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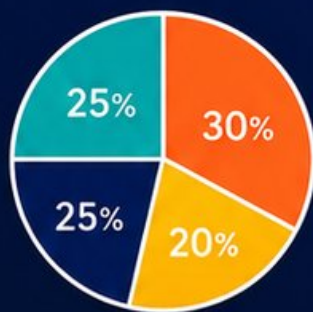
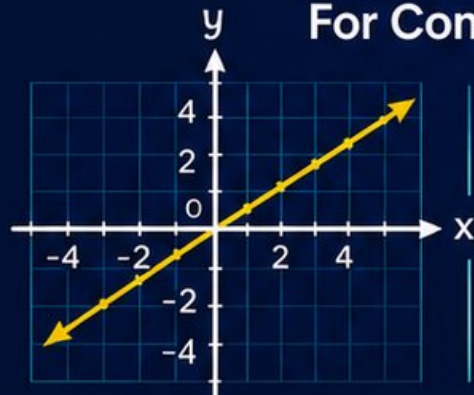
Oklahoma OSTP

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

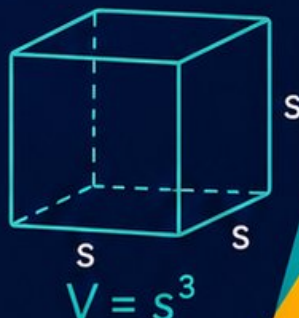


$$y = mx + b$$

$$2x - 3y = 6$$

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

$$A = bh$$



**4 PRINTED
TESTS**



**2 ONLINE
TESTS**

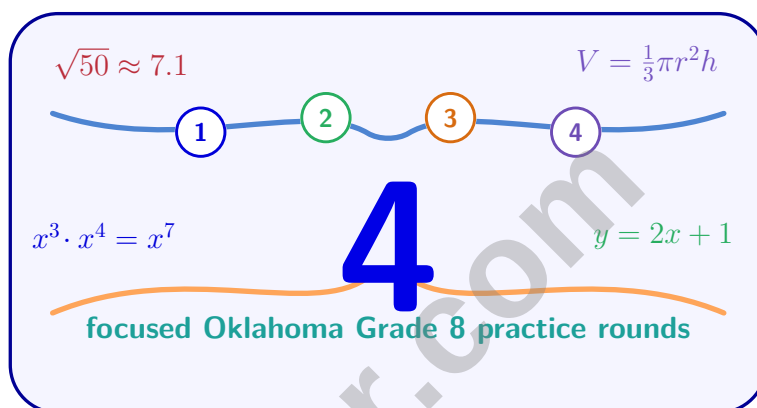


Use these **two additional online practice tests**
for extra review after the printed tests in this book.



4 Oklahoma OSTP Grade 8 Math Practice Tests

Four Grade 8 OSTP Rounds with Keys, Review, and Explanations



Four 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!

Four focused rounds for sharper OSTP math thinking

This book gives you four 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 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.

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?

Four OSTP 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

Table of Contents

★ Practice Test 1	_____	14
★ Practice Test 2	_____	28
★ Practice Test 3	_____	43
★ Practice Test 4	_____	58
Practice Test Answer Keys	_____	73
Practice Test Answers and Explanations	_____	76

1) Two square pyramids have the same height (10 cm). Pyramid X has a base edge of 3 cm; Pyramid Y has a base edge of 6 cm. What is the ratio of Pyramid X's volume to Pyramid Y's volume?

☐ A. 1 : 2☐ C. 2 : 1☐ B. 1 : 4☐ D. 1 : 3

2) Maria is currently 4 years older than her sister Emma. In 3 years, Maria will be twice Emma's age. How old is Emma now?

☐ A. 1☐ C. 3☐ B. 2☐ D. 5

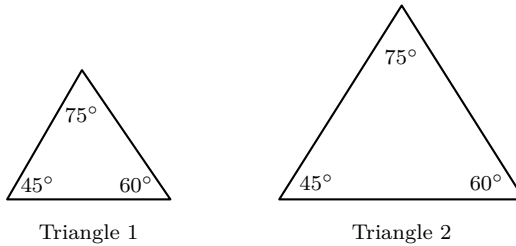
3) An angle and its complement differ by 12° . What is the measure of the larger of the two angles?

☐ A. 39° ☐ C. 51° ☐ B. 45° ☐ D. 63°

4) Which of the following is the BEST description of what a small residual means?

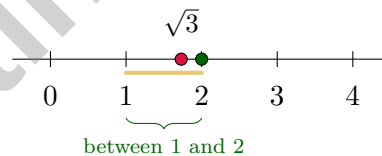
☐ A. The data point is far from the trend line☐ C. The slope of the line is steep☐ B. The data point is very close to the trend line☐ D. There is no correlation in the data

- 5) Two triangles both have angles measuring 45° , 60° , and 75° . Are these triangles necessarily similar?



- ☐ A. No, the sides must also be proportional
☐ B. No, only two angles are given
☐ C. Yes, angles alone determine similarity (AAA)
☐ D. Only if the triangles are congruent
- 6) A bus travels according to $d(t) = 55t$, where d is distance in miles and t is time in hours. How far has the bus traveled after 3 hours?

- ☐ A. 55 miles
☐ B. 110 miles
☐ C. 165 miles
☐ D. 185 miles



7)

Which statement is true?

- ☐ A. $\sqrt{3} > 2$
☐ B. $\sqrt{3} = 1.73$
☐ C. $\sqrt{3} < 2$
☐ D. $\sqrt{3}$ is rational



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- 8) A meeting can be held at 2 different locations (downtown or uptown) and at 3 different times (morning, afternoon, or evening). How many possible meeting arrangements are there?

☐ A. $2 + 3 = 5$

☐ C. $3 + 4 = 7$

☐ B. $2 \times 3 = 6$

☐ D. $3^2 = 9$

- 9) Convert $0.4\overline{18}$ to a fraction in simplest form.

☐ A. $\frac{4}{18}$

☐ C. $\frac{418}{999}$

☐ B. $\frac{418}{1000}$

☐ D. $\frac{414}{990} = \frac{23}{55}$

- 10) Compare 9.9×10^2 and 1.0×10^3 . Which is true?

☐ A. 9.9×10^2 is larger

☐ C. They are equal

☐ B. Cannot be determined

☐ D. 1.0×10^3 is larger

- 11) $\sqrt{89}$ is between 9 and 10. Which decimal is the better approximation?

☐ A. 9.7

☐ C. 9.6

☐ B. 9.5

☐ D. 9.4

- 12) Which is the best estimate of $\sqrt{15}$?

☐ A. 3.2

☐ C. 4.2

☐ B. 7.5

☐ D. 3.9

- 13) A student has two options to save money: Option 1 puts \$800 in a savings account at 10% simple interest for 1 year; Option 2 keeps the \$800 in cash (0% return). How much MORE money will Option 1 have compared to Option 2 after 1 year?

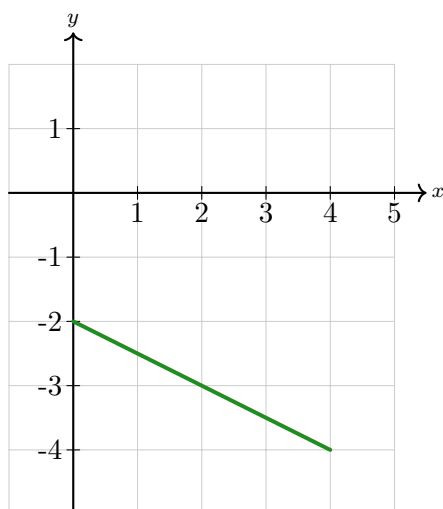
☐ A. \$40 more

☐ C. \$160 more

☐ B. \$320 more

☐ D. \$80 more





1)

What is the equation of the line shown?

☐ A. $y = -\frac{1}{2}x - 2$

☐ C. $y = \frac{1}{2}x - 2$

☐ B. $y = -2x - 2$

☐ D. $y = 2x - 2$

- 2) A video streaming service charges a flat fee plus a per-minute rate. The relationship is shown:

Minutes watched	10	20	30
Cost (\$)	2.50	4.50	6.50

What is the slope?

☐ A. \$0.20 per minute

☐ C. \$0.10 per minute

☐ B. \$2.50 per minute

☐ D. \$0.05 per minute

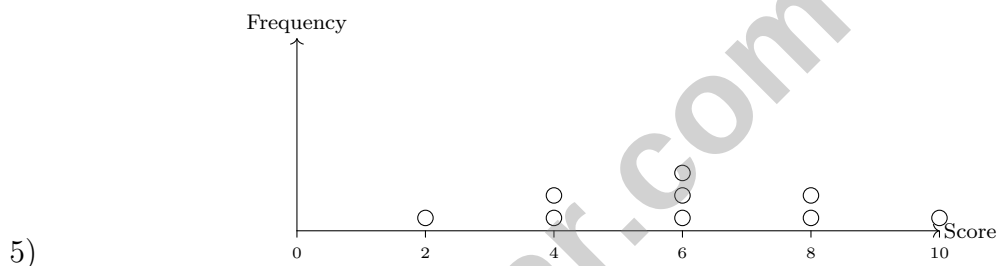


- 3) Train A travels at 60 mph. Train B travels at 75 mph. If Train B leaves 1 hour later but they meet after Train A has traveled for 5 hours, which equation is correct?

☐ A. $60 \cdot 5 = 75 \cdot 4$
☐ C. $60 \cdot 4 = 75 \cdot 5$
☐ B. $60 \cdot 5 + 75 \cdot 4 = \text{total distance}$
☐ D. $60 \cdot 5 = 75 \cdot 5$

- 4) A decorative tent in the shape of a square pyramid has a base side of 4 m and a height of 3 m. What is its volume?

☐ A. 12 m^3
☐ C. 24 m^3
☐ B. 16 m^3
☐ D. 48 m^3



Data from dot plot: $\{2, 4, 4, 6, 6, 6, 8, 8, 10\}$ with mean = 6. Find MAD.

☐ A. 1.5
 ☐ C. 2
☐ B. 1.78
 ☐ D. 2.2

- 6) A bag contains 4 white socks and 6 black socks. If two socks are drawn without replacement, what is the probability that both are black?

☐ A. $\frac{1}{3}$
☐ C. $\frac{6}{10}$
☐ B. $\frac{3}{10}$
☐ D. $\frac{6}{25}$



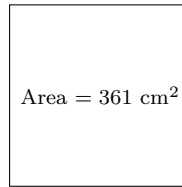
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1) A student writes: $\frac{x^8}{x^2} = x^4$. What mistake did the student make?

- ☐ A. Added the exponents instead of subtracting.
- ☐ B. Multiplied the exponents instead of subtracting.
- ☐ C. Divided the exponents instead of subtracting.
- ☐ D. The student is correct.

2) A square has an area of 361 square cm. What is its perimeter?

$s = ?$



$s = ?$

- ☐ A. 38 cm
- ☐ B. 57 cm
- ☐ C. 76 cm
- ☐ D. 152 cm
- 3) A bicycle rental costs \$5 base fee plus \$3 per hour. If the relationship is graphed with hours on the x -axis and cost on the y -axis, what is the slope?

- ☐ A. $\frac{3}{5}$
- ☐ B. 8
- ☐ C. 3
- ☐ D. 5

4) A store has two types of mangoes. Premium mangoes cost \$2 each, standard mangoes cost \$1 each. A customer buys 15 mangoes for \$20. Solving the system $p + s = 15$ and $2p + s = 20$ gives $p = 5, s = 10$. Is this solution valid in the real world?

- ☐ A. No, because only the first equation is satisfied.
- ☐ B. No, because p is not a whole number.
- ☐ C. Yes, because it represents a realistic purchase.
- ☐ D. No, because the total cost should be higher.



5) If $h(x) = 3x$, what is $h(-2)$?

☐ A. -6

☐ C. -2

☐ B. 6

☐ D. 3

6) What is the rule for a translation that moves point (x, y) left 5 units and up 8 units?

☐ A. $(x, y) \rightarrow (x + 5, y + 8)$

☐ C. $(x, y) \rightarrow (x + 5, y - 8)$

☐ B. $(x, y) \rightarrow (x - 5, y + 8)$

☐ D. $(x, y) \rightarrow (x - 5, y - 8)$

7) A triangle has angles measuring 55° , 68° , and x° . Find x .

☐ A. 57°

☐ C. 77°

☐ B. 67°

☐ D. 87°

8) A right triangle has legs of 15 and 20. How much longer is the hypotenuse than the shorter leg?

☐ A. 10

☐ C. 25

☐ B. 20

☐ D. 35



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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

- Choice B is correct.** (PA.GM.2.3) $V_X = \frac{1}{3} \times 9 \times 10 = 30 \text{ cm}^3$. $V_Y = \frac{1}{3} \times 36 \times 10 = 120 \text{ cm}^3$. Ratio: $\frac{30}{120} = 1 : 4$.
- Choice A is correct.** (PA.A.4.1) Let e = Emma's current age. Then Maria's age is $e + 4$. In 3 years: Emma is $e + 3$, Maria is $e + 7$. The condition gives $e + 7 = 2(e + 3)$, so $e + 7 = 2e + 6$, thus $e = 1$.
- Choice C is correct.** (PA.A.2.4) Let the smaller angle be x . Then $x + (x + 12) = 90 \Rightarrow 2x + 12 = 90 \Rightarrow 2x = 78 \Rightarrow x = 39^\circ$. The larger angle is $39 + 12 = 51^\circ$.
- Choice B is correct.** (PA.D.1.2) A small residual (absolute value close to zero) means the data point lies near the trend line, indicating a good fit at that point.
- Choice C is correct.** (PA.GM.1.1) If two triangles have all three corresponding angles congruent, they are similar by AAA (Angle-Angle-Angle). Here, both triangles have the same three angles, so they must be similar regardless of side lengths.
- Choice C is correct.** (PA.A.1.2) Substitute $t = 3$: $d(3) = 55(3) = 165$ miles.
- Choice C is correct.** (PA.N.1.4) From the number line, $\sqrt{3} \approx 1.73$ is positioned to the left of 2, so $\sqrt{3} < 2$. We can verify: $1.73^2 = 2.9929 < 4 = 2^2$. Also, $\sqrt{3}$ is irrational.
- Choice B is correct.** (PA.D.2.3) Two location choices times three time options: $2 \times 3 = 6$ possible arrangements.
- Choice D is correct.** (PA.N.1.4) Let $x = 0.4\overline{18} = 0.41818\dots$. Then $10x = 4.\overline{18}$ and $1000x = 418.\overline{18}$. Subtracting: $990x = 414$, so $x = \frac{414}{990} = \frac{23}{55}$.
- Choice D is correct.** (PA.N.1.2) $9.9 \times 10^2 = 990$ and $1.0 \times 10^3 = 1,000$. The exponent dominates when coefficients are close.
- Choice D is correct.** (PA.N.1.4) $9.4^2 = 88.36$ and $9.5^2 = 90.25$. Since 89 is closer to 88.36, $\sqrt{89} \approx 9.43 \approx 9.4$.
- Choice D is correct.** (PA.N.1.4) Since $3.9^2 = 15.21 \approx 15$ and $3.87^2 \approx 15$, we estimate $\sqrt{15} \approx 3.9$. Distractor 3.2 confuses with $\sqrt{10}$; 4.2 is too high; 7.5 is nonsense.
- Choice D is correct.** (PA.A.1.2) Option 1: $I = 800 \times 0.10 \times 1 = \80 . Option 2: \$0 interest. Difference: $\$80 - \$0 = \$80$.
- Choice A is correct.** (PA.GM.2.2) The student correctly calculated $SA = 2(12) + 2(15) + 2(20) = 24 + 30 + 40 = 94 \text{ m}^2$. The formula $2(lw + lh + wh)$ accounts for all six faces (two of each type).
- Choice A is correct.** (PA.GM.1.1) Reflection across the y -axis uses the rule $(x, y) \rightarrow (-x, y)$. Only the sign of x changes; the y -coordinate stays the same. (Coordinate swapping is reflection across $y = x$, not the y -axis.)
- Choice A is correct.** (PA.A.3.1) Subtract 9: $-x = -5$. Multiply by -1 : $x = 5$. Check: $9 - 5 = 4$ ✓. (Distractor B: sign error; C: adding instead of subtracting.)
- Choice D is correct.** (PA.A.3.2) Subtract 3: $-\frac{1}{2}x \geq 2$. Multiply by -2 (FLIP): $x \leq -4$.
- The correct answer is C,E.** (PA.N.1.1) (A) False: $x^0 = 1$ for $x \neq 0$, not 0. (B) False: negative exponent creates a reciprocal, not a negative base (e.g., $2^{-1} = \frac{1}{2} > 0$). (C) True: $(x^2)^3 = x^{2 \cdot 3} = x^6$ ✓. (D) False: $x^{-2} = \frac{1}{x^2}$, not $-x^2$ (e.g., $2^{-2} = \frac{1}{4} \neq -4$). (E) True: quotient rule ✓.
- The correct answer is 8 .** (PA.N.1.1) $e^3 = 512$, so $e = \sqrt[3]{512} = 8$ feet.
- Choice A is correct.** (PA.A.4.2) A DASHED line means the boundary is NOT included, changing the meaning to $x < -1$. The solid line is essential for including the boundary in $\leq$ or $\geq$ inequalities.
- Choice B is correct.** (PA.GM.2.1) From $V = \pi r^2 h$, we get $h = \frac{V}{\pi r^2} = \frac{628}{3.14 \times 25} = \frac{628}{78.5} = 8 \text{ m}$.
- Choice C is correct.** (PA.D.1.3) The slope -0.05 is the rate of change in M per unit increase in d . Since d is measured in hundreds of miles, each 100-mile interval causes MPG to drop by 0.05.
- Choice C is correct.** (PA.N.1.3) $3.5 \times 2 = 7$ and $10^{4+3} = 10^7$, giving 7×10^7 . The coefficient 7 is already in standard form $[1, 10]$, so no renormalization is needed.
- Choice D is correct.** (PA.A.2.2) Check ratio: $(2, 6) \rightarrow 6/2 = 3$ and $(4, 12) \rightarrow 12/4 = 3$. Same ratio means proportional. Choice D has $k = 3$.
- The correct answer is 60 .** (PA.A.2.3) Slope = $\frac{180 \text{ miles}}{3 \text{ hours}} = 60 \text{ miles per hour}$.



Hi, Detail Champion!

◇ In Grade 8, small details can change an entire answer: a negative sign, a decimal place, a unit, an exponent, or an inequality symbol. ◇

★ **Remember this:** You practiced noticing those details. That is a serious test skill, and it gets better with every careful review. This version gave you 4 opportunities to rehearse test-day habits. ★

Detail Checks

- **Signs:** Circle negatives before simplifying.
- **Symbols:** Read inequality signs carefully.
- **Decimals:** Line up place values.
- **Units:** Match the unit the question asks for.

Grade 8 test-day tip: Use the final minute on each section for a detail scan, not a full redo.

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

Jay Daie

Your Detail-Check Coach

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.