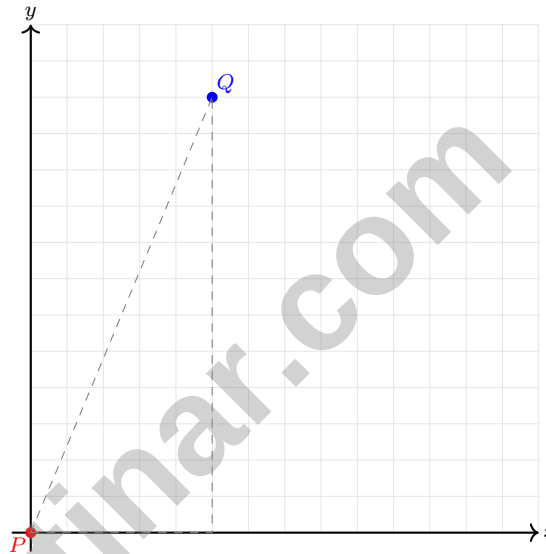
7) A company requires workers to complete at least 100 units per day. If a worker has completed 45 units, how many more units must the worker complete?



8) Trapezoid $PQRS$ is similar to Trapezoid $TUVW$ with scale factor $\frac{3}{2}$. If $PQ = 8$ cm in trapezoid $PQRS$, what is the length of TU in trapezoid $TUVW$?

☐ A. 12 cm☐ C. 8 cm☐ B. 5.33 cm☐ D. 10.67 cm

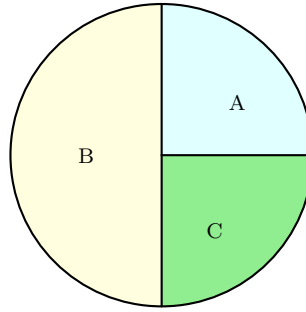
9) Two points are plotted on a coordinate grid: $P = (0, 0)$ and $Q = (5, 12)$. What is the distance from P to Q rounded to the nearest tenth?

☐ A. 12.9☐ C. 17.0☐ B. 13.0☐ D. 8.5

10) A sphere has radius r . A cylinder with radius r and height $2r$ has what relationship to the sphere's volume?

☐ A. Cylinder volume = Sphere volume☐ C. Cylinder volume = $2 \times$ Sphere volume☐ B. Cylinder volume = $1.5 \times$ Sphere volume☐ D. Cylinder volume = $3 \times$ Sphere volume

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1)

The spinner is divided into three sections. Section A covers 90° , section B covers 180° , and section C covers 90° . What is the probability of landing on section B?

- ☐ A. $\frac{1}{4}$
☐ B. $\frac{2}{5}$

- ☐ C. $\frac{1}{3}$
☐ D. $\frac{1}{2}$

2) Solve for x : $5x - 3 = 2x + 9$

- ☐ A. $x = 2$
☐ B. $x = 12$

- ☐ C. $x = 6$
☐ D. $x = 4$

3) A right triangle has a hypotenuse of 20 and one leg of 12. Find the other leg.

- ☐ A. 8
☐ B. 16

- ☐ C. 18
☐ D. 32

4) Which number is irrational?

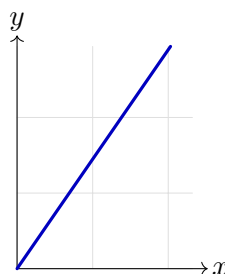
- ☐ A. $\sqrt{9}$
☐ B. 0.5

- ☐ C. $\sqrt{4}$
☐ D. $\sqrt{8}$



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5) Which point must be on the graph of $y = 2x$?



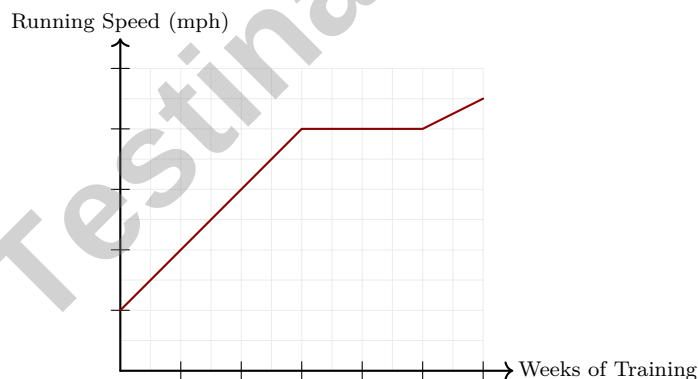
☐ A. (1, 2)

☐ C. (2, 1)

☐ B. (1, 3)

☐ D. (0, 2)

6) A car travels 180 miles in 3 hours. What is the slope (speed in miles per hour)?



7)

A runner trains for 6 weeks. Speed increases for the first 3 weeks, stays constant for 2 weeks (maintenance phase), then improves slightly. During weeks 3–5, what is the runner's speed trend?

☐ A. Speed continues to increase

☐ C. Speed decreases

☐ B. Speed remains constant

☐ D. Speed fluctuates randomly



1) $\frac{1.8 \times 10^{-2}}{9 \times 10^{-8}} = ?$

☐ A. 0.2×10^5

☐ C. 2×10^6

☐ B. 10×10^4

☐ D. 2×10^5

2) Which scenario would most likely result in a smaller MAD after removing an outlier?

☐ A. The outlier equals the mean

☐ C. The outlier is far from the mean

☐ B. The outlier is the only value

☐ D. The data set has one value

3) In a game, you spin a spinner with 3 colors (red, yellow, green) and flip a coin (heads, tails). The table shows all outcomes. How many outcomes are there?

	Red	Yellow	Green
Heads	(H,R)	(H,Y)	(H,G)
Tails	(T,R)	(T,Y)	(T,G)

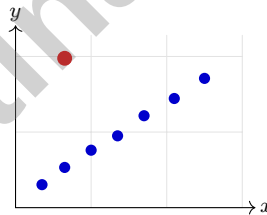
☐ A. $3 + 2 = 5$

☐ C. $2^3 = 8$

☐ B. $3 \times 2 = 6$

☐ D. $3^2 = 9$

4)



A scatter plot shows the time spent studying versus quiz grade. One point is far below the trend line, which could indicate:

☐ A. The trend line is incorrect

☐ C. Studying does not affect quiz grades

☐ B. That student may have been unprepared despite studying, or the data was recorded incorrectly

☐ D. The student did not study enough



5) Convert $0.\overline{45}$ to a fraction in simplest form.

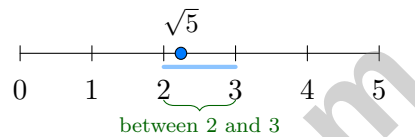
☐ A. $\frac{9}{20}$
☐ B. $\frac{45}{100}$

☐ C. $\frac{45}{90} = \frac{1}{2}$
☐ D. $\frac{45}{99} = \frac{5}{11}$

6) Convert 3.9×10^0 to standard form.

☐ A. 0.39
☐ B. 390

☐ C. 39
☐ D. 3.9



7)

Based on the number line, which statement is true?

☐ A. $\sqrt{5}$ is rational

☐ C. $\sqrt{5} = 2.5$

☐ B. $\sqrt{5}$ is between 1 and 2

☐ D. $\sqrt{5} \approx 2.24$

8) Which number is irrational?

☐ A. $\frac{7}{2}$
☐ B. 3

☐ C. 0.25
☐ D. $\sqrt{5}$

9) Which interval contains $2 + \sqrt{3}$?

☐ A. Between 2 and 3
☐ B. Greater than 5

☐ C. Between 4 and 5
☐ D. Between 3 and 4



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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 B is correct.** (8.F.A.1) Since $1 < 1.5 \leq 2$, use the second rule: $f(1.5) = 0.75$. Cost is \$0.75.
- 2) **Choice C is correct.** (8.EE.B.5) Slope = $\frac{8-0}{1-0} = 8$. This is a steep line passing through (0, 0) and (1, 8).
- 3) **Choice D is correct.** (8.F.B.5) The score improves (60 to 90) in the first 5 questions, then plateaus at 90 for the rest. This indicates hitting the maximum possible score. C is false (no increase after Q5), A is unclear/false, B is false (two different rates).
- 4) **The correct answer is 4.9.** (8.NS.A.2) $\sqrt{6} \times \sqrt{4} = \sqrt{24} = 2\sqrt{6} \approx 2 \times 2.45 = 4.90$.
- 5) **Choice B is correct.** (8.G.B.3, 8.G.B.4) From $6^2 + b^2 = 10^2$, we get $36 + b^2 = 100$, so $b = 8$ (scaled 3-4-5 triple).
- 6) **Choice A is correct.** (8.G.A.2) Set $(n - 2) \times 180 = 1260$. Then $n - 2 = 7$, so $n = 9$ (a nonagon).
- 7) **The correct answer is 55 units.** (8.EE.C.9) The inequality is $45 + x \geq 100$. Subtract 45: $x \geq 55$. The worker must complete at least 55 more units.
- 8) **Choice A is correct.** (8.G.A.1) Scale factor from $PQRS$ to $TUVW$ is $\frac{3}{2}$. So $TU = PQ \times \frac{3}{2} = 8 \times 1.5 = 12$ cm.
- 9) **Choice B is correct.** (8.G.B.5) Distance = $\sqrt{(5-0)^2 + (12-0)^2} = \sqrt{25 + 144} = \sqrt{169} = 13.0$. (This is a 5-12-13 Pythagorean triple.)
- 10) **Choice B is correct.** (8.G.C.6) Sphere: $V_s = \frac{4}{3}\pi r^3$. Cylinder: $V_c = \pi r^2(2r) = 2\pi r^3$. Ratio: $\frac{V_c}{V_s} = \frac{2\pi r^3}{\frac{4}{3}\pi r^3} = \frac{2 \times 3}{4} = 1.5$.
- 11) **Choice A is correct.** (8.SP.A.3) The y -intercept (25) is the fixed cost when $m = 0$ miles.
- 12) **Choice C is correct.** (8.SP.A) Joint frequency: intersection cell (45) divided by grand total (120). This answers 'what fraction of all respondents are rural car-owners?' = $\frac{45}{120} \approx 0.375$.
- 13) **The correct answer is 7.** (8.EE.C.9) Substitute (4, 1): $2(4) - 1 = 7$.
- 14) **Choice A is correct.** (8.EE.C.9) Difference of squares: $4x^2 - 9 = (2x)^2 - 3^2 = (2x - 3)(2x + 3)$.
- 15) **Choice A is correct.** (8.F.A.1) The range is the set of all outputs (y -coordinates): $-1, 2, 5, 8$.
- 16) **Choice C is correct.** (8.F.A.3) $y = 7 + 2x$ is in the form $y = mx + b$ with $m = 2$ and $b = 7$. The other options have squared terms, square roots, or reciprocals.
- 17) **Choice C is correct.** (8.G.A.2) Congruent rectangles have the same dimensions. M'N'O'P' must have dimensions 15 cm and 8 cm (possibly rotated). A rectangle with dimensions 16 cm and 8 cm is NOT congruent.
- 18) **Choice D is correct.** (8.G.A.1) The original triangle has base 2 (from (2, 0) to (4, 0)). The image has base 1. Scale factor: $\frac{1}{2}$.
- 19) **Choice B is correct.** (8.G.A.2) One angle at each intersection is supplementary to the 135° angle, giving 45° . At each of the 2 intersections, there are 2 such 45° angles (vertical to each other), for a total of 4.
- 20) **The correct answer is B, D.** (8.EE.C.7) A: $5x + 2 = 5x - 3 \Rightarrow 2 = -3$ (no solution). B: $2x + 4 = x + 8 \Rightarrow x = 4$ (one solution). C: $3x - 5 = 3x - 5$ (identity, infinitely many). D: $4x + 1 = 2x + 9 \Rightarrow 2x = 8 \Rightarrow x = 4$ (one solution). E: $x = x$ (identity, infinitely many). Correct answers: B and D.
- 21) **Choice B is correct.** (8.G.B.4) When corresponding angles are not congruent, the lines are not parallel. Corresponding angles are congruent only when lines are parallel.
- 22) **The correct answer is 5.** (8.F.B.4) Slope: $\frac{17-9}{3-1} = \frac{8}{2} = 4$. Using (1, 9): $9 = 4(1) + b \Rightarrow b = 5$.
- 23) **Choice C is correct.** (8.G.B.4) Prism: $V_p = B \times h = 25 \times 15 = 375 \text{ cm}^3$. Pyramid: $V_{py} = \frac{1}{3} \times 25 \times 15 = 125 \text{ cm}^3$. Ratio: $\frac{375}{125} = 3$.
- 24) **Choice C is correct.** (8.G.B.4) Decompose: rectangle and trapezoid. Rectangle area = $10 \times 4 = 40 \text{ m}^2$. Trapezoid area = $\frac{1}{2}(6 + 10) \times 3 = 24 \text{ m}^2$. Total = $40 + 24 = 64 \text{ m}^2$.
- 25) **Choice A is correct.** (8.SP.A.1) The rate of change is not constant, showing a curved or leveling pattern rather than a straight line. This indicates a nonlinear association.
- 26) **Choice B is correct.** (8.G.B.5) MAD must be non-negative because it uses absolute values: all deviations are $|x_i - \bar{x}| \geq 0$. A negative result indicates the student subtracted without taking absolute value, or did not apply the absolute-value operation correctly.



The Power of Showing Work

Hi, Organized Solver!

◇ You practiced Grade 8 skills that often require more than one step. That means your written work matters. ◇

★ **Remember this:** Showing work is not extra. It is how you track your thinking, find errors, and prove that your answer did not happen by luck. You practiced across 7 full Grade 8 practice tests, and that repeated effort matters. ★

Organized Work Habits

- **One Line Per Step:** Keep the path readable.
- **Box the Answer:** Make the final result easy to find.
- **Use Labels:** Tell what each value represents.
- **Check the Path:** Follow your steps backward if needed.

Grade 8 test-day tip: When a problem has several steps, write less on each line. Space makes checking easier.

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

Jay Daie

Your Organized-Work Coach

PRACTICE TODAY SUCCEED TOMORROW!

Give your child the confidence and skills they need with **7 full-length Grade 8 Math** practice tests that reflect real test formats and cover all key math standards. Perfect for building skills, strengthening problem-solving abilities, and achieving success on test day!

GRADE 8

Practice
Today
Succeed
Tomorrow!

Algebra

Geometry

Statistics

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



2 EXTRA ONLINE PRACTICE TESTS INCLUDED!

Use these two additional online practice tests for extra review after the printed tests.

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BUILD CONFIDENCE. SHARPEN SKILLS. ACE YOUR EXAM!