

6 Oregon OSAS

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



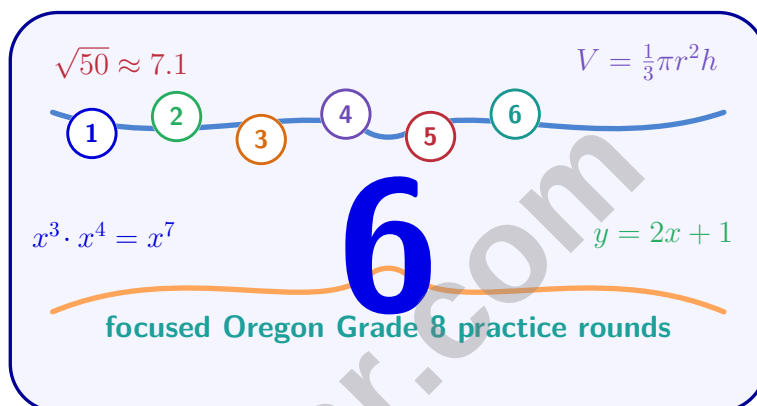
2 ONLINE
TESTS



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

6 Oregon OSAS Grade 8 Math Practice Tests

Focused Grade 8 Math Prep with Skill Review and Answer Explanations



Six 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!

Six focused rounds for sharper OSAS math thinking

This book gives you six 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 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.

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?

Six OSAS 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.



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& answers

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1) A proportional relationship is described by $y = 4x$. What is the unit rate?

☐ A. 1

☐ C. 4

☐ B. 2

☐ D. 8

2) Which set correctly separates rational and irrational numbers?

☐ A. Rational: all decimals; Irrational: all square roots

☐ C. Rational: π , $0.101001\dots$; Irrational: $\frac{7}{2}$, $\sqrt{16}$
☐ B. Rational: $\sqrt{2}$, $\frac{1}{3}$; Irrational: $0.\overline{3}$, $\sqrt{9}$
☐ D. Rational: $\sqrt{4}$, 0.5 ; Irrational: π , $\sqrt{10}$

3) Simplify $\frac{(k^2)^3 \cdot k^{-1}}{k^5}$.

☐ A. k^{-5}
☐ C. k^{10}
☐ B. k^2
☐ D. $k^0 = 1$

4) Convert 950 to scientific notation.

☐ A. 9.5×10^1
☐ C. 9.5×10^3
☐ B. 95×10^1
☐ D. 9.5×10^2

5) $x = 0.3\overline{7}$
 $10x = ?$
 $100x = ?$

 $3.\overline{7}$
 $37.\overline{7}$

Using the diagram, what is $100x - 10x$?

☐ A. $34.\overline{0}$
☐ C. 33

☐ B. 37

☐ D. 34


n	4	9	16	25
$\sqrt{n}$	2	3	4	5

6)

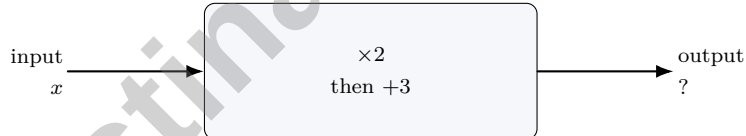
Using the table, between which integers does $\sqrt{11}$ lie?

- ☐ A. 2 and 3
 ☐ C. 4 and 5
☐ B. 5 and 6
 ☐ D. 3 and 4

7) Marco deposits \$1,500 at an annual simple-interest rate of 4%. How much interest does he earn after 2 years?

- ☐ A. \$60
 ☐ C. \$240
☐ B. \$150
 ☐ D. \$120

8) A function machine multiplies the input by 2 and adds 3. If the input is x , what is the output?



- ☐ A. $2x + 3$
☐ C. $3x + 2$
☐ B. $2(x + 3)$
☐ D. $x + 5$

9) A function has the first differences: 4, 4, 4, 4. Is the function linear?

- ☐ A. No, because differences are all the same
 ☐ C. No, because only x -values can be constant
☐ B. Yes, constant first differences mean linear
 ☐ D. Yes, only if the starting value is positive



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10) Which table represents a linear function?

☐ A.

x	y
1	2
2	4
3	8

☐ B.

x	y
1	5
2	8
3	11

☐ C.

x	y
1	1
2	3
3	6

☐ D.

x	y
1	2
2	5
3	10

11) 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

12) A car traveling at 60 mph leaves 1 hour before a car traveling at 75 mph. How long does the faster car take to catch the slower car?

- ☐ A. 2 hours
☐ B. 3 hours

- ☐ C. 4 hours
☐ D. 5 hours

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

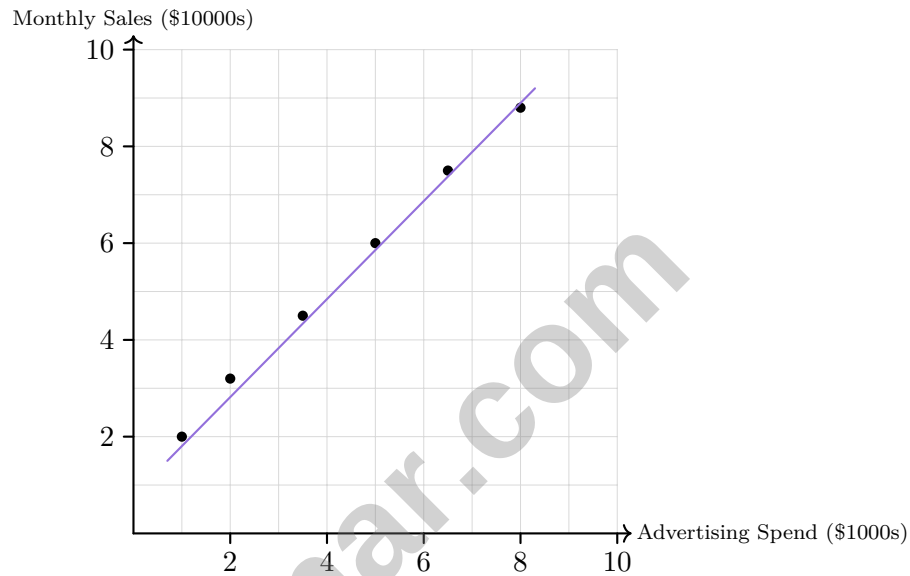
- ☐ A. 6
☐ B. 3

- ☐ C. 5
☐ D. 8



- 1) Distance traveled: Function $d_1(t) = 55t$ miles (constant speed). Function d_2 at hours $(0, 0)$, $(3, 180)$. After 6 hours, which distance greater?

- ☐ A. d_1
☐ C. Same distance
☐ B. d_2
☐ D. Cannot determine



2)

A business tracks advertising spend versus monthly sales. Based on the trend line, what is the approximate y -intercept (sales with no advertising)?

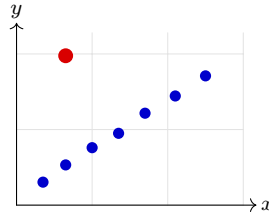
- ☐ A. \$30,000
 ☐ C. \$10,000
☐ B. \$20,000
 ☐ D. \$0

- 3) A line segment from $(0, 0)$ to $(4, 4)$ is dilated by scale factor 0.5 from the origin. Where does it map to?

- ☐ A. From $(0, 0)$ to $(2, 2)$
☐ C. From $(2, 2)$ to $(4, 4)$
☐ B. From $(0, 0)$ to $(8, 8)$
☐ D. Remains the same



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4)

A scatter plot shows years of education versus annual income for 100 adults. Most points cluster in an upward trend, but three points are far below the trend line, representing people with high education but low income. These three points are:

- ☐ A. Errors that should be removed ☐ C. Examples of no correlation
☐ B. Part of the overall trend ☐ D. Outliers deserving investigation

5) From the table below, which relative frequency calculation is incorrect?

	Apparel	Electronics	Total
Teen	48	32	80
Adult	72	88	160
Total	120	120	240

- ☐ A. Among teens, $\frac{32}{80} = 0.40$ buy electronics.
☐ B. Among electronics buyers, $\frac{32}{120} \approx 0.27$ are teens.
☐ C. Of all shoppers, $\frac{48}{240} = 0.20$ are teen apparel buyers.
☐ D. Of all shoppers, $\frac{32}{80} = 0.40$ are teen electronics buyers.



- 1) Points C and D are on a coordinate grid with $C = (0, 0)$ and $D = (7, 24)$. What is the distance from C to D ?

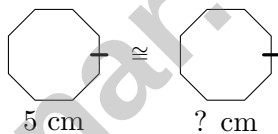
☐ A. 25

☐ C. $\sqrt{600}$
☐ B. 31

☐ D. 17

- 2) Calculate $(8.5 \times 10^4) - (3.7 \times 10^4)$ in scientific notation.

- 3) Two congruent regular octagons are shown. Each octagon has 8 sides of equal length. If Octagon 1 has a side length of 5 cm and a perimeter of 40 cm, what is the perimeter of Octagon 2?


☐ A. 20 cm

☐ C. 5 cm

☐ B. 40 cm

☐ D. 80 cm

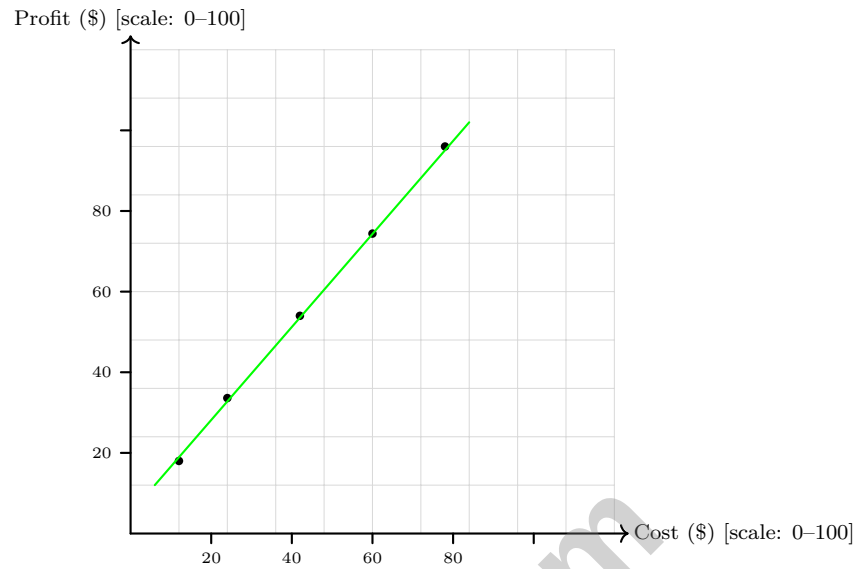
- 4) If each exterior angle of a regular polygon is 18° , what is the polygon?

☐ A. 15-sided polygon

☐ C. 20-sided polygon

☐ B. 18-sided polygon

☐ D. 24-sided polygon

5)

Looking at the scatter plot above, approximately what is the profit when the cost is \$60?

☐ A. \$80

☐ C. \$40

☐ B. \$60

☐ D. \$20

6) A student says that if a cube is dilated by scale factor 3, the volume is multiplied by 3. Is this correct?

☐ A. Yes, volume always scales linearly

☐ C. No, volume is multiplied by 27

☐ B. No, volume is multiplied by 9

☐ D. No, the volume remains the same

7) Solve by substitution:
$$\begin{cases} y = 2x - 5 \\ 4x - y = 7 \end{cases}$$

☐ A. (1, -3)

☐ C. (3, 1)

☐ B. (2, -1)

☐ D. (4, 3)


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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 C is correct.** **(8.AEE.B.5)** In $y = kx$, the constant of proportionality k is the unit rate. Here $k = 4$, so the unit rate is 4 units of y per 1 unit of x .
- 2) **Choice D is correct.** **(8.NS.A.1)** $\sqrt{4} = 2$ (rational), $0.5 = \frac{1}{2}$ (rational), π (irrational), $\sqrt{10}$ (irrational, non-perfect square). All classifications are correct.
- 3) **Choice D is correct.** **(8.AEE.A.1)** $(k^2)^3 = k^6$; then $k^6 \cdot k^{-1} = k^5$; then $\frac{k^5}{k^5} = k^0 = 1$.
- 4) **Choice D is correct.** **(8.AEE.A.1)** Move the decimal 2 places left to get 9.5; the exponent is 2.
- 5) **Choice D is correct.** **(8.NS.A.1)** $100x - 10x = 37.\bar{7} - 3.\bar{7} = 34$. The repeating parts cancel, leaving $90x = 34$.
- 6) **Choice D is correct.** **(8.NS.A.2)** From the table, $3^2 = 9$ and $4^2 = 16$. Since $9 < 11 < 16$, we have $3 < \sqrt{11} < 4$.
- 7) **Choice D is correct.** **(8.AEE.A.1)** Simple interest: $I = Prt = 1500 \times 0.04 \times 2 = \120 . Distractor A is 1-year interest; C is double (wrong time calc); D confuses principal.
- 8) **Choice A is correct.** **(8.AFN.A.1)** Multiply by 2 first: $2x$. Then add 3: $2x + 3$.
- 9) **Choice B is correct.** **(8.AFN.A.3)** A function is linear if and only if its first differences are constant. Since all differences equal 4, this function is linear.
- 10) **Choice B is correct.** **(8.AFN.B.4)** Linear functions have constant slope. Option B: slope from 1 to 2 is $\frac{8-5}{1} = 3$; from 2 to 3 is $\frac{11-8}{1} = 3$. Constant, so linear.
- 11) **Choice C is correct.** **(8.AFN.B)** The rate of change is the hourly cost, which is \$3 per hour. The slope is 3.
- 12) **Choice C is correct.** **(8.AEE.C.8)** When the faster car catches up, they've traveled the same distance. Let t = time the faster car travels. The slower car travels $60(t + 1) = 60t + 60$. The faster car travels $75t$. Setting them equal: $75t = 60t + 60$, so $15t = 60$, giving $t = 4$ hours.
- 13) **Choice C is correct.** **(8.NS.A.1)** Since $3 \geq 2$, use the second rule: $f(3) = 5$.
- 14) **The correct answer is 48.** **(8.GM.A.4)** If new perimeter is 84 and scale factor is $\frac{7}{4}$, then original perimeter $= 84 \div \frac{7}{4} = 84 \times \frac{4}{7} = 48$ cm.
- 15) **Choice C is correct.** **(8.GM.A.3)** Two equilateral triangle bases: $2 \times \frac{1}{2}(5)(4.3) = 21.5 \text{ cm}^2$. Three rectangular sides: $3 \times (5 \times 7) = 105 \text{ cm}^2$. Total $\approx 21.5 + 105 = 126.5 \text{ cm}^2$.
- 16) **Choice B is correct.** **(8.GM.A.1)** Reflections preserve angle measures. The reflected triangle has the same angles as the original (rigid transformation).
- 17) **Choice A is correct.** **(8.AEE.B.6)** Slope $= \frac{4-0}{2-(-2)} = \frac{4}{4} = 1$. Using $(-2, 0)$: $0 = 1(-2) + b$ gives $b = 2$.
- 18) **Choice A is correct.** **(8.AEE.C)** Distribute: $-3x + 6 = 9$. Subtract 6: $-3x = 3$. Divide by -3 : $x = -1$.
- 19) **Choice A is correct.** **(8.AEE.C.7)** Multiply by $\frac{3}{2}$: $x \geq -6$.
- 20) **Choice B is correct.** **(8.GM.B.8)** The inequality $y \leq 4x - 8$ has LESS THAN OR EQUAL ($\leq$), so a SOLID line and shading BELOW.
- 21) **Choice B is correct.** **(8.GM.C.9)** From $V = \pi r^2 h$: $1695.6 = 3.14 \times 36 \times h \Rightarrow h = \frac{1695.6}{113.04} = 15$ in.
- 22) **The correct answer is B,D.** **(8.DR.C.3)** For a good fit, residuals should be small and clustered around zero. Residuals measure vertical distance from the data points to the line. Large residuals indicate a weaker fit, not a strong one.
- 23) **Choice C is correct.** **(8.AFN.B.4)** Substitute $x = 6$: $R = 20 + 3(6) = 20 + 18 = \38 .
- 24) **Choice C is correct.** **(8.AEE.A)** $9^2 = 81$ and $10^2 = 100$. Since 99 is very close to 100, $\sqrt{99} \approx 9.95 \approx 10$.
- 25) **The correct answer is $\frac{1}{4}$.** **(8.AEE.A.1)** There are 13 spades in a standard deck. $P(\text{spade}) = \frac{13}{52} = \frac{1}{4}$.
- 26) **Choice D is correct.** **(8.AEE.A.4)** Divide coefficients: $1.2 \div 4 = 0.3 = 3 \times 10^{-1}$. Subtract exponents: $10^{4-6} = 10^{-2}$. Combine: $3 \times 10^{-1} \times 10^{-2} = 3 \times 10^{-3}$.
- 27) **Choice A is correct.** **(8.AEE.C.8)** Parallel lines have the same slope but different y -intercepts. Both lines shown have slope 1 but intercepts 1 and 3.
- 28) **Choice A is correct.** **(8.AEE.B.6)** FOIL: $(x - 4)(x - 3) = x^2 - 3x - 4x + 12 = x^2 - 7x + 12$.



Hi, Number Sense Builder!

◇ Grade 8 mathematics connects numbers, algebra, geometry, and data. It helps you model linear change, compare functions, estimate irrational values, measure distance, and explain patterns. ◇

★ **Remember this:** You practiced listening to that story. When the answer makes sense in the situation, your math becomes much stronger. This version gave you 6 opportunities to rehearse test-day habits. ★

Number Sense Checks

- **Too Big?:** Compare with an estimate.
- **Too Small?:** Use the context to judge.
- **Right Sign?:** Positive and negative values matter.
- **Right Unit?:** A number needs meaning.

Grade 8 test-day tip: Before choosing an answer, ask whether it fits the story of the problem.

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

Jay Daie

Your Number-Sense Friend

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 | ✓ Statistics & Probability |
| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
| ✓ Functions | ✓ Inequalities |
| ✓ Geometry | ✓ Data Analysis & Graphing |
| | ✓ And More! |



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2 ONLINE TESTS



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