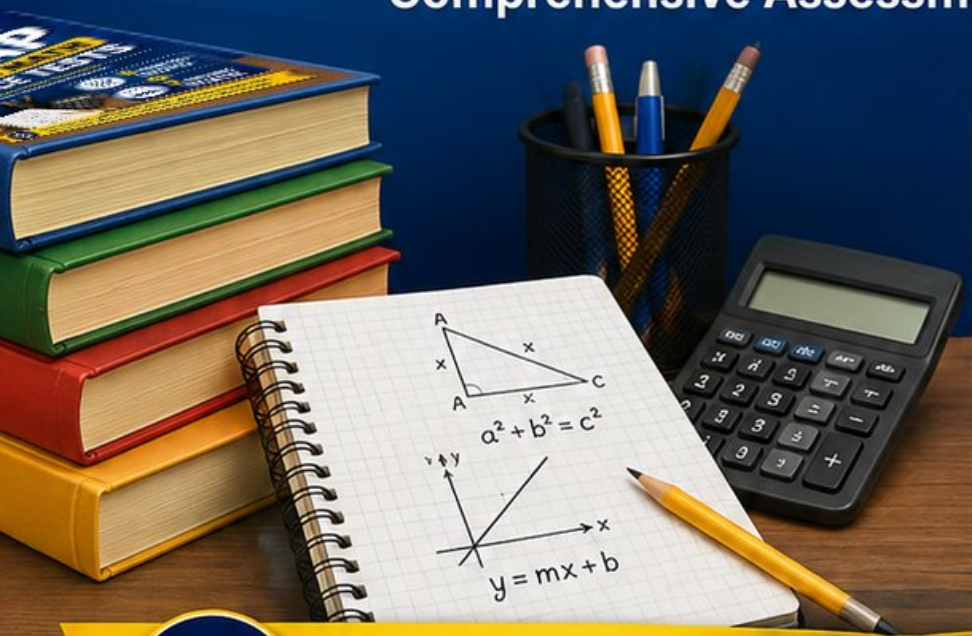
6 Oklahoma OSTP

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For Comprehensive Assessment Programs



6 PRINTED TESTS

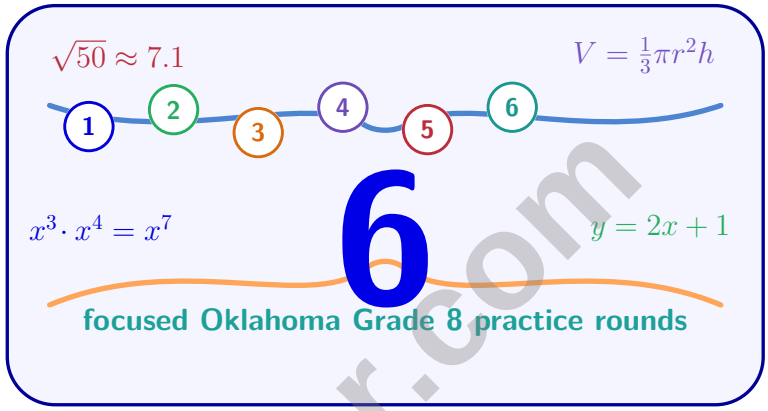
+

2 ONLINE TESTS

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

6 Oklahoma OSTP Grade 8 Math Practice Tests

Six Standards-Aligned Grade 8 Tests for Review and Test Confidence



Six complete 40-question Grade 8 OSTP 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

Copyright ©

Testinar Inc

Published by Testinar Inc

Testinar.com

Welcome, Oklahoma Grade 8 Problem Solver!

Six focused rounds for sharper OSTP math thinking

This book gives you six full Grade 8 OSTP 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 Oklahoma 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.

How to Use This Book

A six-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.

Oklahoma 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?

Six OSTP tests, 240 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 4–6	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.

Table of Contents

1) A menu has 4 drink types and 5 snack types. A customer orders one drink and one snack. How many different orders are possible?

☐ A. $4 + 5 = 9$
☐ B. $4 \times 5 = 20$
☐ C. $5^4 = 625$
☐ D. $4^5 = 1{,}024$

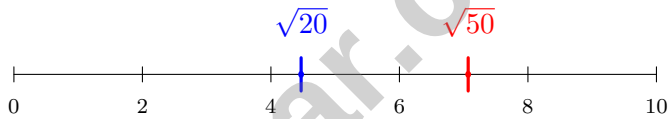
2) Which is closest to $\sqrt{40}$?

☐ A. 5
☐ B. 6
☐ C. 6.3
☐ D. 7

3) Which is the best estimate of $2\sqrt{7}$?

☐ A. 3.5
☐ B. 14.0
☐ C. 7.0
☐ D. 5.2

4)



Based on the number line, which statement is true?

☐ A. Cannot determine
☐ B. $\sqrt{50} < \sqrt{20}$
☐ C. They are equal
☐ D. $\sqrt{20} < \sqrt{50}$

5) Simplify using the laws of exponents: $\dfrac{x^7}{x^3}$

☐ A. x^{10}
☐ B. x^{21}
☐ C. x^4
☐ D. x^{-4}

6) What is $\sqrt[3]{1728}$?

☐ A. 10
☐ B. 11
☐ C. 12
☐ D. 13

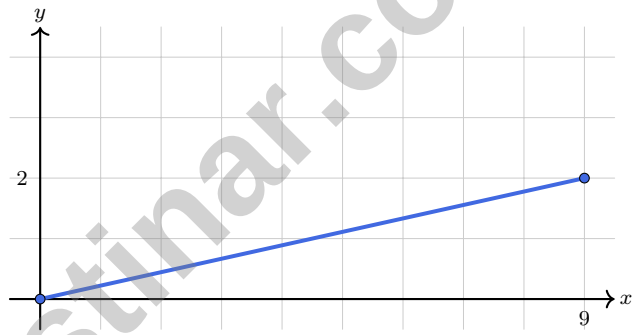
7) Which is the smallest number?

☐ A. 1.5×10^{-2}
☐ B. 1.5×10^{0}
☐ C. 1.5×10^{-4}
☐ D. 1.5×10^{2}

8) If $1.5 \times 10^4 = 15,000$, then $(1.5 \times 10^4) \times 10 = ?$

☐ A. 15×10^5
☐ B. 1.5×10^3
☐ C. $150,000$
☐ D. 1.5×10^{40}

9)



The slope is approximately:

☐ A. 0.18
☐ B. 9
☐ C. 4.5
☐ D. 0.22

10) Verify: Is $(3, 6)$ a solution to the system $\begin{cases} y = 2x \\ y = x + 3 \end{cases}$?

- ☐ A. Yes, because $6 = 2(3)$ and $6 = 3+3$
- ☐ B. No; the second equation gives $6 = 2 + 3$, which is false
- ☐ C. No; the first equation gives $6 \neq 2(3) + 1$
- ☐ D. No; neither equation is satisfied

11) A function with equally spaced x-values shows second differences of $2, 2, 2$. What type of function is it?

- ☐ A. Linear (constant first differences)
- ☐ B. Quadratic (constant second differences)
- ☐ C. Exponential (growing rates)
- ☐ D. Cannot be determined from second differences alone

12) A table shows the relationship between hours worked and pay earned.

Hours	2	4	6	8
Pay ($)	18	36	54	72

What is the rate of change (slope) of pay with respect to hours worked?

- ☐ A. $8 per hour
- ☐ B. $12 per hour
- ☐ C. $10 per hour
- ☐ D. $9 per hour

13) A concert venue sells adult tickets for $15 and student tickets for $8. If 120 total tickets were sold for $1,520, how many student tickets were sold?

- ☐ A. 40
- ☐ B. 60
- ☐ C. 80
- ☐ D. 100

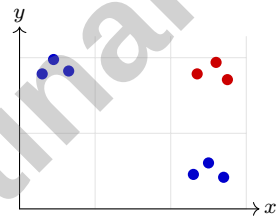
1) If a right triangle has a hypotenuse of 85 and one leg is 13, what is the other leg?

☐ A. 72
☐ B. 84
☐ C. 98
☐ D. 7225

2) A parallelogram has base 6 in and height 4 in. It is dilated by a scale factor of 2.5. What is the new height?

☐ A. 4 in
☐ B. 10 in
☐ C. 15 in
☐ D. 6.5 in

3) Two lines intersect. One angle is 82°. What is the measure of an adjacent angle?

4) 

A scatter plot of rainfall (inches) versus plant height (cm) shows several clusters of points. One cluster has points at low rainfall and low plant height. Another cluster shows points at high rainfall and high plant height. A third small cluster is at high rainfall but very low plant height. Which cluster represents an unexpected or unusual situation?

☐ A. Low rainfall, low plant height (expected)
☐ B. High rainfall, high plant height (expected)
☐ C. High rainfall, low plant height (unexpected)
☐ D. Cannot determine what is unusual from a scatter plot

5) In a two-way table of 500 voters by income and voting choice:

	Yes	No	Total
High Income	150	100	250
Low Income	120	130	250
Total	270	230	500

A student claims: "Since both income groups total 250, there is no association." Is this reasoning correct?

☐ A. Yes; equal row totals guarantee independence.
☐ B. No; equal row totals don't ensure equal conditional frequencies.
☐ C. Yes; balancing the sample sizes shows no bias.
☐ D. No; we must check the yes vote totals, which differ.

6) A student finds that their homework scores have a mean of 85 and MAD of 4. Which interval is one MAD from the mean?

☐ A. 81 to 89
☐ B. 75 to 95
☐ C. 80 to 90
☐ D. 70 to 100

7) A bag contains 7 red marbles and 3 blue marbles. If two marbles are drawn without replacement, what is the probability that the first is red AND the second is blue?

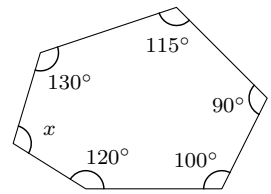
☐ A. $\frac{3}{10}$
☐ B. $\frac{7}{30}$
☐ C. $\frac{21}{100}$
☐ D. $\frac{7}{90}$

8) A square pyramid has a base edge of 12 cm and a volume of 576 cm^3. What is the height of the pyramid in centimeters?

1) A cylinder has radius 2 inches and height 6 inches. Express its surface area in terms of π.

☐ A. $8\pi + 12\pi$ in^2
☐ B. $8\pi + 24\pi$ in^2
☐ C. $16\pi + 24\pi$ in^2
☐ D. $16\pi + 48\pi$ in^2

2)



A hexagon has five known interior angles: $120°, 100°, 90°, 115°, 130°$. What is the sixth angle?

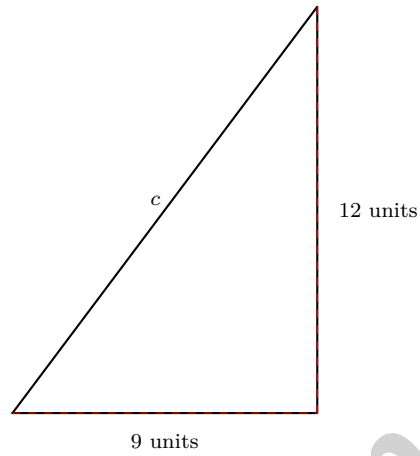
☐ A. 145°
☐ B. 155°
☐ C. 165°
☐ D. 175°

3) Evaluate $(x + 4)(x + 8)$ when $x = 1$.

4) Which graph feature indicates that an object momentarily stops during a distance-time journey?

☐ A. A vertical line segment
☐ B. A horizontal line segment
☐ C. A steep downward slope
☐ D. A negative y-intercept

5) A right triangle has legs of 9 units and 12 units. What is the length of the hypotenuse?



☐ A. 15 units
☐ B. 21 units
☐ C. $\sqrt{200}$ units
☐ D. 3 units

6) Triangle A has sides $5, 12, 13$. Triangle B has sides $7.5, 18, 19.5$. Triangle C has sides $10, 24, 26$. Which triangles are similar to Triangle A?

☐ A. Only Triangle B
☐ B. Only Triangle C
☐ C. Both Triangle B and C
☐ D. Neither Triangle B nor C

7) A right triangle has legs of $\sqrt{12}$ and $\sqrt{13}$. What is the hypotenuse in simplified radical form?

☐ A. $\sqrt{20}$
☐ B. 5
☐ C. $\sqrt{5}$
☐ D. 25

Oklahoma OSTP 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 Oklahoma OSTP practice test.

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

1) **Choice B is correct.** PA.D.2.3 Choose from 4 drinks and 5 snacks: $4 \times 5 = 20$ possible orders.
2) **Choice C is correct.** PA.N.1.4 Since $6^2 = 36$ and $6.3^2 = 39.69 \approx 40$, we have $\sqrt{40} \approx 6.3$. Also, $7^2 = 49 > 40$.
3) **Choice D is correct.** PA.N.1.4 $\sqrt{7} \approx 2.646$, so $2\sqrt{7} \approx 5.29$.
4) **Choice D is correct.** PA.N.1.4 Since the square root function is increasing and $20 < 50$, we have $\sqrt{20} < \sqrt{50}$. The number line shows $\sqrt{20} \approx 4.5$ and $\sqrt{50} \approx 7.1$, confirming $\sqrt{20} < \sqrt{50}$.
5) **Choice C is correct.** PA.N.1.1 When dividing powers with the same base, subtract exponents: $\frac{x^7}{x^3} = x^{7-3} = x^4$.
6) **Choice C is correct.** PA.N.1.1 $12 \times 12 \times 12 = 1728$, so $\sqrt[3]{1728} = 12$.
7) **Choice C is correct.** PA.N.1.2 The most negative exponent gives the smallest value. $1.5 \times 10^{-4} = 0.00015$ is the smallest.
8) **Choice C is correct.** PA.N.1.3 $1.5 \times 10^4 \times 10 = 1.5 \times 10^{4+1} = 1.5 \times 10^5 = 150,000$.
9) **Choice D is correct.** PA.A.2.2 Slope $= \frac{2}{9} \approx 0.222 \approx 0.22$. This is a very shallow line.
10) **Choice A is correct.** PA.A.4.1 Check $(3, 6)$ in both equations: $6 = 2(3) = 6$ ✓ and $6 = 3 + 3 = 6$ ✓. The solution is correct.
11) **Choice B is correct.** PA.A.2.1 When second differences are constant, the function is quadratic (nonlinear). Linear functions have constant first differences, not second.
12) **Choice D is correct.** PA.A.2.3 Choose two points from the table: $(2, 18)$ and $(4, 36)$. Slope $= \frac{36-18}{4-2} = \frac{18}{2} = 9$ dollars per hour.
13) **Choice A is correct.** PA.A.4.1 Let a = adult tickets and s = student tickets. Then $a + s = 120$ and $15a + 8s = 1520$. Substitute $a = 120 - s$: $15(120 - s) + 8s = 1520$, so $1800 - 7s = 1520$. Then $7s = 280$, so $s = 40$.
14) **Choice C is correct.** PA.A.1.2 The pattern shows the function increases by 3 for each unit increase in x (or by 6 for each 2-unit increase). So $m(4) = 11 + 6 = 17$.
15) **Choice B is correct.** PA.GM.2.2 Using $SA = 2(lw + lh + wh) = 2(40 + 24 + 15) = 2(79) = 158$ m^2.
16) **Choice A is correct.** PA.GM.1.1 Clockwise and counterclockwise are opposite directions. $270°$ clockwise $= 360° - 270° = 90°$ counterclockwise.
17) **Choice A is correct.** PA.A.2.4 Using $(1, 4)$ and $(5, 2)$: slope $= \frac{2-4}{5-1} = -\frac{1}{2}$. Substituting: $4 = -\frac{1}{2}(1) + b$ gives $b = \frac{9}{2}$.
18) **The correct answer is A,C.** PA.GM.1.1 Correct: (A) Corresponding angles are congruent — definition of similarity. (C) Corresponding sides are proportional — they scale by a constant factor k. Incorrect: (B) Equal length is congruence, not similarity. (D) Congruence requires equality; similarity allows scaling. (E) Scale factor can be any positive number; $k < 1$ is a reduction, still similarity.
19) **Choice D is correct.** PA.A.3.1 Subtract $-2x$ (add $2x$) and subtract 12: $-3x = -18$. Divide by -3: $x = 6$.
20) **Choice A is correct.** PA.A.3.2 Subtract 7: $-4x \leq -12$. Divide by -4 (FLIP): $x \geq 3$.
21) **Choice A is correct.** PA.A.4.2 The line is $x - 2y = 6$. Test origin: $0 - 0 = 0 \leq 6$ TRUE. So the origin is in the solution region with $\leq$.
22) **Choice C is correct.** PA.A.1.3 Slope of F: 1. Slope of G: $(373 - 273)/100 = 1$. Both slopes are 1.
23) **Choice A is correct.** PA.GM.2.1 Cone: $V = \frac{1}{3} \times 3.14 \times 4 \times 6 = 25.12$ cm^3. Sphere: $V = \frac{4}{3} \times 3.14 \times 8 = 33.49$ cm^3. Cylinder: $V = 3.14 \times 4 \times 6 = 75.36$ cm^3. Order: Cone < Sphere < Cylinder.
24) **Choice C is correct.** PA.GM.1.1 Parallelogram $= 10 \times 6 = 60$ m^2. Each triangle $= \frac{1}{2} \times 10 \times 2 = 10$ m^2. Two triangles $= 20$ m^2. Total $= 60 + 20 = 80$ m^2.
25) **Choice C is correct.** PA.D.1.3 Set $y = 0$: $0 = -0.5x + 5 \Rightarrow 0.5x = 5 \Rightarrow x = 10$.
26) **Choice A is correct.** PA.A.4.2 FOIL: $(4x - 3)(x + 2) = 4x^2 + 8x - 3x - 6 = 4x^2 + 5x - 6$.
27) **Choice A is correct.** PA.A.1.1 Option A fails the function test: input 3 maps to both 1 and 2. The other options each have unique input-output pairs.

Hi, Math Communicator!

◇ Grade 8 math is not only about getting a number. It is about explaining relationships and making your reasoning visible. ◇

⋆ **Remember this:** When you show steps, label diagrams, and write clear answers, you are joining the conversation that math is trying to have. You practiced across 6 full Grade 8 practice tests, and that repeated effort matters. ⋆

Communication Skills

- **Use Words:** Explain what the answer means.
- **Use Symbols:** Keep equations accurate.
- **Use Diagrams:** Show relationships visually.
- **Use Units:** Connect math to context.

Grade 8 test-day tip: For open-ended questions, answer in a complete thought: value, unit, and reason.

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

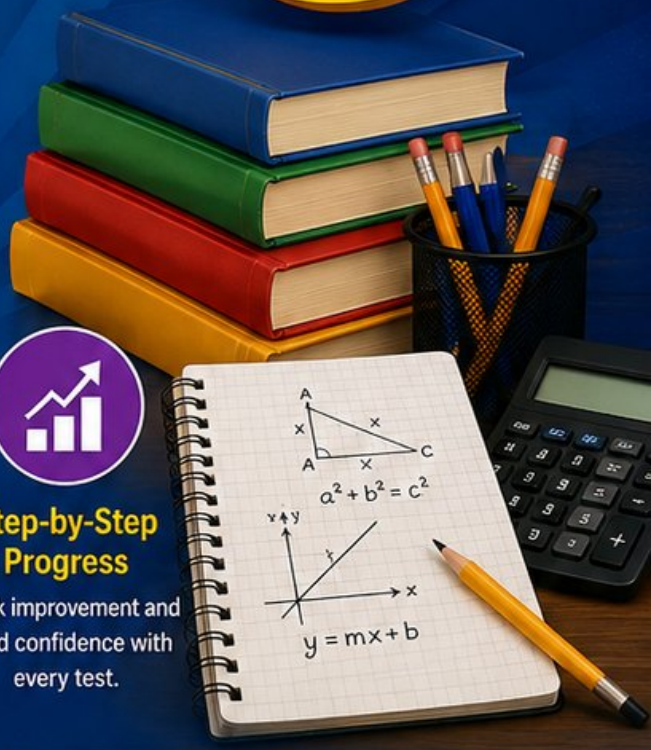
Jay Daie

Your Math Communication Coach

PRACTICE TODAY. ACHIEVE TOMORROW.

6

Give your child the confidence and skills they need with **6 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!



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
- Statistics & Probability
- Pythagorean Theorem
- Volume & Surface Area
- Transformations
- Inequalities
- Data Analysis & Graphing
- And More!

6 PRINTED TESTS

+

2 ONLINE TESTS

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