

OKLAHOMA OSTP

GRADE 8 MATH

PRACTICE TESTS

5

PRINTED
TESTS



2

 ONLINE
TESTS

**Standards Aligned
Problem Solving For
Comprehensive Assessment Programs**



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



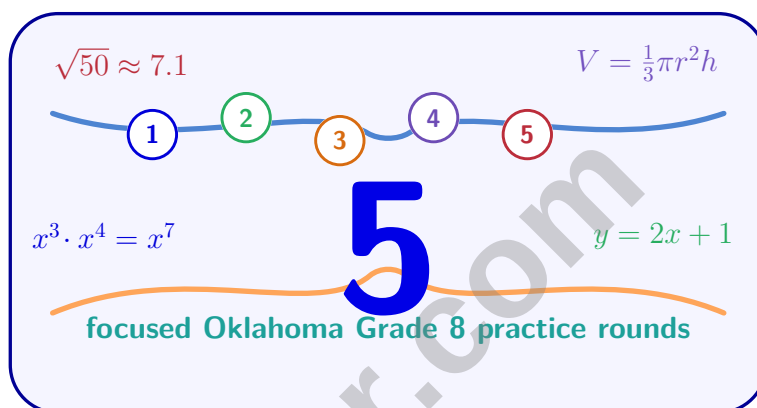
$$a^2 + b^2 = c^2$$



$$y = mx + b$$

5 Oklahoma OSTP Grade 8 Math Practice Tests

Five OSTP Rounds for Exponents, Functions, and Shapes



Five 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



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Welcome, Oklahoma Grade 8 Problem Solver!

Five focused rounds for sharper OSTP math thinking

This book gives you five 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.

Read

Model

Verify

How to Use This Book

A five-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?

Five OSTP tests, 200 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–5	Functions, systems, transformations, geometry, data analysis, and multi-step problem solving.
Answer Pages	Compact keys and explanations that show why each answer works.

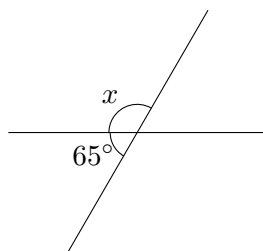
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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For more practice
& answers

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1)

Two lines intersect. One angle measures 65° . What is x , the measure of an adjacent angle?

☐ A. 25° ☐ C. 115° ☐ B. 65° ☐ D. 155° 2) Evaluate $(x + 9)^2$ when $x = 1$.

3) A phone company charges \$25 per month plus \$0.10 per text message. What is the total monthly cost for 100 texts?

4) What is $(-2)^4$?☐ A. -16 ☐ C. -8 ☐ B. 8 ☐ D. 16 

5) Estimate $\sqrt{99}$ to the nearest integer.

☐ A. 8

☐ C. 10

☐ B. 9

☐ D. 11

6) A water tank is being drained at a constant rate. The relationship between time and remaining water is shown:

Time (min)	5	15	25
Water (gal)	60	40	20

What is the slope (rate of drainage)?

☐ A. -2 gallons per minute

☐ C. -3 gallons per minute

☐ B. 2 gallons per minute

☐ D. 60 gallons per minute

7) A student uses elimination to solve: $3x + 2y = 16$ and $5x - 2y = 24$. They add the equations to get $8x = 40$, so $x = 5$. Then they substitute to find $y = 0.5$. Is this correct?

☐ A. No, adding eliminates x , not y .

☐ C. No, the system has no solution.

☐ B. No, the substitution is wrong.

☐ D. Yes, the solution is correct.

8) If $f(x) = \begin{cases} 2x & \text{if } x < 2 \\ 5 & \text{if } x \geq 2 \end{cases}$, what is $f(3)$?

☐ A. 6

☐ C. 5

☐ B. 3

☐ D. 8



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9) 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

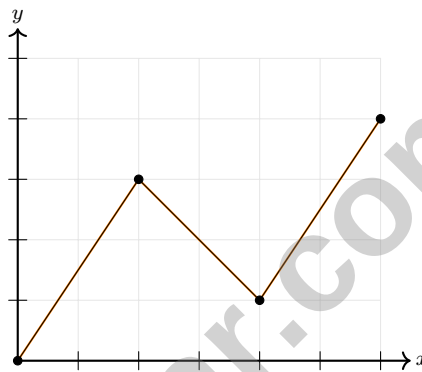
What is the rate of change of the population per year?

☐ A. 2 thousand per year

☐ C. 6 thousand per year

☐ B. 3 thousand per year

☐ D. 9 thousand per year



10)

Over which interval is the function decreasing most rapidly?

☐ A. From $x = 0$ to $x = 2$

☐ C. From $x = 4$ to $x = 6$

☐ B. From $x = 2$ to $x = 4$

☐ D. The function never decreases



1) Which two perfect squares help locate $\sqrt{72}$?

☐ A. 36 and 49

☐ C. 81 and 100

☐ B. 49 and 64

☐ D. 64 and 81

2) Simplify $5^0 \cdot n^7 \cdot n^{-7}$.

☐ A. n^{14}

☐ C. $5n$

☐ B. n

☐ D. 1

3) What is $\sqrt{400}$?

☐ A. 18

☐ C. 20

☐ B. 19

☐ D. 21

4) The first differences of a sequence are $-2, -2, -2, -2$. This indicates a:

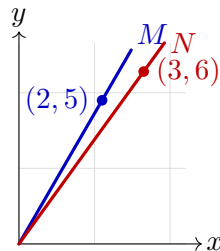
☐ A. Nonlinear function

☐ C. Exponential function

☐ B. Quadratic function

☐ D. Linear function with negative slope

5) 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

☐ D. Cannot be determined from the information

☐ B. Line N is steeper

☐ C. Both lines have the same steepness



- 6) A proportional relationship passes through $(0, 0)$ and $(3, 12)$. What is the constant of proportionality k ? (Give your answer as a simplified fraction or decimal.)

- 7) A movie theater offers two pricing schemes: Scheme A costs \$8 per ticket, Scheme B costs \$60 upfront plus \$3 per ticket. For how many tickets is Scheme A cheaper?

- ☐ A. Fewer than 12 tickets ☐ C. Fewer than 15 tickets
☐ B. Fewer than 10 tickets ☐ D. Fewer than 8 tickets

- 8) If $g(x) = x + 7$, what is $g(2)$?

- ☐ A. 5 ☐ C. 10
☐ B. 9 ☐ D. 14

- 9) Factor $x^2 - 25$.

- ☐ A. $(x - 5)^2$ ☐ C. $(x + 5)(x - 5)$
☐ B. $(x + 5)^2$ ☐ D. $(x - 25)(x + 1)$

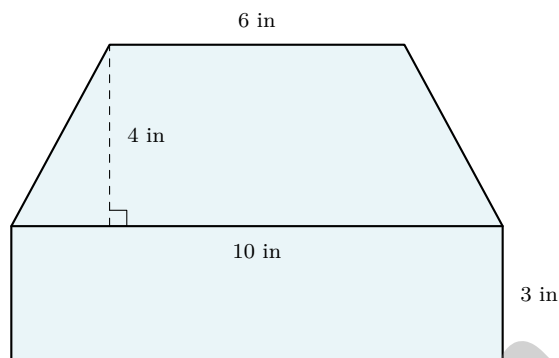
- 10) Which of the following relations is a function?

- ☐ A. $\{(1, 2), (1, 3), (2, 4)\}$ ☐ C. $\{(2, 5), (2, 6), (3, 7)\}$
☐ B. $\{(1, 2), (2, 3), (3, 4)\}$ ☐ D. $\{(4, 1), (4, 2), (4, 3)\}$



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- 1) A composite figure is an irregular pentagon that can be broken into a trapezoid (parallel sides 6 in and 10 in, height 4 in) and a rectangle (10 in by 3 in) sharing the longer base. What is the total area?



- ☐ A. 30 in²
☐ C. 62 in²
☐ B. 60 in²
☐ D. 104 in²
- 2) Look at the table. Which expression is **not** equivalent to x^6 ?

Option	Expression
A.	$(x^2)^3$
B.	$x^3 \cdot x^3$
C.	$x^8 \div x^2$
D.	$x^6 + x^0$

- ☐ A. Option A
 ☐ C. Option C
☐ B. Option B
 ☐ D. Option D
- 3) What is $\sqrt[3]{1000}$?

- ☐ A. 8
 ☐ C. 10
☐ B. 9
 ☐ D. 11



4) 3.2×10^{-3} equals:

☐ A. 3,200

☐ C. 0.0032

☐ B. 0.032

☐ D. 3.2

5) Three stores sell apples. Store A: 3 pounds for \$6. Store B: 5 pounds for \$11. Store C: 2 pounds for \$5. Which store has the lowest unit price?

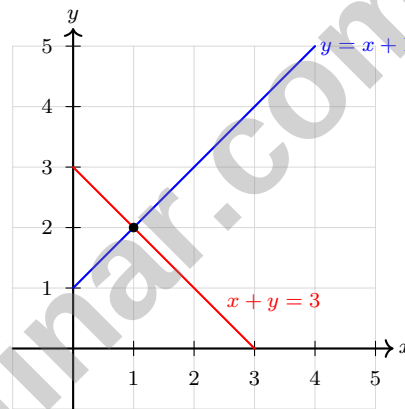
☐ A. Store C (\$2.50 per pound)

☐ C. Store A (\$2 per pound)

☐ B. Store B (\$2.20 per pound)

☐ D. Store A and Store B are the same

6) Use the graph below to find the solution to the system of $y = x + 1$ and $x + y = 3$.



☐ A. (1, 2)

☐ C. (2, 1)

☐ B. (0, 3)

☐ D. (3, 0)

7) The function $y = 2 - 5x$ is linear. What are its slope and y -intercept?

☐ A. Slope = -5 , y -intercept = -2

☐ C. Slope = -5 , y -intercept = 2

☐ B. Slope = 2 , y -intercept = -5

☐ D. Slope = 5 , y -intercept = 2



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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.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (PA.A.2.4) Adjacent angles on a straight line are supplementary, so they sum to 180° . Thus $x = 180 - 65 = 115^\circ$.
- 2) **The correct answer is 100.** (PA.A.4.2) Substitute $x = 1$: $(1 + 9)^2 = 100$.
- 3) **The correct answer is \$35.** (PA.A.1.1) Compute $25 + 0.10(100) = 35$.
- 4) **Choice D is correct.** (PA.N.1.1) $(-2)^4 = (-2) \cdot (-2) \cdot (-2) \cdot (-2) = 16$ (even exponent, positive result).
- 5) **Choice C is correct.** (PA.N.1.1) $9^2 = 81$ and $10^2 = 100$. Since 99 is very close to 100, $\sqrt{99} \approx 9.95 \approx 10$.
- 6) **Choice A is correct.** (PA.A.2.3) Using $(5, 60)$ and $(15, 40)$: slope $= \frac{40 - 60}{15 - 5} = \frac{-20}{10} = -2$ gallons per minute.
- 7) **Choice D is correct.** (PA.A.4.1) Adding the two equations: $(3x + 2y) + (5x - 2y) = 16 + 24$, so $8x = 40$, and $x = 5$. The $2y$ terms cancel, correctly eliminating y (not x , as distractor A suggests). Substituting into the first equation: $3(5) + 2y = 16$, so $15 + 2y = 16$, giving $y = 0.5$. The solution is correct.
- 8) **Choice C is correct.** (PA.A.1.2) Since $3 \geq 2$, use the second rule: $f(3) = 5$.
- 9) **Choice A is correct.** (PA.A.2.5) Slope is $\frac{\Delta P}{\Delta t} = \frac{6}{3} = 2$ thousand per year from $t = 0$ to $t = 3$ (or any consecutive pair).
- 10) **Choice B is correct.** (PA.A.2.1) From $x = 2$ to $x = 4$: change is from 3 to 1, a drop of 2 over 2 units (slope $= -1$). From 0 to 2: rise of 3. From 4 to 6: rise of 3. The only decreasing segment is 2 to 4.
- 11) **Choice C is correct.** (PA.GM.1.1) Reflection is a rigid motion that preserves all distances and angles. So the reflected pentagon is congruent to the original.
- 12) **Choice B is correct.** (PA.GM.1.1) Reflection across the y -axis negates the x -coordinate while keeping y the same: $(x, y) \rightarrow (-x, y)$.
- 13) **The correct answer is 10.** (PA.A.1.3) Car A travels 60 mph and Car B travels 50 mph, so the difference is 10 mph.
- 14) **Choice C is correct.** (PA.GM.1.1) In a right triangle, the two acute angles are complementary: $38 + x = 90$, so $x = 52^\circ$.
- 15) **Choice A is correct.** (PA.GM.1.1) From $1^2 + (\sqrt{3})^2 = c^2$, we get $1 + 3 = 4$, so $c = \sqrt{4} = 2$ (the 30-60-90 triangle leg ratios).
- 16) **Choice B is correct.** (PA.GM.1.2) $d = \sqrt{(8 - 2)^2 + (12 - 4)^2} = \sqrt{6^2 + 8^2} = \sqrt{36 + 64} = \sqrt{100} = 10$.
- 17) **The correct answer is 2.** (PA.A.2.1) The term x^2 has exponent 2.
- 18) **Choice C is correct.** (PA.GM.2.3) $1200 = \frac{1}{3} \times B \times 10 \Rightarrow B = \frac{1200 \times 3}{10} = 360 \text{ m}^2$.
- 19) **Choice B is correct.** (PA.GM.1.1) Rectangle area $= 6 \times 5 = 30 \text{ m}^2$. Triangle area $= \frac{1}{2} \times 6 \times 2 = 6 \text{ m}^2$. Total $= 30 + 6 = 36 \text{ m}^2$.
- 20) **Choice A is correct.** (PA.GM.2.3) Using $\frac{(n-2) \times 180}{n} = 108$: $(n - 2) \times 180 = 108n \Rightarrow 180n - 360 = 108n \Rightarrow 72n = 360 \Rightarrow n = 5$.
- 21) **Choice B is correct.** (PA.D.1.1) High correlation between ice cream and drowning likely reflects a common cause: warm weather increases both ice cream sales and swimming activity. Correlation alone cannot prove that one variable causes changes in another.
- 22) **The correct answer is A,C.** (PA.A.4.1) Option A: Lines $y = 3x + 1$ and $y = 3x - 2$ are parallel (same slope 3, different intercepts). Option B: Different slopes (3 and $\frac{1}{3}$), so one intersection. Option C: Both equations have the form $2x + y = k$ with $k = 4$ and $k = 6$ (parallel). Option D: Lines $y = 2x$ and $x + y = 6$ have different slopes, so one intersection. Option E: Lines $y = x$ and $y = -x$ have different slopes, intersecting at the origin.
- 23) **Choice B is correct.** (PA.D.1.1) Uninsured full-time $= 144 - 108 = 36$. Relative frequency among full-time only: $\frac{36}{144} = \frac{1}{4} = 0.25$. This is row-conditional.
- 24) **Choice B is correct.** (PA.GM.1.2) Absolute deviations are $|5 - 10| = 5$, $|8 - 10| = 2$, $|12 - 10| = 2$, and $|15 - 10| = 5$. The sum is 14, so the MAD is $14 \div 4 = 3.5$.
- 25) **Choice B is correct.** (PA.D.2.1) With replacement: $P(\text{red and red}) = \frac{5}{8} \times \frac{5}{8} = \frac{25}{64}$.
- 26) **Choice D is correct.** (PA.D.1.2) When sketching trend lines by hand, slight differences in slope are natural and acceptable, as long as both lines reasonably balance data on both sides and follow the overall trend.



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Hi, Persistent Problem Solver!

◇ Some Grade 8 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 5 full Grade 8 practice tests, and that repeated effort matters. ★

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 8 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

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

Jay Daie

Your Persistence Coach

Practice Today. Succeed Tomorrow!

Give your child the confidence and skills they need with **5 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 | ✓ 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! |

5
PRINTED
TESTS



2 ONLINE
TESTS



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