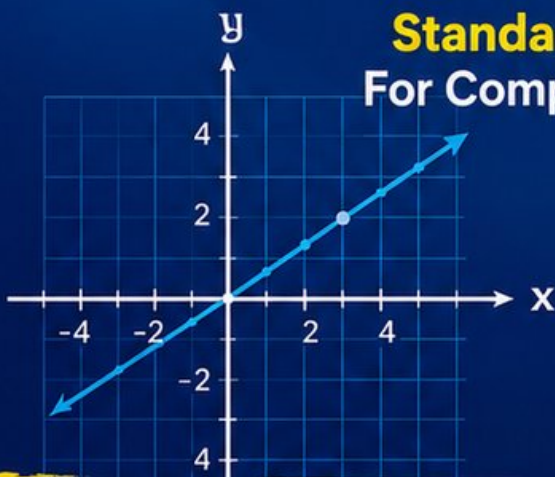
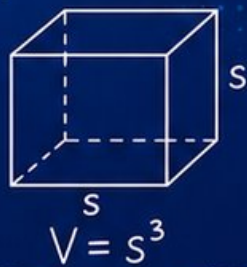


9 Arkansas ATLAS Grade 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



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



**9 PRINTED
TESTS**

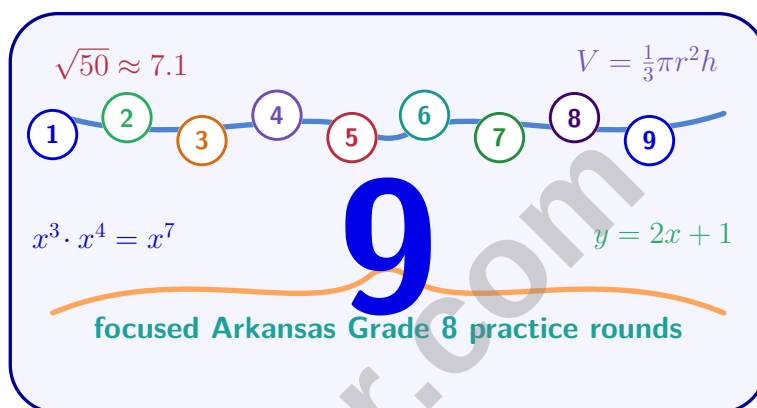


**2 ONLINE
TESTS**

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

9 Arkansas ATLAS Grade 8 Math Practice Tests

Targeted Arkansas Test Prep for Real Numbers, Functions, Geometry, and Probability



Nine complete 40-question Grade 8 ATLAS 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, Arkansas Grade 8 Problem Solver!

Nine focused rounds for sharper ATLAS math thinking

This book gives you nine full Grade 8 ATLAS 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 Arkansas 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.

Arkansas 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 ATLAS 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.

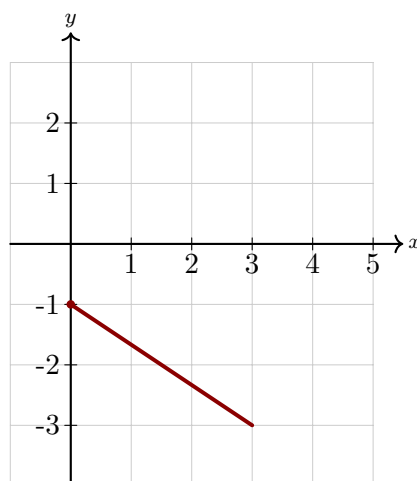
The tests are mixed on purpose. Grade 8 success means recognizing which idea is being tested even when the next question changes format.



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& answers

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1)

What is the y -intercept of the line shown?

☐ A. -3 ☐ C. -2 ☐ B. 0 ☐ D. -1

2) If a figure is rotated 360° about the origin, what happens to the figure?

☐ A. It is reduced in size by one-fourth☐ D. It returns to its original position and orientation☐ B. It is reflected across the origin☐ C. It moves to a different quadrant

3) A credit card has a balance of \$800 with 18% APR. Which list correctly shows the interest charged each month (assuming no payments)?

☐ A. \$12, \$12, \$12, ...☐ C. \$12, \$24, \$36, ...☐ B. \$18, \$18, \$18, ...☐ D. \$12, \$12.18, \$12.36, ...

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

$s = ?$

$\text{Area} = 361 \text{ cm}^2$

$s = ?$

- ☐ A. 38 cm ☐ C. 76 cm
☐ B. 57 cm ☐ D. 152 cm
- 5) What is the product $(3 \times 10^4) \times (2 \times 10^5)$ in scientific notation?
- ☐ A. 5×10^9 ☐ C. 6×10^{20}
☐ B. 6×10^{10} ☐ D. 6×10^9
- 6) What is the solution to $8x - 4 = 3x + 11$?
- ☐ A. $x = 1$ ☐ C. $x = 15$
☐ B. $x = -3$ ☐ D. $x = 3$
- 7) Solve: $-3x + 8 < 2$
- ☐ A. $x > 2$ ☐ C. $x > -2$
☐ B. $x < 2$ ☐ D. $x < -2$
- 8) In the list 5.2×10^{-2} , 5.2×10^0 , 5.2×10^2 , 5.2×10^{-1} , what is the exponent of the smallest number?



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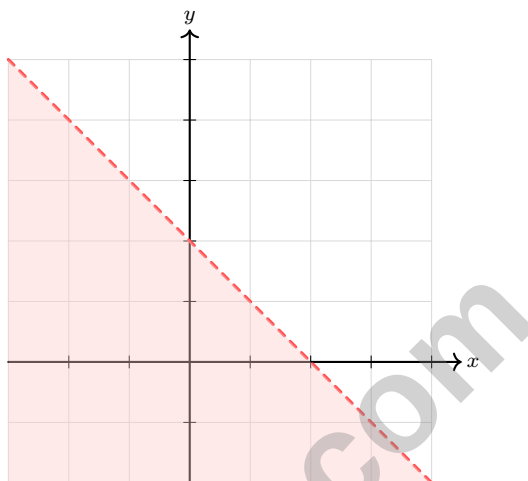
9) Multiply: $(x + 7)(x - 1)$

☐ A. $x^2 + 6x - 7$

☐ B. $x^2 - 7$

☐ C. $x^2 + 7x - 1$

☐ D. $x^2 + 8x - 7$



10)

Based on the dashed line and shaded region, what inequality is shown?

☐ A. $y > -x + 2$

☐ B. $y < -x + 2$

☐ C. $y \geq -x + 2$

☐ D. $y \leq -x + 2$

11) Comparison of graphs: Line A passes through origin with slope 2. Line B crosses y -axis at -3 with slope 1. At $x = 4$, which is higher?

☐ A. Line A

☐ B. Line B

☐ C. Both equal

☐ D. Cannot determine



1) Which is the best estimate of $\sqrt{7}$?

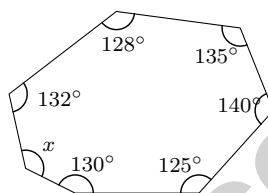
☐ A. 2.1

☐ C. 3.5

☐ B. 7.0

☐ D. 2.6

2) A gift box in the shape of a triangular pyramid has a right-triangular base with legs 5 in and 12 in. The pyramid is 4 in tall. What is the volume?

☐ A. 20 in³
☐ C. 40 in³
☐ B. 30 in³
☐ D. 60 in³


3)

A heptagon has six interior angles: 130° , 125° , 140° , 135° , 128° , 132° . Find the seventh angle.

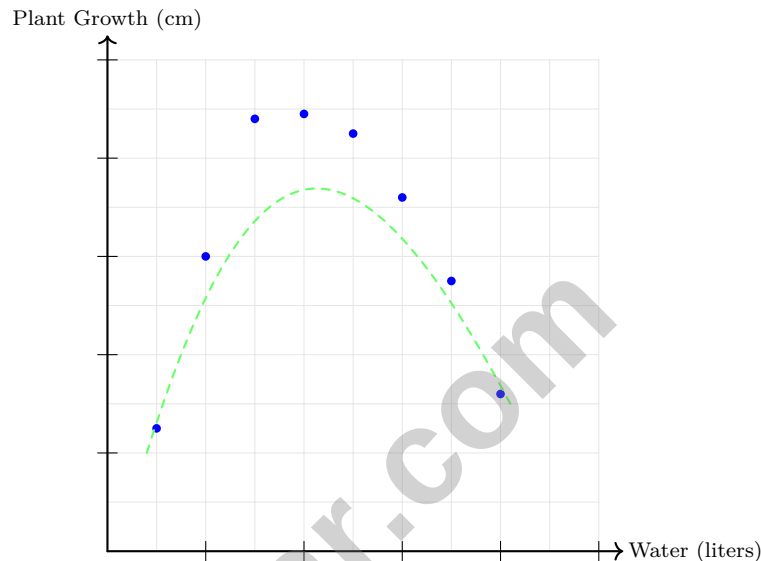
☐ A. 100°
☐ C. 110°
☐ B. 105°
☐ D. 115°

4) Use the table to find the value of x if $f(x) = 7$.

x	0	1	2	3
$f(x)$	1	3	5	7



- 5) A scatter plot shows plant growth (cm) versus amount of water given (liters) over 8 weeks. The first 3 liters produce rapid growth; beyond 3 liters, additional water causes little additional growth, then declining growth past 5 liters (from overwatering). This pattern is best described as:



- ☐ A. Negative linear correlation ☐ C. Nonlinear: increasing then decreasing (inverted parabola)
☐ B. Perfect positive correlation ☐ D. No correlation
- 6) A plant height model is $h = 3t + 8$, where h is height in inches and t is time in weeks. If the data only covers weeks 1 through 10, would predicting the height at week 15 be interpolation or extrapolation?

- ☐ A. Interpolation, because 15 is within the range ☐ C. Interpolation, because we can always predict
☐ B. Neither, because the model breaks down ☐ D. Extrapolation, because 15 is outside the data range



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- 1) A square pyramid has a base edge of 2.5 m and a height of 9.6 m. What is its volume?
(Use $2.5^2 = 6.25$.)

☐ A. 20 m^3 ☐ C. 40 m^3
☐ B. 30 m^3 ☐ D. 50 m^3

- 2) A rectangular pyramid (not square) has a rectangular base with dimensions 5 m $\times$ 3 m. The slant heights are 8 m (for the pair of triangular faces on the longer base edges) and 7 m (for the pair on the shorter edges). What is the lateral surface area?

☐ A. $40 + 30 = 70 \text{ m}^2$ ☐ C. 100 m^2
☐ B. $2 \times \frac{1}{2}(5)(8) + 2 \times \frac{1}{2}(3)(7) = 61 \text{ m}^2$ ☐ D. 120 m^2

- 3) A cone and a cylinder have the same radius r and height h . How do their volumes compare?

☐ A. Cone volume = Cylinder volume ☐ D. Cone volume = $3 \times$ Cylinder volume
☐ B. Cone volume = $\frac{1}{3}$ Cylinder volume
☐ C. Cone volume = $\frac{1}{2}$ Cylinder volume

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

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

- 5) A student has 45 points and earns 5 points per quiz. How many quizzes are needed to reach at least 70 points?



- 6) Using the equation $y = 3x - 5$, complete the table:

x	0	2	5
y	?	?	?

What is the sum of the three y values?

- ☐ A. 6 ☐ C. 20
☐ B. 15 ☐ D. 25
- 7) What two positive integers multiply to 21 and add to 10?

- 8) What is the image of the point $(0, -7)$ after a reflection across the line $y = x$?

- ☐ A. $(0, 7)$ ☐ C. $(-7, 0)$
☐ B. $(7, 0)$ ☐ D. $(0, -7)$
- 9) A transversal intersects two parallel lines. One of the angles formed is 123° . What is the measure of the adjacent angle on the same side of the transversal?
- ☐ A. 57° ☐ C. 180°
☐ B. 123° ☐ D. 246°
- 10) The distance from $(0, 0)$ to a point on the coordinate plane is $\sqrt{50}$ units. Which coordinates could this point have?
- ☐ A. $(5, 5)$ ☐ C. $(5, 2)$
☐ B. $(7, 2)$ ☐ D. $(3, 4)$



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Arkansas ATLAS 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 Arkansas ATLAS practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** (8.FN.2) The y -intercept is where the line crosses the y -axis, at point $(0, -1)$.
- 2) **Choice D is correct.** (8.GM.10) A full 360° rotation completes one full turn, bringing the figure back unchanged. This is the identity transformation.
- 3) **Choice D is correct.** (8.GM.1) Monthly rate: $18\%/12 = 1.5\%$. Month 1: $800 \times 0.015 = \$12$. Month 2: $812 \times 0.015 = \$12.18$. Month 3 uses the new balance, about $\$824.18$, so the interest is $824.18 \times 0.015 \approx \12.36 .
- 4) **Choice C is correct.** (8.NCC.7) Area = 361, so $s = \sqrt{361} = 19$ cm. Perimeter = $4s = 4 \times 19 = 76$ cm.
- 5) **Choice D is correct.** (8.NCC.6) Multiply the coefficients and add the exponents: $(3 \times 2) \times 10^{4+5} = 6 \times 10^9$.
- 6) **Choice D is correct.** (8.ALG.1) Subtract $3x$ and add 4: $5x = 15$. Divide by 5: $x = 3$.
- 7) **Choice A is correct.** (8.ALG.1) Subtract 8: $-3x < -6$. Divide by -3 (FLIP): $x > 2$.
- 8) **The correct answer is -2 .** (8.NCC.3) With the same coefficient, the smallest power has the smallest exponent: -2 .
- 9) **Choice A is correct.** (8.ALG.1) FOIL: $(x+7)(x-1) = x^2 - x + 7x - 7 = x^2 + 6x - 7$.
- 10) **Choice B is correct.** (8.GM.6) DASHED line means $>$ or $<$. Shading BELOW means $y <$. Combined: $y < -x + 2$.
- 11) **Choice A is correct.** (8.FN.4) $A(4) = 2(4) = 8$. $B(4) = 1(4) - 3 = 1$. Since $8 > 1$, Line A is higher.
- 12) **Choice B is correct.** (8.FN.3) Constant second differences indicate a quadratic (degree-2 polynomial) function, which is nonlinear.
- 13) **Choice C is correct.** (8.FN.4) Line 1 slope: $\frac{5-1}{4-0} = 1$. Line 2 slope: $\frac{6-2}{4-0} = 1$. Same slope; different intercepts.
- 14) **Choice A is correct.** (8.GM.10) Reverse the translation: $(x, y) \rightarrow (x+6, y-4)$. So $P = (1+6, 8-4) = (7, 4)$.
- 15) **Choice B is correct.** (8.FN.7) Alternate interior angles are on opposite sides of the transversal and between the parallel lines.
- 16) **Choice D is correct.** (8.SP.2) Relative frequency among dine-in orders: $\frac{108}{180} = 0.60$. This is a row-conditional frequency.
- 17) **Choice D is correct.** (8.NCC.1) $\pi \approx 3.14$ and $\sqrt{5} \approx 2.24$, so $3.14 + 2.24 = 5.38 \approx 5.4$.
- 18) **Choice D is correct.** (8.NCC.3) Negative exponent flips the fraction: $\left(\frac{1}{3}\right)^{-2} = \left(\frac{3}{1}\right)^2 = 3^2 = 9$.
- 19) **The correct answer is A,B.** (8.GM.3, 8.GM.4) A: $3^2 + 4^2 = 9 + 16 = 25 = 5^2$ ✓. B: $5^2 + 12^2 = 25 + 144 = 169 = 13^2$ ✓. C: $36 + 49 = 85 \neq 64$. D: $49 + 576 = 625 \neq 676$. E: $64 + 100 = 164 \neq 144$.
- 20) **Choice C is correct.** (8.FN.1) Slope $k = \frac{5}{5} = 1$. The line has a 45-degree angle, so $y = x$.
- 21) **The correct answer is 7.1.** (8.NCC.5) Since $7^2 = 49$ and $7.1^2 = 50.41$, we have $\sqrt{50}$ between 7.0 and 7.1, closer to 7.1. More precisely, $7.07^2 \approx 49.98 \approx 50$. To the nearest tenth, $\sqrt{50} \approx 7.1$.
- 22) **Choice D is correct.** (8.ALG.3) Set the expressions equal: $\frac{1}{3}x + 2 = -\frac{2}{3}x + 5$. Add $\frac{2}{3}x$ to both sides: $x + 2 = 5$, so $x = 3$. Then $y = \frac{1}{3}(3) + 2 = 3$. Solution: $(3, 3)$.
- 23) **The correct answer is $\frac{37}{300}$.** (8.SP.2) Set $x = 0.12\bar{3} = 0.12333\dots$. Then $100x = 12.\bar{3}$ and $1000x = 123.\bar{3}$. Subtracting: $900x = 111$, so $x = \frac{111}{900} = \frac{37}{300}$.
- 24) **Choice C is correct.** (8.FN.3) A point has one x -value with one y -value, so it passes the vertical line test. A vertical line is not a function (fails VLT). Circles and ellipses fail the VLT.
- 25) **Choice B is correct.** (8.FN.9) The height increases initially (upward throw) then decreases (falling back). A parabola captures this curved motion better than a straight line. Option A is a line, C is constant, and D is always decreasing.
- 26) **Choice C is correct.** (8.GM.6) Using the Pythagorean Theorem on Triangle 1: $c^2 = 6^2 + 8^2 = 36 + 64 = 100$, so $c = 10$ m. Triangle 2 is congruent, so its hypotenuse is also 10 m.
- 27) **Choice B is correct.** (8.GM.4) When corresponding angles are not congruent, the lines are not parallel. Corresponding angles are congruent only when lines are parallel.
- 28) **The correct answer is $(6, 7)$.** (8.SP.2) $6^2 = 36$ and $7^2 = 49$. Since $36 < 45 < 49$, we have $6 < \sqrt{45} < 7$.
- 29) **Choice C is correct.** (8.GM.6) Two semicircles form one complete circle. Area = $\pi r^2 = 3.14 \times 3^2 = 28.26 \text{ m}^2$.



Hi, Thoughtful Reader!

◇ A strong Grade 8 test taker is also a strong reader. You practiced turning words, tables, graphs, and diagrams into math decisions. ◇

★ **Remember this:** That skill grows each time you slow down enough to ask what the problem is really telling you and what it is really asking for. This version gave you 9 opportunities to rehearse test-day habits. ★

Reader-to-Solver Skills

- **Circle the Ask:** Make the target visible.
- **Sort Information:** Separate useful facts from extra words.
- **Match Units:** Keep quantities connected.
- **Answer Fully:** Include the value and what it means.

Grade 8 test-day tip: After solving, reread only the final question. Make sure your answer matches it exactly.

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

Jay Daie

Your Reading-and-Math Helper

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GRADE

8

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Strengthen understanding and feel prepared for test day.

COVERS ALL ESSENTIAL TOPICS

- | | |
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| ✓ Expressions & Equations | ✓ Pythagorean Theorem |
| ✓ Ratios & Proportional Relationships | ✓ Volume & Surface Area |
| ✓ Linear Equations | ✓ Transformations |
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