

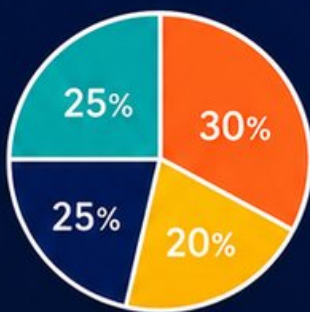
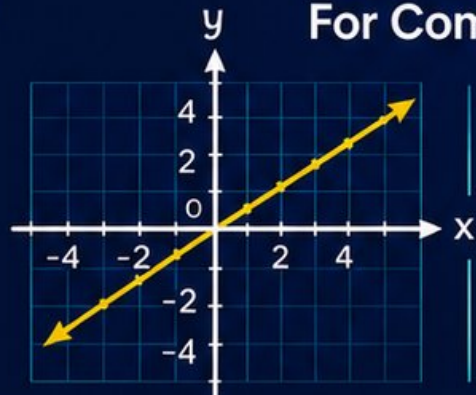
Tennessee TCAP

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

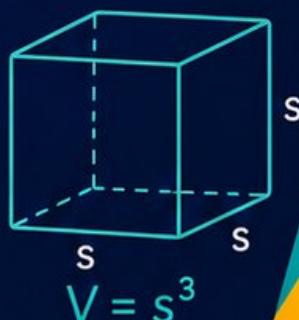


$$y = mx + b$$

$$2x - 3y = 6$$

$$\sqrt{x^2 + y^2}$$

$$A = bh$$



4 PRINTED TESTS



2 ONLINE TESTS

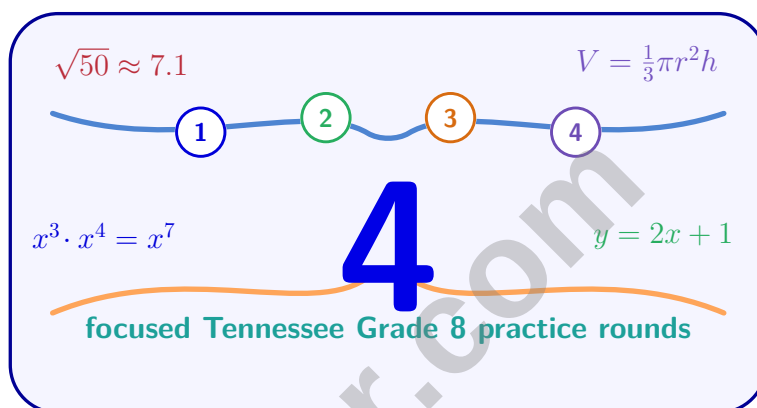


Use these **two additional online practice tests** for extra review after the printed tests in this book.



4 Tennessee TCAP Grade 8 Math Practice Tests

Four TCAP Tests for Standards Practice and Smarter Review



Four 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!

Four focused rounds for sharper TCAP math thinking

This book gives you four 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 four-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?

Four TCAP tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	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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& answers

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- 1) A license plate has 2 letters followed by 3 digits. Letters can be any of A through Z, and digits can be 0 through 9. How many possible license plates are there?

☐ A. $26^2 \times 10^3 = 676,000$

☐ C. $26 \times 10 = 260$

☐ B. $26 + 26 + 10 + 10 + 10 = 82$

☐ D. $(26 + 10)^5 = 60,466,176$

- 2) A register contains pennies, nickels, and dimes. There are twice as many nickels as pennies, and twice as many dimes as nickels. If there are 70 coins total, how many pennies are there?

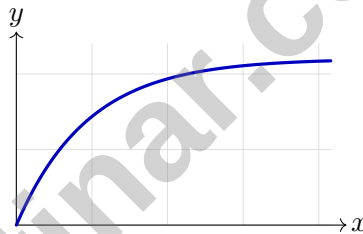
☐ A. 5

☐ C. 10

☐ B. 8

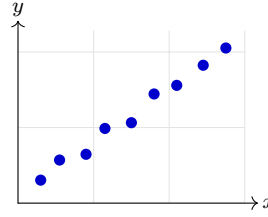
☐ D. 12

- 3) Which real-world scenario matches: graph starts at origin, rises steeply, then gradually levels off?



- | | |
|---|--|
| ☐ A. A plant growing slower and slower as it matures | ☐ C. Water flowing out of a tank at constant rate |
| ☐ B. A car accelerating uniformly over time | ☐ D. A ball rolling down a ramp with no friction |





4)

A scatter plot shows the relationship between advertising spending (in hundreds of dollars) and product sales (in units). The data points form a tight cluster around an imaginary upward line. What does this indicate?

- ☐ A. Weak positive correlation ☐ C. Weak negative correlation
☐ B. No correlation ☐ D. Strong positive correlation

5) A line of best fit for a data set is $y = 2x + 5$. What is the y -intercept, and what does it represent?

- ☐ A. The intercept is 2; it is the starting value ☐ C. The intercept is 7; it is the sum of slope and starting value
☐ B. The intercept is 5; it is the predicted value when $x = 0$ ☐ D. The intercept is $2x$; it is the slope

6) Pentagons $ABCDE$ and $FGHIJ$ are similar. Side $AB = 7$ cm and the corresponding side $FG = 14$ cm. If $BC = 9$ cm, what is the length of GH ?

- ☐ A. 4.5 cm ☐ C. 9 cm
☐ B. 18 cm ☐ D. 11.5 cm

7) If $h(x) = -x + 4$, what is $h(1)$?

- ☐ A. 3 ☐ C. -3
☐ B. 5 ☐ D. 4



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8) If $\sqrt{x}$ is rational and x is a positive integer, what must be true about x ?

☐ A. x is odd

☐ C. x is prime

☐ B. x is greater than 10

☐ D. x is a perfect square

9) Which of these equals $0.\overline{16}$?

☐ A. $\frac{5}{36}$

☐ C. $\frac{16}{100}$

☐ B. $\frac{16}{99}$

☐ D. $\frac{1}{6}$

10) Which value is irrational?

☐ A. $\sqrt{16}$

☐ C. $\sqrt{7}$

☐ B. $\sqrt{9}$

☐ D. $\sqrt{25}$

11) A circular garden has radius 2 meters. Using $\pi \approx 3.14$, which is the best estimate of the circumference?

☐ A. 6.28 m

☐ C. 12.8 m

☐ B. 25.12 m

☐ D. 12.56 m

12) Express 120,000,000 in scientific notation.

☐ A. 1.2×10^7

☐ C. 1.2×10^9

☐ B. 12×10^7

☐ D. 1.2×10^8

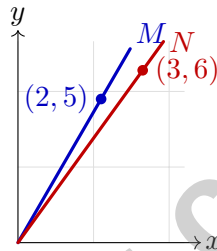
13) Evaluate 2^{-3} and express it as a decimal.



- 1) Function $f(x) = \frac{3}{4}x + 2$ and g shown in table: $(0, 3)$, $(4, 5)$, $(8, 7)$. Which has steeper slope?

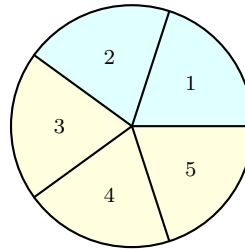
x	0	4	8
$g(x)$	3	5	7

- ☐ A. $f(x)$ is steeper
☐ B. $g(x)$ is steeper
☐ C. Equal slopes
☐ D. Cannot compare
- 2) Two lines are shown on the same graph. Line M passes through $(0, 0)$ and $(2, 5)$. Line N passes through $(0, 0)$ and $(3, 6)$. Which statement is true?



- ☐ A. Line M is steeper
☐ B. Line N is steeper
☐ C. Both lines have the same steepness
☐ D. Cannot be determined from the information
- 3) Which system best models: "The sum of two numbers is 20. Their difference is 4"?
- ☐ A. $x + y = 20$; $x - y = 4$
☐ B. $x + y = 20$; $x + y = 4$
☐ C. $x \cdot y = 20$; $x/y = 4$
☐ D. $x = 20$; $y = 4$





4)

A spinner has 5 equal sections numbered 1–5. Two sections (1 and 2) are shaded. If you spin once, what is the probability of landing on a shaded section?

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

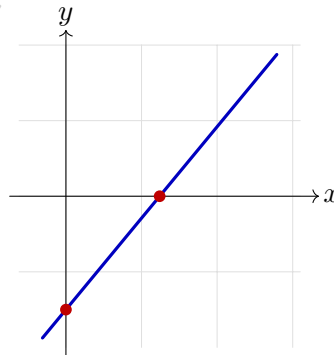
- ☐ C. $\frac{3}{5}$
☐ D. $\frac{4}{5}$

5) A raffle has 20 tickets. If the first ticket drawn wins first prize and the second drawn wins second prize, how many ways can the prizes be awarded?

- ☐ A. $20 + 19 = 39$
☐ B. $20 \times 19 = 380$

- ☐ C. $20!$
☐ D. $\binom{20}{2} = 190$

6) A function has a y -intercept of -3 and an x -intercept of 2 . On the graph, these appear at which points?

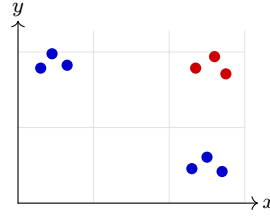


- ☐ A. $(0, -3)$ and $(2, 0)$
☐ B. $(-3, 0)$ and $(0, 2)$

- ☐ C. $(0, 2)$ and $(-3, 0)$
☐ D. $(2, 0)$ and $(0, 0)$



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1)

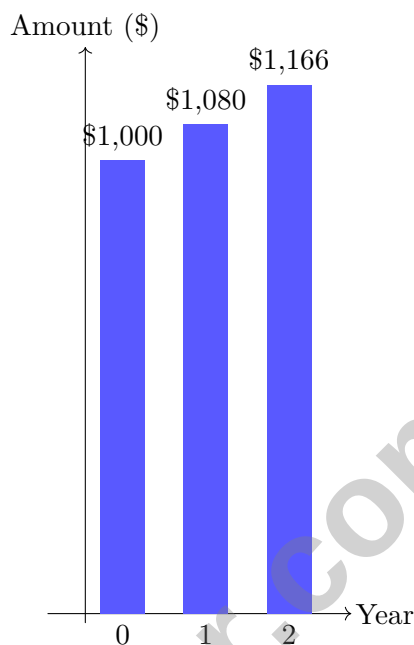
A scatter plot compares test scores of students who studied alone (green points) versus in groups (orange points). Green points cluster at (2 hours, 78%) and orange points cluster at (2 hours, 85%). Both study the same number of hours but achieve different scores based on study method. This is an example of:

- ☐ A. Positive linear correlation
- ☐ B. A data entry error
- ☐ C. Negative correlation
- ☐ D. A confounding variable (study method) creating two distinct clusters



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& answers

- 2) An investment grows with compound interest. If \$1,000 is invested at 8% compound interest annually, which is the closest to the amount after 2 years?



- ☐ A. \$1,080 ☐ C. \$1,166
☐ B. \$1,160 ☐ D. \$1,200
- 3) Simplify $\frac{a^{-3}}{a^2}$.
- ☐ A. a^6 ☐ C. a^1
☐ B. a^{-1} ☐ D. a^{-5}
- 4) A cell phone plan costs \$20 per month plus \$0.10 per text message. If cost is graphed against number of texts sent (x-axis texts, y-axis cost in \$), what is the slope?
- ☐ A. \$20 per text ☐ C. 20 texts per dollar
☐ B. \$20.10 per text ☐ D. \$0.10 per text



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 A is correct.** (8.SP.B.4) Each letter has 26 choices and each digit has 10 choices. Multiply: $26 \times 26 \times 10 \times 10 \times 10 = 676,000$.
- 2) **Choice C is correct.** (8.G.C) Let p = pennies, n = nickels, and d = dimes. Then $n = 2p$ and $d = 2n = 4p$. The total is $p + 2p + 4p = 7p = 70$, so $p = 10$.
- 3) **Choice A is correct.** (8.F.B.5) Steep rise early (fast growth), then level off (approaching maximum) matches plant growth. B is linear, C is linear decrease, D accelerates (not levels off).
- 4) **Choice D is correct.** (8.SP.A.1) Tight clustering around an upward trend indicates strong positive correlation. Points that are far from an imaginary line show weak correlation.
- 5) **Choice B is correct.** (8.SP.A.2) In $y = mx + b$, $b = 5$ is the y -intercept, representing the y -value when $x = 0$.
- 6) **Choice B is correct.** (8.G.A.1) Scale factor is $\frac{14}{7} = 2$. So $GH = BC \times 2 = 9 \times 2 = 18$ cm.
- 7) **Choice A is correct.** (8.F.A.1) Substitute $x = 1$: $h(1) = -(1) + 4 = -1 + 4 = 3$.
- 8) **Choice D is correct.** (8.NS.A.1) For $\sqrt{x}$ to be rational when x is a positive integer, x must be a perfect square (like 1, 4, 9, 16, 25, etc.). Non-perfect squares have irrational square roots.
- 9) **Choice D is correct.** (8.NS.A.1) Let $x = 0.\overline{16} = 0.1666\dots$. Then $10x = 1.\overline{6}$ and $100x = 16.\overline{6}$. Subtracting: $90x = 15$, so $x = \frac{15}{90} = \frac{1}{6}$.
- 10) **Choice C is correct.** (8.NS.A.2) $\sqrt{16} = 4$, $\sqrt{9} = 3$, and $\sqrt{25} = 5$ are all rational. Only $\sqrt{7}$ cannot be expressed as a ratio of integers.
- 11) **Choice D is correct.** (8.NS.A.2) Circumference $= 2\pi r = 2 \times 3.14 \times 2 = 12.56$ m.
- 12) **Choice D is correct.** (8.EE.A.3) Move the decimal 8 places left to get 1.2; the exponent is 8.
- 13) **The correct answer is 0.125.** (8.EE.A.1) $2^{-3} = \frac{1}{2^3} = \frac{1}{8} = 0.125$.
- 14) **Choice A is correct.** (8.G.C.6) The student correctly calculated $SA = 2(12) + 2(15) + 2(20) = 24 + 30 + 40 = 94$ m². The formula $2(lw + lh + wh)$ accounts for all six faces (two of each type).
- 15) **Choice A is correct.** (8.G.A.1) Clockwise and counterclockwise are opposite directions. 270° clockwise $= 360^\circ - 270^\circ = 90^\circ$ counterclockwise.
- 16) **Choice A is correct.** (8.EE.B.6) In slope-intercept form $y = mx + b$, the coefficient m is the slope. Here $m = -2$.
- 17) **Choice A is correct.** (8.EE.C.7) Subtract 9: $-x = -5$. Multiply by -1 : $x = 5$. Check: $9 - 5 = 4$ ✓. (Distractor B: sign error; C: adding instead of subtracting.)
- 18) **Choice A is correct.** (8.EE.C.9) Dividing by -5 requires flipping: $x \geq -3$, not $x \leq -3$.
- 19) **The correct answer is 3.** (8.EE.B.5) Slope $= \frac{14 - 5}{2 - (-1)} = \frac{9}{3} = 3$.
- 20) **Choice D is correct.** (8.EE.C.9) Test $(3, 2)$: $3 + 2 = 5 \not\leq 4$ FALSE. The other points all satisfy $x + y \leq 4$.
- 21) **Choice C is correct.** (8.G.C.6) Radius $r = 12$ cm. $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 1728 = 7234.56$ cm³.
- 22) **The correct answer is A,B.** (8.G.B.4) A: $5000(0.06)(3) = \$900$. B: $5000(0.08)(2) = \$800$. C is false because the total owed would be \$6,000, not \$5,500. D is false because the monthly payment would be about \$237.50. E is false because the interest would be \$500, not \$400.
- 23) **The correct answer is -2 .** (8.F.A.2) Slope: $(14 - 2)/(4 - 1) = 4$. From $(1, 2)$: $2 = 4(1) + b \Rightarrow b = -2$.
- 24) **Choice B is correct.** (8.SP.A.3) The y -intercept (here, -1) is the predicted value when $x = 0$. On the graph, it is where the line crosses the y -axis.
- 25) **The correct answer is $\frac{1}{2}$.** (8.SP.B.4) Sample space: HH, HT, TH, TT. Exactly one heads: HT, TH. That's 2 of 4. $P = \frac{1}{2}$.
- 26) **Choice C is correct.** (8.EE.A.2) Both $15^2 = 225$ and $(-15)^2 = 225$, so $x = 15$ or $x = -15$.
- 27) **Choice C is correct.** (8.EE.A.4) Divide coefficients: $5 \div 2.5 = 2$. Subtract exponents: $10^{-2 - (-5)} = 10^3$. Result: 2×10^3 .



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 4 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!

Give your child the confidence and skills they need with **4 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!

4



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.



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!



4 PRINTED TESTS

+



2 ONLINE TESTS



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