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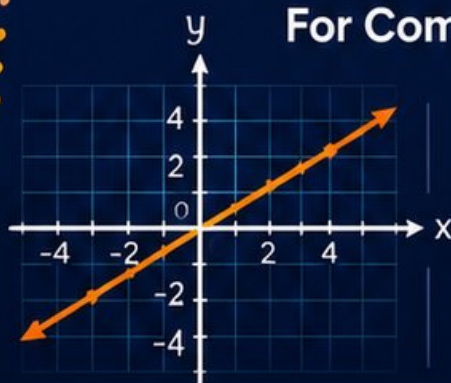
Oklahoma OSTP

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

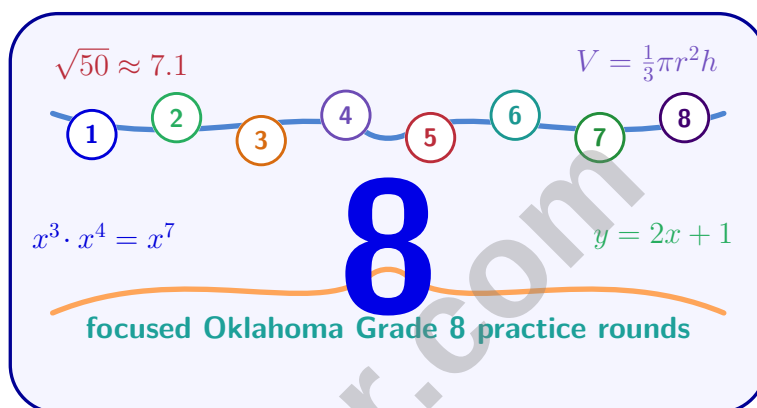
2

 ONLINE
TESTS

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

8 Oklahoma OSTP Grade 8 Math Practice Tests

Oklahoma Practice for Functions, Geometry, Data, and Probability



Eight 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!

Eight focused rounds for sharper OSTP math thinking

This book gives you eight 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

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.

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?

Eight OSTP 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.

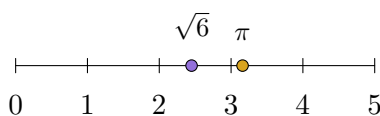


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1)



Which is true based on the number line?

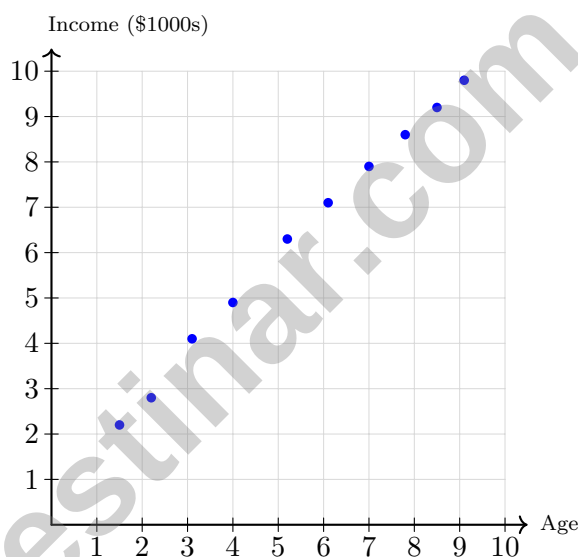
☐ A. $\sqrt{6} > \pi$

☐ C. $\sqrt{6} = \pi$

☐ B. $\sqrt{6} + \pi$ is rational

☐ D. $\sqrt{6} < \pi$

2) The scatter plot below shows age (in years) on the x -axis and income (in thousands of dollars) on the y -axis for 10 employees.



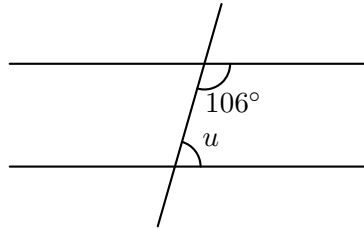
Describe the correlation between age and income.

☐ A. Negative correlation

☐ C. Positive correlation

☐ B. No correlation

☐ D. Perfect correlation

3)

Two parallel lines are cut by a transversal. Angles u and 106° are co-interior angles. What is u ?

☐ A. 74° ☐ C. 148° ☐ B. 106° ☐ D. 180°

4) A square pyramid has a height of 8 inches and a volume of 128 in^3 . What is the length of each base edge?

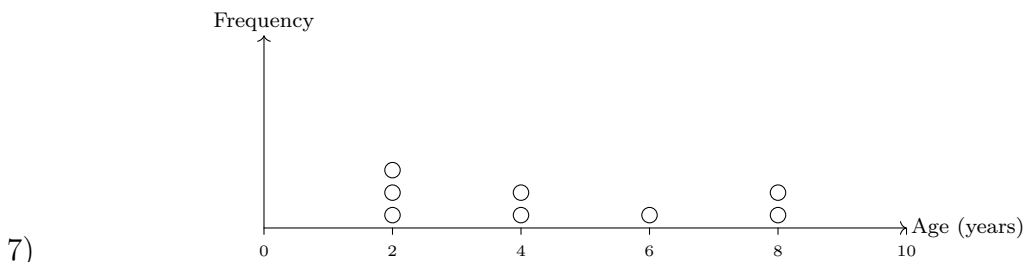
☐ A. 4 in☐ C. 8 in☐ B. $4\sqrt{3}$ in☐ D. 12 in

5) A segment has endpoints at $G(2, 5)$ and $H(8, 5)$. The segment is reflected across the line $y = x$. What is the length of the reflected segment $G'H'$?

6) In a survey of 200 people on movie preferences, 120 prefer comedy. Of those who prefer comedy, 84 are female. What is the relative frequency of females among comedy-lovers?

☐ A. 0.42☐ C. 0.70☐ B. 0.60☐ D. 0.84

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Children's ages: 2, 2, 2, 4, 4, 6, 8, 8 (mean = 5). What is the MAD?

- ☐ A. 1.75 ☐ C. 2.25
☐ B. 2 ☐ D. 3
- 8) A data set has a linear relationship modeled by the line $y = 0.5x + 10$. Which point lies exactly on the trend line?
- ☐ A. (2, 10) ☐ C. (6, 12)
☐ B. (8, 15) ☐ D. (4, 12)
- 9) A path forms a rectangular frame: outer 25 m by 15 m, inner 20 m by 10 m. What is the area of the path only, in m^2 ?

- 10) Convert $0.\overline{18}$ to a fraction in simplest form.

- ☐ A. $\frac{1}{18}$ ☐ C. $\frac{18}{90}$
☐ B. $\frac{18}{100}$ ☐ D. $\frac{18}{99} = \frac{2}{11}$



1) Factor completely: $5x^2 + 35x + 50$.

☐ A. $5(x^2 + 7x + 10)$

☐ C. $5(x + 2)(x + 5)$

☐ B. $(5x + 5)(x + 10)$

☐ D. $5(x + 10)(x + 1)$

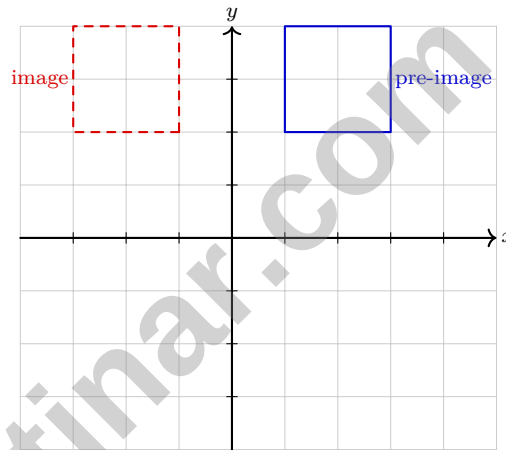
2) A music streaming service charges \$8 for premium features plus \$12 per month for access. Which equation represents the total cost T for m months of service?

☐ A. $T = 12m + 8$

☐ C. $T = 20m$

☐ B. $T = 8m + 12$

☐ D. $T = 8m - 12$



3)

The blue rectangle is reflected to produce the red image. Over which line is the rectangle reflected?

☐ A. The x -axis

☐ C. The line $y = x$

☐ B. The y -axis

☐ D. The line $y = -x$



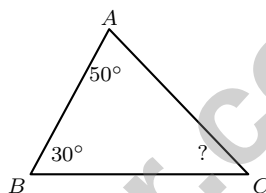
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4) A table shows:

x	0	3	6
y	5	2	-1

What is the rate of change (slope)?

5) In triangle ABC , angle $BAC = 50^\circ$ and angle $ABC = 30^\circ$. What is angle ACB ?

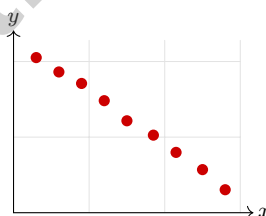


☐ A. 20°

☐ C. 80°

☐ B. 50°

☐ D. 100°



6)

A scatter plot represents average monthly temperature ($^\circ\text{C}$) versus average monthly heating costs (\$). The correlation is strong and negative. What is the most logical explanation?

☐ A. Warmer months require more heating

☐ C. Warmer months require less heating

☐ B. Cold months decrease heating costs

☐ D. Temperature has no effect on heating



1) Two-way table of 500 employees by department and remote work status:

	Remote	On-Site	Total
IT	105	75	180
HR	35	85	120
Ops	60	140	200
Total	200	300	500

What is the relative frequency of IT employees among all employees?

☐ A. $\frac{105}{200}$

☐ B. $\frac{180}{500}$

☐ C. $\frac{105}{180}$

☐ D. $\frac{75}{500}$

2) A hexagon is translated by the vector $(3, -2)$ and then rotated 90° counterclockwise about the origin. How many sides does the resulting figure have?

☐ A. 3

☐ B. 9

☐ C. 12

☐ D. 6

3) Solve: $4x - 9 \leq 3x + 1$

☐ A. $x \leq 10$

☐ B. $x \geq 10$

☐ C. $x \leq -10$

☐ D. $x \geq -10$

4) Solve by substitution: $\begin{cases} y = \frac{2}{3}x - 1 \\ 3y + 2x = 9 \end{cases}$

☐ A. $(3, 1)$

☐ B. $(6, 3)$

☐ C. $(4, \frac{5}{3})$

☐ D. $(2, \frac{1}{3})$



5) Is the point $(2, 4)$ in the solution region of $y \leq x + 1$?

☐ A. Yes, because $4 \leq 2 + 1$

☐ C. No, because $4 > 3$

☐ B. Yes, because $4 < 2 + 1$

☐ D. No, because $4 = 3$

6) A taxi charges \$3 per mile plus a \$5 base fare. If m is the number of miles, which expression represents the total charge?

☐ A. $5m + 3$

☐ C. $3m - 5$

☐ B. $3m + 5$

☐ D. $\frac{3m}{5}$

7) $\alpha(x) = -3x + 12$ and β table $(0, 12), (2, 6), (4, 0)$. Related how?

x	0	2	4
$\beta(x)$	12	6	0

☐ A. Identical

☐ C. Different slopes.

☐ B. Same slope, different intercepts.

☐ D. Cannot be determined.

8) The line passes through $(-3, 5)$ and $(1, 13)$. Find the slope of this line.

9) The equation $y = |x - 2|$ is:

☐ A. Linear, because it is an equation

☐ C. Nonlinear, because absolute value creates a V-shape

☐ B. Linear, because the absolute value of a linear expression is linear

☐ D. Linear, because it can be written as $y = mx + b$



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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 D is correct.** (PA.N.1.4) From the number line, $\sqrt{6} \approx 2.45$ is to the left of $\pi \approx 3.14$. Therefore $\sqrt{6} < \pi$. Both are irrational.
- 2) **Choice C is correct.** (PA.D.1.1) The points form an upward trend. As age increases, income increases, showing a positive correlation. Perfect would mean all points lie exactly on a line.
- 3) **Choice A is correct.** (PA.A.2.4) Co-interior angles are supplementary. So $u = 180 - 106 = 74^\circ$.
- 4) **Choice B is correct.** (PA.GM.2.3) $V = \frac{1}{3}s^2h$. So $128 = \frac{1}{3}s^2(8)$, which gives $s^2 = 48$. Therefore $s = \sqrt{48} = 4\sqrt{3}$ inches.
- 5) **The correct answer is 6.** (PA.GM.1.1) Reflections preserve length. The original segment GH has length $|8 - 2| = 6$, so $G'H'$ also has length 6.
- 6) **Choice C is correct.** (PA.D.1.1) Relative frequency of females among comedy-lovers: $\frac{84}{120} = 0.70$. This is a row-conditional frequency.
- 7) **Choice A is correct.** (PA.GM.1.2) Absolute deviations: $|2 - 5| = 3$ (three times), $|4 - 5| = 1$ (twice), $|6 - 5| = 1$, $|8 - 5| = 3$ (twice). Sum $= 9 + 2 + 1 + 6 = 14$. $MAD = 14/8 = 1.75$.
- 8) **Choice D is correct.** (PA.D.1.2) Substituting $x = 4$: $y = 0.5(4) + 10 = 2 + 10 = 12$. Point $(4, 12)$ is on the line.
- 9) **The correct answer is 175.** (PA.GM.1.1) Outer $= 25 \times 15 = 375 \text{ m}^2$. Inner $= 20 \times 10 = 200 \text{ m}^2$. Path $= 375 - 200 = 175 \text{ m}^2$.
- 10) **Choice D is correct.** (PA.N.1.4) Let $x = 0.\overline{18}$. Then $100x = 18.\overline{18}$. Subtracting: $99x = 18$, so $x = \frac{18}{99} = \frac{2}{11}$.
- 11) **Choice D is correct.** (PA.N.1.4) $(4.6)^2 = 21.16$ and $(4.7)^2 = 22.09$. Since 22 is closer to 22.09, $\sqrt{22}$ is closer to 4.7.
- 12) **Choice C is correct.** (PA.N.1.4) $2\pi \approx 2 \times 3.14 = 6.28$. Distractor A (3.28) is $\pi + \pi/2$. Distractor B (5.14) is $\pi + 2$. Distractor D (8.56) is 2×4.28 . All common calculation errors.
- 13) **Choice B is correct.** (PA.D.2.3) Choose from 3 math classes and 2 science classes: $3 \times 2 = 6$ possible combinations.
- 14) **Choice D is correct.** (PA.N.1.2) The most positive exponent gives the largest value. $3.1 \times 10^1 = 31$ is the largest.
- 15) **Choice D is correct.** (PA.A.2.4) Perpendicular slopes are negative reciprocals. Here, 2 and $-\frac{1}{2}$ are negative reciprocals.
- 16) **Choice C is correct.** (PA.A.3.1) Distribute: $3x - 12 = 2x + 5$. Subtract $2x$: $x - 12 = 5$. Add 12: $x = 17$. Check: $3(17 - 4) = 3(13) = 39$ and $2(17) + 5 = 39$ ✓. (Distractor B from forgetting to distribute the 3; D from arithmetic error.)
- 17) **The correct answer is 8.** (PA.D.1.3) Substitute $x = 10$: $y = \frac{1}{2}(10) + 3 = 5 + 3 = 8$.
- 18) **Choice C is correct.** (PA.A.4.2) SOLID line (includes boundary) with shading ABOVE means $y \geq -x - 1$.
- 19) **The correct answer is A,D.** (PA.GM.1.1) A: Corresponding angles formed by parallel lines and a transversal are congruent—TRUE. B: Not all angles are equal; some are supplementary—FALSE. C: Alternate interior angles are congruent, not supplementary—FALSE. D: Alternate exterior angles are congruent—TRUE. E: Co-interior angles are supplementary (sum to 180°), not complementary—FALSE.
- 20) **Choice D is correct.** (PA.A.1.1) Divide 10 by 2: $10 \div 2 = 5$. Subtract 1: $5 - 1 = 4$.
- 21) **Choice A is correct.** (PA.A.2.1) The scenario describes three distinct behaviors: rising speed (increasing), constant speed (flat), and decreasing speed (falling). This is a piecewise linear graph with three segments.
- 22) **Choice B is correct.** (PA.GM.2.3) Sum of angles in a pentagon is 540° . Sum of known: $98 + 115 + 120 + 110 = 443^\circ$. Fifth angle: $540 - 443 = 97^\circ$.
- 23) **The correct answer is $\frac{1}{7}$.** (PA.D.2.1) Total: 15 tokens. $P(\text{black first}) = \frac{6}{15}$; $P(\text{black second} | \text{black first}) = \frac{5}{14}$. Product: $\frac{6}{15} \times \frac{5}{14} = \frac{1}{7}$.
- 24) **Choice D is correct.** (PA.A.1.2) During promotional 0% APR, no interest accrues. Amount owed remains \$800 after 12 months.
- 25) **Choice C is correct.** (PA.N.1.1) Apply power to numerator and denominator: $\left(\frac{x}{y}\right)^2 = \frac{x^2}{y^2}$.
- 26) **Choice D is correct.** (PA.N.1.1) Volume of a cube $= e^3 = 4^3 = 64$ cubic units.
- 27) **Choice C is correct.** (PA.N.1.3) Multiply coefficients: $4.8 \times 1.25 = 6$. Add exponents: $10^{-2+2} = 10^0 = 1$. Result: $6 \times 10^0 = 6 \times 1 = 6$.



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 8 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 **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?



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
- ✓ 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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Better Results.