

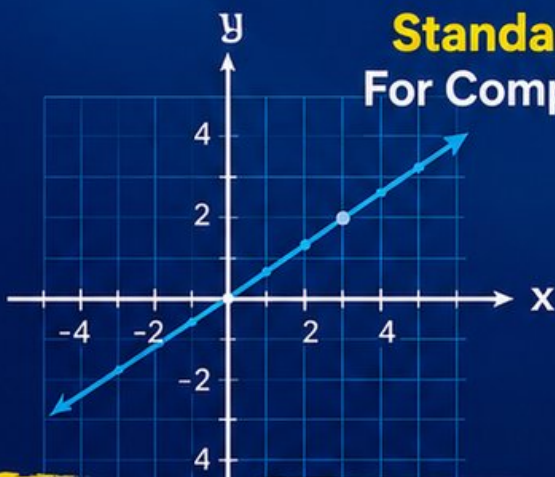
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Oregon
OSAS

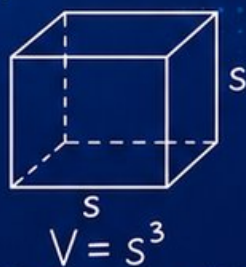
Grade 8

MATH

PRACTICE TESTS

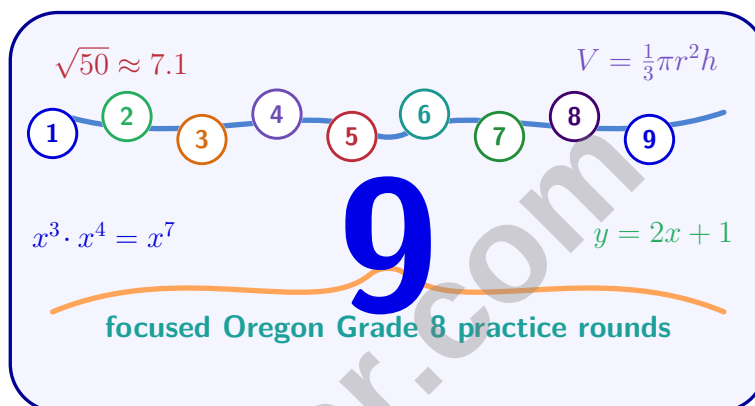
Standards Aligned Problem Solving
For Comprehensive Assessment Programs

$$2x + 3y = 12$$
$$y = mx + b$$

9 PRINTED
TESTS2 ONLINE
TESTSUse these **two additional online practice tests** for extra review after the printed tests in this book.

9 Oregon OSAS Grade 8 Math Practice Tests

Grade 8 Oregon Practice for Graphs, Equations, Transformations, and Data Analysis



Nine complete 40-question Grade 8 OSAS 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, Oregon Grade 8 Problem Solver!

Nine focused rounds for sharper OSAS math thinking

This book gives you nine full Grade 8 OSAS 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 Oregon 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 nine-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.

Oregon 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?

Nine OSAS tests, 360 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 7–9	Pythagorean reasoning, volume, data analysis, linear models, probability, mixed review, and stamina.
Answer Pages	Compact keys and explanations that show why each answer works.

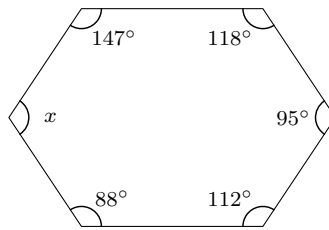
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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1)

A hexagon has five interior angles: 88° , 112° , 95° , 118° , 147° . Find the sixth angle.

☐ A. 150° ☐ C. 170° ☐ B. 160° ☐ D. 180°

2) A quadrilateral is rotated 270° clockwise about the origin. This is equivalent to a counterclockwise rotation of how many degrees?

☐ A. 90° ☐ C. 270° ☐ B. 180° ☐ D. 360°

3) Rewrite $3x - 2y < 6$ in slope-intercept form. Which inequality is equivalent?

☐ A. $y > \frac{3}{2}x - 3$ ☐ C. $y \geq \frac{3}{2}x - 3$ ☐ B. $y < \frac{3}{2}x - 3$ ☐ D. $y \leq \frac{3}{2}x - 3$

4) A bank loan of \$10,000 at 5% simple interest is repaid in 5 equal annual installments. The total simple interest over the full term is \$2,500. How much principal and interest remains owed after making the first \$2,500 payment?

☐ A. \$8,000☐ C. \$10,000☐ B. \$8,500☐ D. \$9,500

5) Which expression equals 2^{10} ?

☐ A. $2^5 + 2^5$

☐ B. $2^6 + 2^4$

☐ C. $(2^5)^2$

☐ D. $2^{15} \div 2^6$

6) What is $\sqrt{361}$?

☐ A. 18

☐ B. 21

☐ C. 20

☐ D. 19

7) The mass of the Sun is approximately 2×10^{30} kg. How many times more massive is the Sun than Earth, which has mass 6×10^{24} kg?

8) Multiply: $(6 \times 10^2) \times (3 \times 10^4)$

☐ A. 18×10^5

☐ B. 18×10^8

☐ C. 9×10^6

☐ D. 1.8×10^7

9) A fitness trainer charges by the hour. Client pays \$45 for 3 hours of training. What is the hourly rate (unit rate)?

☐ A. \$12 per hour

☐ B. \$20 per hour

☐ C. \$18 per hour

☐ D. \$15 per hour



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10) Which equation has a negative slope?

☐ A. $y = 5x + 2$

☐ B. $y = -3x + 8$

☐ C. $y = \frac{1}{4}x - 1$

☐ D. $y = x + 6$

11) Look at the table of values for the equation $y = 2x + 1$:

x	y
1	3
2	5
?	9

What value of x produces $y = 9$?

☐ A. $x = 3$

☐ B. $x = 5$

☐ C. $x = 8$

☐ D. $x = 4$

12) Solve: $2(3 - x) \geq 4$

☐ A. $x \geq 1$

☐ B. $x \leq -1$

☐ C. $x \geq -1$

☐ D. $x \leq 1$

13) Factor $9x^2 - 36$ completely.

$$\begin{array}{l} 9x^2 - 36 \\ \swarrow \\ 9(x^2 - 4) \end{array}$$

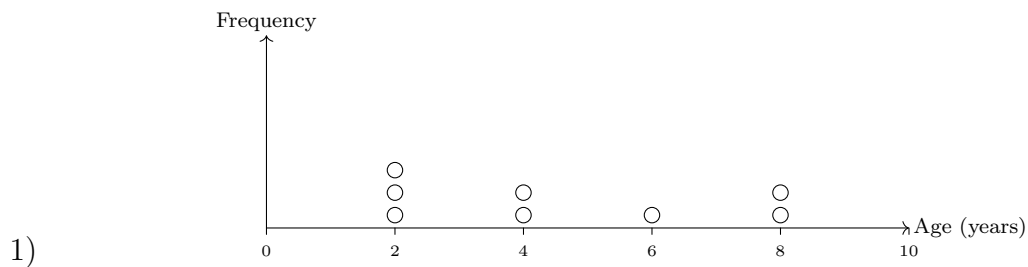
☐ A. $9(x^2 - 4)$

☐ B. $9(x - 2)(x + 2)$

☐ C. $(3x - 6)^2$

☐ D. $(x - 6)(9x + 6)$





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

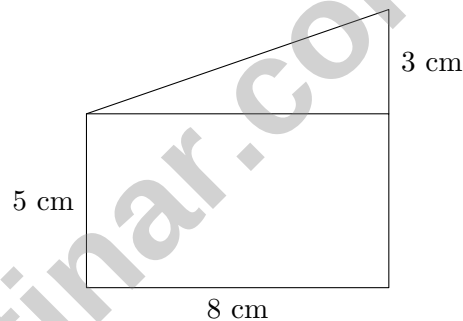
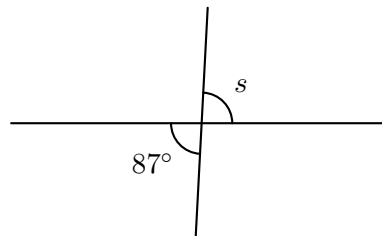
☐ A. 1.75

☐ C. 2.25

☐ B. 2

☐ D. 3

- 2) A composite figure is made of a rectangle (8 cm by 5 cm) with a right triangle (*base* = 8 cm, *height* = 3 cm) on one side. Find the total area.


☐ A. 40 cm²
☐ C. 60 cm²
☐ B. 52 cm²
☐ D. 72 cm²


3)

Two lines intersect at a point. Angles s and 87° are vertical angles. What is s ?

☐ A. 3°
☐ C. 93°
☐ B. 87°
☐ D. 180°


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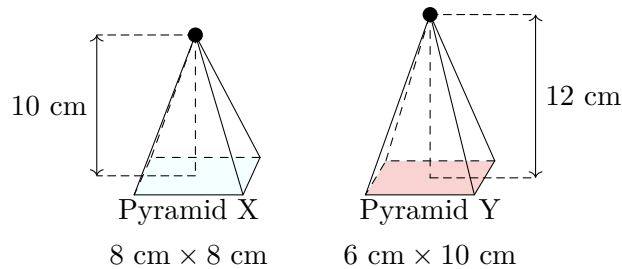
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- 4) Pyramid X has a square base with side 8 cm and height 10 cm. Pyramid Y has a rectangular base of 6 cm by 10 cm and height 12 cm. Which pyramid has the larger volume?



- ☐ A. Pyramid X
☐ B. Pyramid Y
☐ C. They have equal volumes.
☐ D. Cannot be determined.
- 5) Four scatter plots are shown with different correlation patterns. Which plot would be most useful for predicting the value of one variable given the other?
- ☐ A. Weak positive correlation with many outliers
☐ B. Strong positive correlation with minimal scatter
☐ C. No correlation with random scatter
☐ D. Perfect nonlinear association
- 6) The best-fit line for a summer temperature study is $T = 1.2m + 68$, where T is temperature in $^{\circ}\text{F}$ and m is the month number (with month 1 = June). What does the intercept of 68 represent in this context?
- ☐ A. The predicted temperature at month 0 (an extrapolated value)
☐ B. The temperature increase per month
☐ C. The maximum temperature observed
☐ D. The rate of temperature change



1) Solve by substitution:
$$\begin{cases} x = 4 - y \\ x + 3y = 8 \end{cases}$$

☐ A. (0, 4)

☐ C. (2, 2)

☐ B. (1, 3)

☐ D. (3, 1)

2) A rectangular prism has dimensions 2.5 feet $\times$ 1.5 feet $\times$ 2 feet. What is the surface area?

☐ A. 6.0 ft²

☐ C. 23.5 ft²

☐ B. 12.5 ft²

☐ D. 28.5 ft²

3) f passes through (2, 5) and (4, 1). $g(x) = -x + 8$. Which has a more negative slope?

☐ A. $f(x)$

☐ C. Both equal.

☐ B. $g(x)$

☐ D. Not comparable.

4) Two points are (2, 5) and (4, 11). What is the slope of the line through them?

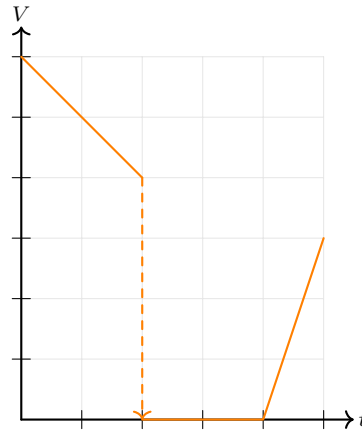
☐ A. 3

☐ C. 6

☐ B. $\frac{1}{3}$

☐ D. -3





5)

A tank scenario: drains linearly $[0,2]$, pumped dry $[2,2]$, refills $[4,5]$. Identify the discontinuity.

- ☐ A. At $t = 2$ (vertical jump down from 4 to 0) ☐ C. At $t = 5$ (final value unclear)
☐ B. At $t = 4$ (gap in time) ☐ D. No discontinuities (function is continuous)

6) Calculate $\frac{9.6 \times 10^8}{3.2 \times 10^5}$ and express in scientific notation.

7) Hexagon ABCDEF is congruent to hexagon GHIJKL. The perimeter of ABCDEF is 48 cm. What is the perimeter of GHIJKL?

- ☐ A. 24 cm ☐ C. 96 cm
☐ B. 48 cm ☐ D. Cannot be determined



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Oregon OSAS 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 Oregon OSAS practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice B is correct.** **(8.GM.A.5)** A hexagon's interior angles add to 720° . The known angles add to $88 + 112 + 95 + 118 + 147 = 560^\circ$, so the sixth angle is $720 - 560 = 160^\circ$.
- 2) **Choice A is correct.** **(8.GM.A.1)** Clockwise and counterclockwise are opposite directions. 270° clockwise = $360^\circ - 270^\circ = 90^\circ$ counterclockwise.
- 3) **Choice A is correct.** **(8.GM.B.8)** Subtract $3x$ from both sides: $-2y < -3x + 6$. Divide by -2 (flip inequality): $y > \frac{3}{2}x - 3$.
- 4) **Choice C is correct.** **(8.AEE.A.1)** Total amount to repay: \$10,000 (principal) + \$2,500 (interest) = \$12,500. Five equal annual payments: $\$12,500 / 5 = \$2,500$ per payment. After first payment of \$2,500, remaining owed is $\$12,500 - \$2,500 = \$10,000$.
- 5) **Choice C is correct.** **(8.AEE.A.1)** $(2^5)^2 = 2^{5 \cdot 2} = 2^{10}$. The other choices do not simplify to 2^{10} .
- 6) **Choice D is correct.** **(8.AEE.A)** $19 \times 19 = 361$, so $\sqrt{361} = 19$.
- 7) **The correct answer is 3.33×10^5 .** **(8.AEE.A.1)** Divide: $\frac{2 \times 10^{30}}{6 \times 10^{24}} = \frac{2}{6} \times 10^6 = \frac{1}{3} \times 10^6 \approx 3.33 \times 10^5$.
- 8) **Choice D is correct.** **(8.AEE.A.4)** Multiply: $6 \times 3 = 18 = 1.8 \times 10^1$. Add exponents: $10^2 + 4 = 10^6$. Combine: $1.8 \times 10^1 \times 10^6 = 1.8 \times 10^7$.
- 9) **Choice D is correct.** **(8.AEE.B.5)** Unit rate $k = \frac{45}{3} = 15$ dollars per hour.
- 10) **Choice B is correct.** **(8.AEE.B.6)** The slope is the coefficient of x . Only option B has a negative coefficient: -3 .
- 11) **Choice D is correct.** **(8.AEE.C)** Use $y = 2x + 1$: $9 = 2x + 1 \Rightarrow 8 = 2x \Rightarrow x = 4$.
- 12) **Choice D is correct.** **(8.AEE.C.7)** Distribute: $6 - 2x \geq 4$. Subtract 6: $-2x \geq -2$. Divide by -2 (FLIP): $x \leq 1$.
- 13) **Choice B is correct.** **(8.AEE.B.6)** Factor out GCF of 9: $9(x^2 - 4)$. Then difference of squares: $9(x - 2)(x + 2)$.
- 14) **Choice C is correct.** **(8.AFN.A.2)** Both have slope $\frac{1}{2}$. Intercepts are 3 and -2 . Parallel lines.
- 15) **Choice B is correct.** **(8.AFN.A.3)** $y = \frac{3}{4}x + 2$ perfectly matches the linear form $y = mx + b$ with $m = \frac{3}{4}$ and $b = 2$. Fractional slopes do not make a function nonlinear.
- 16) **Choice B is correct.** **(8.GM.A.3)** The pre-image $(1, 2)$ maps to image $(-1, 2)$, confirming reflection across the y -axis: $(x, y) \rightarrow (-x, y)$.
- 17) **The correct answer is $\frac{5}{11}$.** **(8.NS.A.1)** Let $x = 0.454545 \dots$. Then $100x = 45.454545 \dots$, so $99x = 45$ and $x = \frac{45}{99} = \frac{5}{11}$.
- 18) **Choice A is correct.** **(8.GM.B.8)** $\sqrt{5^2 + 5^2} = \sqrt{25 + 25} = \sqrt{50}$. Check others: $(7, 2)$ gives $\sqrt{53}$; $(5, 2)$ gives $\sqrt{29}$; $(3, 4)$ gives 5.
- 19) **Choice C is correct.** **(8.NS.A.2)** Arrange all 4 books in order: $4! = 4 \times 3 \times 2 \times 1 = 24$.
- 20) **Choice A is correct.** **(8.AEE.C.8)** When two distinct lines do not intersect (parallel lines), they have no points in common, so the system has no solution.
- 21) **The correct answer is A,D.** **(8.NS.A.2)** A is true: $3^2 = 9$ and $4^2 = 16$, so $9 < 12 < 16$ means $3 < \sqrt{12} < 4$. B is false: $6^2 = 36$ and $7^2 = 49$, so $\sqrt{48}$ is between 6 and 7, not 5 and 6. C is false: $\sqrt{100} = 10$, so it is not between 10 and 11. D is true: $6^2 = 36$ and $7^2 = 49$, so $36 < 37 < 49$ means $6 < \sqrt{37} < 7$. E is false: $8^2 = 64$ and $9^2 = 81$, so $\sqrt{75}$ is between 8 and 9, not 9 and 10.
- 22) **Choice B is correct.** **(8.AFN.A.1)** The range is the set of all distinct y -values: 4, 1, 0, 1, 4. As a set: $\{0, 1, 4\}$.
- 23) **Choice A is correct.** **(8.AFN.B.4)** One-time premium feature fee is \$8 (intercept). Monthly service cost is \$12 (slope). Total is $T = 12m + 8$.
- 24) **Choice A is correct.** **(8.AFN.B.5)** From $x = -1$ to $x = 1$: the function is constant at $f(x) = 2$ (neither increasing nor decreasing). From $x = 1$ to $x = 3$: the function increases from 2 to 4. From $x = 3$ onward: the function decreases.
- 25) **Choice A is correct.** **(8.GM.A.2)** Subtract 6 from the x -coordinate and add 8 to the y -coordinate: $(3 - 6, -2 + 8) = (-3, 6)$.
- 26) **Choice B is correct.** **(8.GM.B.6, 8.GM.B.7)** From $(\sqrt{12})^2 + (\sqrt{13})^2 = c^2$, we get $12 + 13 = 25$, so $c = \sqrt{25} = 5$.
- 27) **Choice A is correct.** **(8.DR.C.3)** A is true: the column-conditional frequency of Math among Debate is $\frac{36}{144} = 0.25$. B uses the grand total instead of the Math row total. C uses the wrong denominator, and D uses the wrong cell count.



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Bridge Skills

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- **Balance Equations:** Keep both sides fair.
- **Read Graphs:** Connect points to meaning.
- **Compare Rates:** Look for constant relationships.

Grade 8 test-day tip: When you see a variable, say what it represents. That keeps algebra connected to the problem.

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

Jay Daie

Your Algebra Bridge Coach

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GRADE

8

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