

8

Tennessee

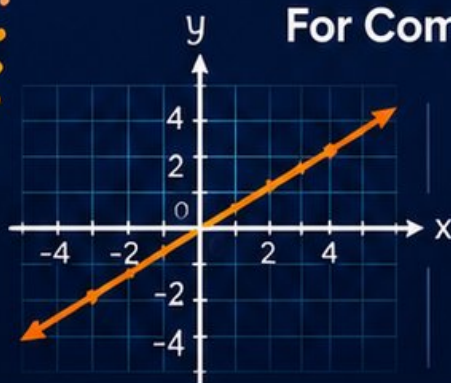
TCAP

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$
$$C = 2\pi r$$
$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3}b^2 h$$



8

 PRINTED TESTS

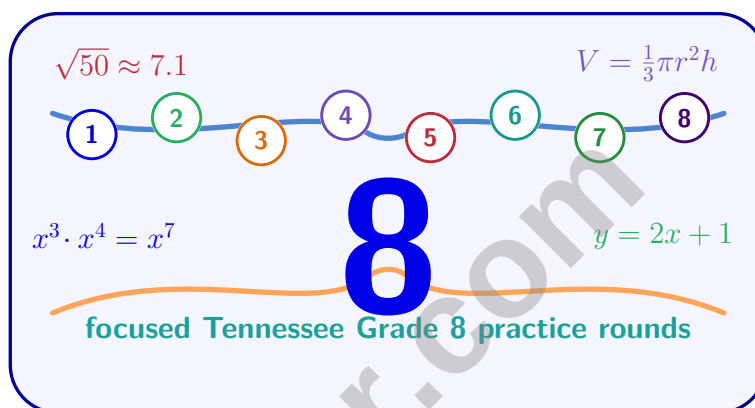
2

 ONLINE TESTS

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

8 Tennessee TCAP Grade 8 Math Practice Tests

Tennessee Grade 8 Practice for Functions, Geometry, and Data Analysis



Eight 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!

Eight focused rounds for sharper TCAP math thinking

This book gives you eight 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

An eight-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?

Eight TCAP tests, 320 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.
Tests 7–8	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.

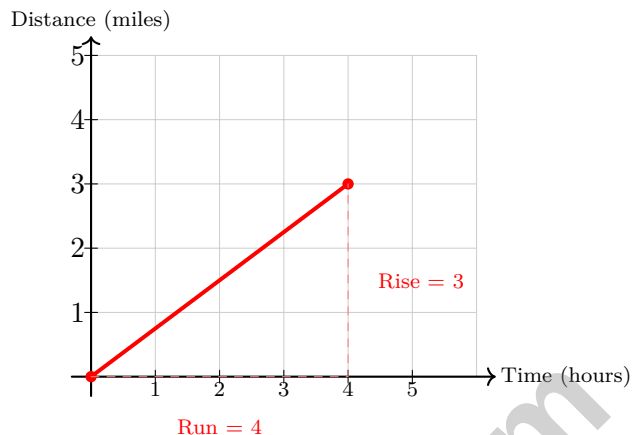


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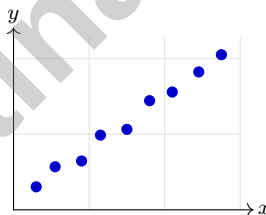
★ Practice Test 1	_____	14
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- 1) A car travels at a constant speed. The graph shows its distance from the start over time.



What is the slope (rate of change) of the car's distance?

- ☐ A. 1 mile per hour
- ☐ B. $\frac{4}{3}$ miles per hour
- ☐ C. $\frac{3}{4}$ miles per hour
- ☐ D. 4 miles per hour



2)

A scatter plot shows the relationship between hours slept and memory test score for 25 students. The points form a clear upward trend with only a few points far from the trend line. This indicates:

- ☐ A. Weak correlation
- ☐ B. Moderate correlation
- ☐ C. Strong correlation
- ☐ D. Perfect correlation



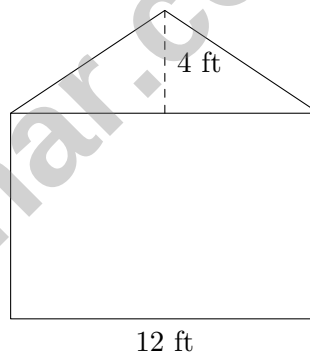
3) Two angles are complementary. One angle is 18° more than the other. What is the smaller angle?

☐ A. 18° ☐ C. 54° ☐ B. 36° ☐ D. 72°

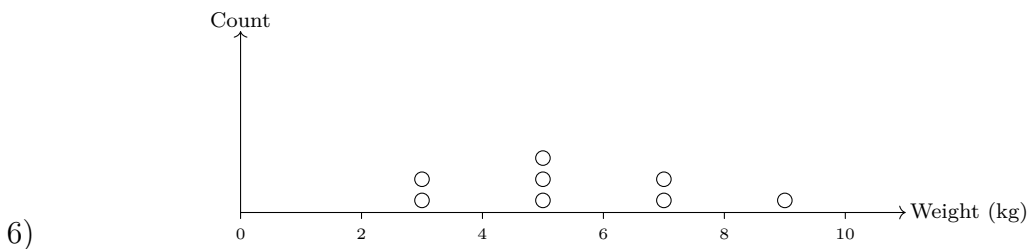
4) A square pyramid has a base edge of 2.5 m and a height of 9.6 m. What is its volume? (Use $2.5^2 = 6.25$.)

☐ A. 20 m^3 ☐ C. 40 m^3 ☐ B. 30 m^3 ☐ D. 50 m^3

5) A composite figure consists of a rectangle with a triangular roof. The rectangle is 12 ft wide and 8 ft tall, and the triangle has the same base and a height of 4 ft. What is the area?

☐ A. 96 ft^2 ☐ C. 132 ft^2 ☐ B. 120 ft^2 ☐ D. 144 ft^2 

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Pet weights: $\{3, 3, 5, 5, 5, 7, 7, 9\}$ kg with mean = 5.5 kg. Find MAD.

☐ A. 1.5

☐ C. 2

☐ B. 1.63

☐ D. 2.25

- 7) A password requires choosing a color and a number from 1 to 9. There are 5 colors available. How many different passwords are possible?

☐ A. $5 + 9 = 14$
☐ C. $9^5 = 59,049$
☐ B. $5 \times 9 = 45$
☐ D. $\frac{9}{5} = 1.8$


A scatter plot shows the relationship between study time (hours) and quiz performance (percent). Which phrase best completes: “The strength of a linear model depends on...”?

☐ A. How close data points cluster to the trend line

☐ C. The total number of data points

☐ B. Whether the line has a positive slope

☐ D. The starting value of the y -intercept


1) A rectangle has a length that is 3 meters more than its width. If the perimeter is 26 meters, which equation represents this, where w is the width?

☐ A. $w + (w + 3) = 26$

☐ C. $w(w + 3) = 26$

☐ B. $3w = 26$

☐ D. $2w + 2(w + 3) = 26$

2) Which statement best defines a function?

☐ A. A relation where every output has exactly one input.

☐ C. A set of ordered pairs with different x -coordinates.

☐ B. A relation where every input has exactly one output.

☐ D. Any relation that includes both positive and negative values.

3) Which table represents a NONLINEAR function?

x	0	1	2	3
y	1	2	4	8

☐ A. No, y increases

☐ C. Yes, the y -values are doubling

☐ B. Yes, the first differences are not constant

☐ D. No, the x -values are equally spaced

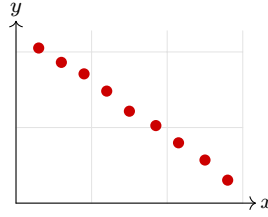
4) Two parallel lines cut by a transversal. If one angle formed is 78° , how many angles of 102° are formed?

☐ A. 1

☐ C. 3

☐ B. 2

☐ D. 4

5)

A scatter plot displays the number of hours spent watching television versus hours spent exercising per week for 25 teenagers. The points show a downward trend: as TV hours increase, exercise hours decrease. What type of correlation is shown?

- ☐ A. Positive correlation ☐ C. No correlation
☐ B. Negative correlation ☐ D. Equal correlation on both sides
- 6) A point P is at $(5, 3)$. After a translation of $(-2, 4)$, the point moves to P' . What is the distance from P to P' ?
- ☐ A. $\sqrt{5}$ units ☐ C. 6 units
☐ B. $\sqrt{20}$ units ☐ D. $\sqrt{45}$ units
- 7) The sum of two people's ages is 35. In 5 years, the older person will be twice the age of the younger person. If the younger person is currently y years old, find y .

- 8) A student found that a cone and a cylinder with the same radius r and height h have volumes differing by 600 cm^3 . If $V_{\text{cyl}} = 900 \text{ cm}^3$, what is V_{cone} ?

- ☐ A. 100 cm^3 ☐ C. 600 cm^3
☐ B. 300 cm^3 ☐ D. 1500 cm^3



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1) Which is the best estimate of $\frac{\pi}{2}$?

☐ A. 1.27

☐ C. 2.14

☐ B. 3.14

☐ D. 1.57

2) When a figure is rotated 270° counterclockwise about the origin, the transformation rule is:

☐ A. $(x, y) \rightarrow (y, -x)$

☐ C. $(x, y) \rightarrow (-x, -y)$

☐ B. $(x, y) \rightarrow (-y, x)$

☐ D. $(x, y) \rightarrow (y, x)$

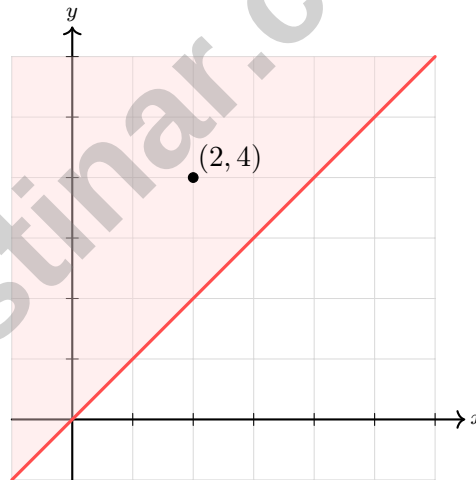
3) Solve: $3x + 2 \geq -4$

☐ A. $x \geq -2$

☐ C. $x \geq 2$

☐ B. $x \leq -2$

☐ D. $x \leq 2$



4)

The test point $(2, 4)$ is marked in the shaded region. Which inequality does this represent?

☐ A. $y > x$

☐ C. $y \geq x$

☐ B. $y < x$

☐ D. $y \leq x$



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5) A line passes through (1, 3) and (3, 7). Is this a linear relationship?

- ☐ A. No, the slope is not 1 ☐ C. Yes, a line is always linear
☐ B. No, because you need more than two points ☐ D. Yes, only if the slope is positive

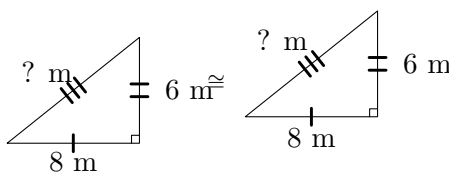
6) A town's population P (in thousands) at year t (years since 2010) follows this data:

Year since 2010 (t)	0	3	6	9
Population (P , thousands)	45	51	57	63

What is the rate of change of the population per year?

- ☐ A. 2 thousand per year ☐ C. 6 thousand per year
☐ B. 3 thousand per year ☐ D. 9 thousand per year
- 7) Calculate $\frac{9.6 \times 10^8}{3.2 \times 10^5}$ and express in scientific notation.

8) Two congruent right triangles are shown. Triangle 1 has legs of 6 m and 8 m. What is the hypotenuse of Triangle 2?



- ☐ A. 5 m ☐ C. 10 m
☐ B. 7 m ☐ D. 14 m



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.B.5) The rise is 3 miles and the run is 4 hours. Slope = $\frac{3}{4}$ miles per hour. This is the constant speed.
- 2) **Choice C is correct.** (8.SP.A.1) A clear upward trend with most points close to the line indicates strong positive correlation. If most points stayed far from the trend, the correlation would be weak.
- 3) **Choice B is correct.** (8.G.B.4) Let the smaller angle be x . Then $x + (x + 18) = 90$, so $2x + 18 = 90$, giving $x = 36^\circ$.
- 4) **Choice A is correct.** (8.G.B.4) $V = \frac{1}{3} \times 6.25 \times 9.6 = \frac{60}{3} = 20 \text{ m}^3$.
- 5) **Choice B is correct.** (8.G.B.4) Decompose: rectangle plus triangular roof. Rectangle area = $12 \times 8 = 96 \text{ ft}^2$. Triangle area = $\frac{1}{2} \times 12 \times 4 = 24 \text{ ft}^2$. Total area = $96 + 24 = 120 \text{ ft}^2$.
- 6) **Choice B is correct.** (8.G.B.5) Deviations: $|3 - 5.5| = 2.5$ (twice), $|5 - 5.5| = 0.5$ (three times), $|7 - 5.5| = 1.5$ (twice), $|9 - 5.5| = 3.5$. Sum = $5 + 1.5 + 3 + 3.5 = 13$. MAD = $13/8 = 1.625 \approx 1.63$.
- 7) **Choice B is correct.** (8.SP.B.4) For each of the 5 color choices, you can pair it with any of the 9 numbers. By the Counting Principle, multiply: $5 \times 9 = 45$ different passwords.
- 8) **Choice A is correct.** (8.SP.A.2) A strong linear model has points tightly clustered around the line, reflected in small residuals.
- 9) **Choice D is correct.** (8.NS.A.1) Let $x = 0.1\overline{35} = 0.13535\ldots$. Then $10x = 1.\overline{35}$ and $1000x = 135.\overline{35}$. Subtracting: $990x = 134$, so $x = \frac{134}{990} = \frac{67}{495}$.
- 10) **Choice D is correct.** (8.EE.A.3) Move the decimal 7 places right: $7.14 \times 10^7 = 71,400,000 \text{ m}$.
- 11) **Choice D is correct.** (8.NS.A.1) Since $3^2 = 9$ and $4^2 = 16$, any square root between $\sqrt{9}$ and $\sqrt{16}$ lies between 3 and 4. Because 13 is between 9 and 16, $\sqrt{13}$ is between 3 and 4. Also, $\sqrt{8} \approx 2.83$, $\sqrt{13} \approx 3.61$, $\sqrt{20} \approx 4.47$, and $\sqrt{25} = 5$, so only $\sqrt{13}$ is in the interval from 3 to 4.
- 12) **Choice D is correct.** (8.NS.A.2) Evaluate: $\sqrt[3]{8} = 2$, $\sqrt{5} \approx 2.24$, $\sqrt{15} \approx 3.87$. From the number line, order: $2 < 2.24 < 3.87$.
- 13) **Choice C is correct.** (8.NS.A.2) $\sqrt{36} = 6$ (rational), π is irrational, and $0.333\ldots = \frac{1}{3}$ (rational). $\sqrt{11}$ cannot be expressed as a ratio of integers.
- 14) **Choice D is correct.** (8.EE.B.6) A line through the origin has y -intercept 0. With slope 3, the equation is $y = 3x + 0$ or $y = 3x$.
- 15) **Choice C is correct.** (8.EE.A.4) $1.5 \times 10^4 \times 10 = 1.5 \times 10^{4+1} = 1.5 \times 10^5 = 150,000$.
- 16) **Choice A is correct.** (8.EE.C.7) Base cost is \$30. Each text adds \$0.15. Total is \$45, so $30 + 0.15t = 45$.
- 17) **Choice D is correct.** (8.EE.C.9) Subtract 3: $-2x > -8$. Divide by -2 (FLIP): $x < 4$. Open circle and left ray.
- 18) **The correct answer is B,D.** (8.F.A.1) Option B: each input (0, 1, 2, 3) has exactly one output (0, 1, 2, 3)—a function. Option D: each input (5, 6, 7) has exactly one output (1, 2, 3)—a function. Option A: input 1 maps to both 2 and 3—not a function. Option C: input 2 maps to both 4 and 5—not a function. Option E: input 1 maps to both 1 and 3—not a function.
- 19) **Choice A is correct.** (8.G.B.3, 8.G.B.4) The diagonal is the hypotenuse of a right triangle with legs 8 and 6: $d^2 = 8^2 + 6^2 = 64 + 36 = 100$, so $d = 10 \text{ m}$.
- 20) **Choice D is correct.** (8.G.B.4) Account A: $I = 1000 \times 0.04 \times 5 = \200 . Account B: $A = 1000(1.03)^5 \approx 1159.27$, so interest $\approx \$159.27$. Account A earns more interest.
- 21) **Choice D is correct.** (8.EE.A.1) $(b^3)^2 = b^6$; then $b^6 \cdot b^4 = b^{10}$; then $\frac{b^{10}}{b^5} = b^5$.
- 22) **Choice C is correct.** (8.EE.A.2) Area = 361, so $s = \sqrt{361} = 19 \text{ cm}$. Perimeter = $4s = 4 \times 19 = 76 \text{ cm}$.
- 23) **Choice D is correct.** (8.EE.B.5) Slope = $\frac{\Delta y}{\Delta x} = \frac{6-0}{3-0} = \frac{6}{3} = 2$. The line passes through (0, 0) and (3, 6).
- 24) **Choice A is correct.** (8.EE.C.8) Substitute $y = \frac{2}{3}x - 1$ into $3y + 2x = 9$: $3(\frac{2}{3}x - 1) + 2x = 9$, so $2x - 3 + 2x = 9$, giving $4x = 12$ and $x = 3$. Then $y = \frac{2}{3}(3) - 1 = 2 - 1 = 1$. So (3, 1) is the answer.
- 25) **Choice B is correct.** (8.EE.C.9) FOIL: $(x - 8)(x + 3) = x^2 + 3x - 8x - 24 = x^2 - 5x - 24$.



Hi, Math Hero!

◇ This wide-ranging book gave you eight serious Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. You showed up for Grade 8 practice again and again. That is what real growth looks like: steady effort, honest review, and a willingness to try. ◇

★ **Remember this:** A math hero is not someone who never misses a question. A math hero learns from the miss and comes back stronger. ★

Hero Habits

- **Courage:** You try problems that are not automatic.
- **Honesty:** You review what needs work.
- **Patience:** You let skills grow over time.
- **Pride:** You recognize the effort you gave.

Grade 8 test-day tip: Save one solved problem you are proud of. Looking back at progress helps motivation stay strong.

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

Jay Daie

Your Math Hero Guide

PRACTICE TODAY, SUCCEED TOMORROW!

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

WHAT'S INSIDE?



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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!



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More Practice. More Confidence.
Better Results.