

8

Arkansas

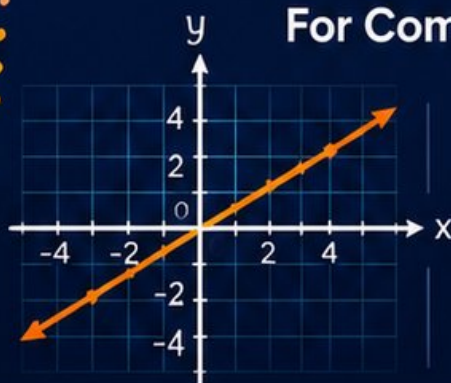
ATLAS

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs



$$A = \pi r^2$$

$$C = 2\pi r$$

$$V = \frac{1}{3}\pi r^2 h$$



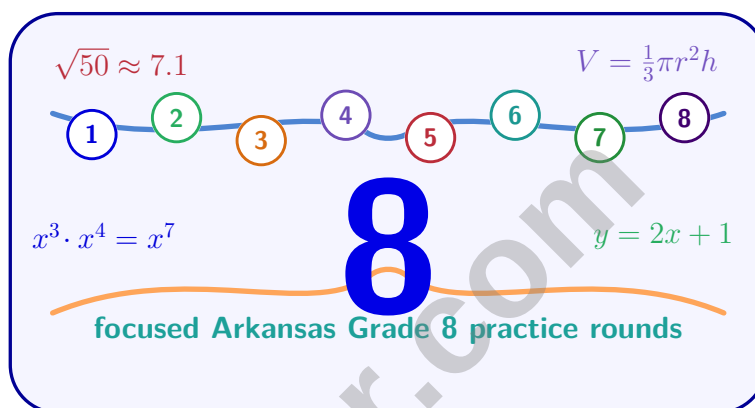
$$V = \frac{1}{3}b^2 h$$

**8** PRINTED TESTS**2** ONLINE TESTS

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

8 Arkansas ATLAS Grade 8 Math Practice Tests

Standards-Aligned Arkansas Review for Equations, Functions, and Geometry



Eight 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!

Eight focused rounds for sharper ATLAS math thinking

This book gives you eight 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

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.

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?

Eight ATLAS 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) When point (a, b) is rotated 180° about the origin, it maps to:

☐ A. (a, b)

☐ C. (b, a)

☐ B. $(-a, -b)$

☐ D. $(-b, -a)$

2) A point $P(3, 7)$ moves to $P'(-2, 4)$. What is the translation vector?

3) In a study of 420 students and their study habits, 252 use study groups and 168 study alone. Of those using study groups, 189 report higher grades. What is the relative frequency of higher-grade students among study-group users?

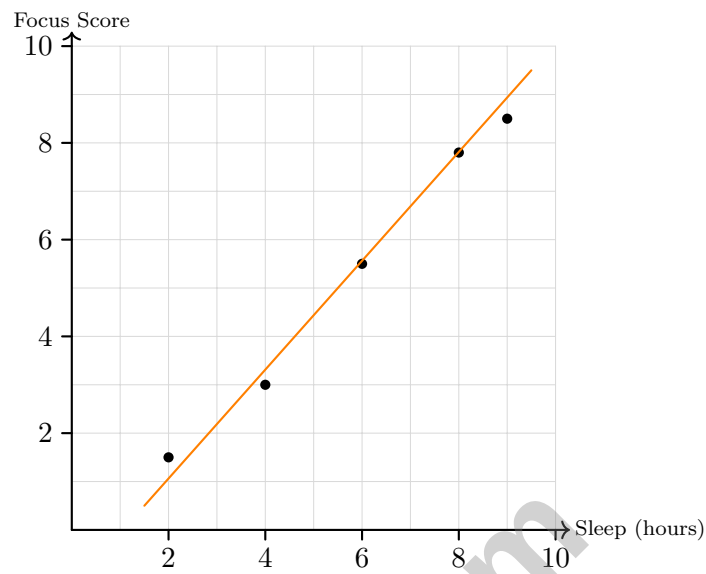
☐ A. 0.45

☐ C. 0.75

☐ B. 0.60

☐ D. 0.85





4)

Based on the trend line, if a student sleeps 7 hours, what is the predicted focus score?

- ☐ A. Approximately 5
- ☐ B. Approximately 6
- ☐ C. Approximately 7
- ☐ D. Approximately 8

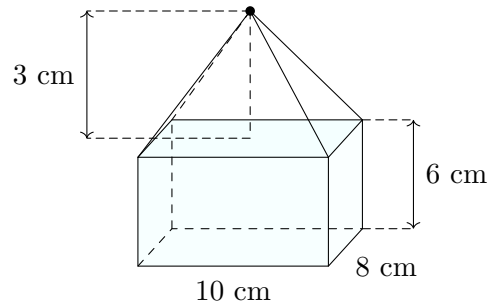
5) What does $3!$ equal?

- ☐ A. $3 + 2 = 5$
- ☐ B. $3 \times 2 \times 1 = 6$
- ☐ C. $3^3 = 27$
- ☐ D. $\frac{3}{2} = 1.5$

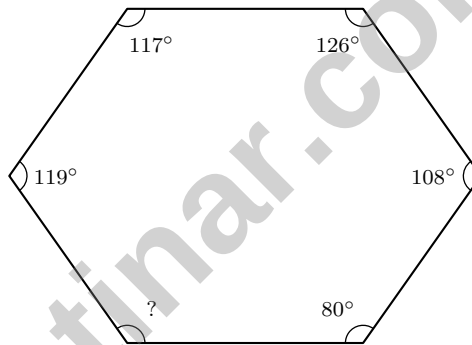


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- 6) A rectangular prism with base 10 cm by 8 cm and height 6 cm is topped with a pyramid (same base, height 3 cm). What is the total volume?



- ☐ A. 480 cm^3 ☐ C. 640 cm^3
☐ B. 560 cm^3 ☐ D. 800 cm^3

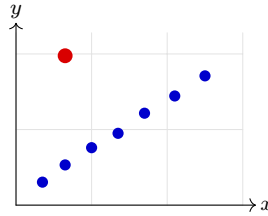


7)

A hexagon has five interior angles: 80° , 108° , 126° , 117° , 119° . Find the sixth angle.

- ☐ A. 165° ☐ C. 175°
☐ B. 170° ☐ D. 180°



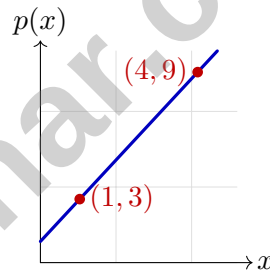


1)

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 |

2) Function p with graph through $(1, 3)$ and $(4, 9)$ (slope shown visually). Function q : “starts at 5, decreases by 2 each unit.” Which has a positive slope?

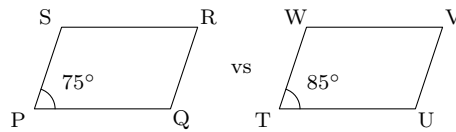


- | | |
|--------------------------------------|---|
| ☐ A. Only p | ☐ C. Both p and q |
| ☐ B. Only q | ☐ D. Neither p nor q |



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- 3) Quadrilateral PQRS is congruent to quadrilateral TUVW by a specific correspondence. If $\angle P = 75^\circ$ and $\angle T = 85^\circ$, what is the error in claiming that PQRS is congruent to TUVW?

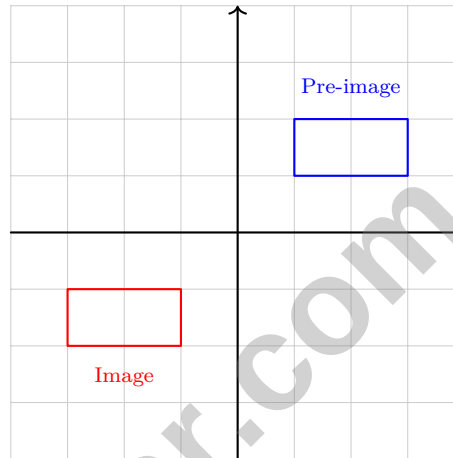


- ☐ A. Congruent figures only need equal corresponding sides
 ☐ C. There is no error; angles can be different
☐ B. The correspondence is $P \leftrightarrow T$, but angles don't match
 ☐ D. The figures have different numbers of sides
- 4) The elevation rises 500 feet over a horizontal distance of 2000 feet. What is the slope?

- 5) A transversal cuts two parallel lines. One of the eight angles formed is 157° . How many of the eight angles measure 157° ?
- ☐ A. 1
 ☐ C. 4
☐ B. 2
 ☐ D. 8
- 6) A retail store analyzes 500 transactions. 350 included a sale item and 150 did not. Of those with a sale item, 245 were from returning customers. What relative frequency (as a percent) of transactions with sale items are from returning customers?
- ☐ A. 49%
 ☐ C. 70%
☐ B. 56%
 ☐ D. 84%



- 1) Among 180 volunteers at an event, 108 are adults and 72 are youth. Of the adults, 81 worked the morning shift. What is the relative frequency of morning-shift workers among adults?

☐ A. 0.45☐ C. 0.75☐ B. 0.60☐ D. 0.85

2)

Looking at the two rectangles, which transformation was applied?

☐ A. Reflection across the x -axis☐ C. 180° rotation about the origin☐ B. Reflection across the y -axis☐ D. Dilation by scale factor 2

- 3) Simplify: $\sqrt{36} + \sqrt[3]{8}$

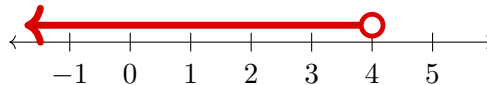


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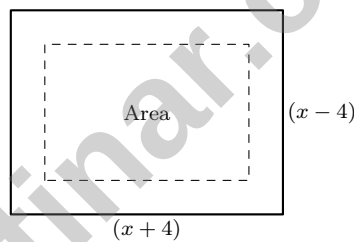
- 4) A recent graduate has a monthly gross income of \$3,000. She budgets: rent \$900, food \$400, transportation \$300, and savings \$200. How much is left for discretionary spending?

- ☐ A. \$200
☐ B. \$2,500
☐ C. \$1,800
☐ D. \$1,200

- 5) Which number line shows the solution to $3 - 2x > -5$?



- ☐ A. Closed circle at 4, ray left
☐ B. Open circle at 4, ray right
☐ C. Closed circle at 4, ray right
☐ D. Open circle at 4, ray left
- 6) The area of a rectangle with dimensions $(x + 4)$ and $(x - 4)$ is shown below.



Which expression represents the area?

- ☐ A. $x^2 - 8$
☐ B. $x^2 + 8x - 16$
☐ C. $x^2 - 16$
☐ D. $2x - 16$



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 B is correct.** **(8.GM.10)** A 180° rotation about the origin maps $(x, y) \rightarrow (-x, -y)$. Distractor E is reflection across the x -axis.
- 2) **The correct answer is $(-5, -3)$.** **(8.GM.10)** Subtract coordinates: $(-2, 4) - (3, 7) = (-5, -3)$.
- 3) **Choice C is correct.** **(8.SP.2)** Relative frequency of higher grades among study-group users: $\frac{189}{252} = 0.75$.
- 4) **Choice C is correct.** **(8.SP.2)** Reading from the trend line at $x = 7$, the corresponding y -value is just under 7, so the best estimate is approximately 7.
- 5) **Choice B is correct.** **(8.SP.4)** The factorial symbol $!$ means multiply all whole numbers from that number down to 1. So $3! = 3 \times 2 \times 1 = 6$.
- 6) **Choice B is correct.** **(8.GM.1)** Prism volume: $10 \times 8 \times 6 = 480 \text{ cm}^3$. Pyramid volume: $\frac{1}{3} \times (10 \times 8) \times 3 = 80 \text{ cm}^3$. Total volume is $480 + 80 = 560 \text{ cm}^3$.
- 7) **Choice B is correct.** **(8.GM.1)** Sum of known: $80 + 108 + 126 + 117 + 119 = 550^\circ$. Sixth angle: $720 - 550 = 170^\circ$.
- 8) **Choice B is correct.** **(8.SP.1)** A downward trend (one variable increases while the other decreases) indicates negative correlation. In this case, more TV time is associated with less exercise time.
- 9) **Choice A is correct.** **(8.SP.5)** $3 \times 4 \times 2 = 24$ different combinations.
- 10) **Choice D is correct.** **(8.NCC.5)** By definition, any repeating decimal can be expressed as a fraction $\frac{a}{b}$ of two integers. For example, $0.142857 = \frac{1}{7}$. Terminating decimals also have fractional forms, but the defining property is the repeating pattern, which guarantees rationality.
- 11) **Choice C is correct.** **(8.NCC.3)** Divide: $\frac{6 \times 10^8}{3 \times 10^6} = \frac{6}{3} \times 10^{8-6} = 2 \times 10^2 = 200$.
- 12) **Choice D is correct.** **(8.SP.2)** Let $x = 0.\overline{18}$. Then $100x = 18.\overline{18}$. Subtracting: $99x = 18$, so $x = \frac{18}{99} = \frac{2}{11}$.
- 13) **Choice C is correct.** **(8.SP.2)** A: $3 \times 2 = 6$ (rational). B: $\sqrt{16} = 4$ (rational). C: $2\sqrt{3}$ is irrational. D: $4 \times 5 = 20$ (rational).
- 14) **Choice D is correct.** **(8.NCC.7)** Volume of a cube $= e^3 = 4^3 = 64$ cubic units.
- 15) **Choice C is correct.** **(8.NCC.6)** $5 \times 10^3 \times 8 = (5 \times 8) \times 10^3 = 40 \times 10^3 = 4 \times 10^4$.
- 16) **Choice D is correct.** **(8.FN.2)** Using point-slope form, then converting: $5 = -3(2) + b$ gives $b = 11$, so $y = -3x + 11$.
- 17) **Choice D is correct.** **(8.ALG.1)** Subtract 7: $-4y = 8$. Divide by -4 : $y = -2$.
- 18) **The correct answer is A, C.** **(8.GM.6)** Congruent figures have equal corresponding sides (A) and equal corresponding angles (C). Color (B) is irrelevant to congruence. Orientation (D) can change through rigid motions. E is false because congruent figures always have equal perimeters.
- 19) **Choice C is correct.** **(8.FN.3)** $y = 7 + 2x$ is in the form $y = mx + b$ with $m = 2$ and $b = 7$. The other options have squared terms, square roots, or reciprocals.
- 20) **The correct answer is 41.** **(8.GM.3, 8.GM.4)** Using the Pythagorean Theorem: $9^2 + 40^2 = 81 + 1600 = 1681$, so $c = \sqrt{1681} = 41$ units (the 9-40-41 triple).
- 21) **Choice B is correct.** **(8.FN.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.
- 22) **Choice C is correct.** **(8.FN.7)** The third interior angle is $180 - 41 - 89 = 50^\circ$. The exterior angle is $180 - 50 = 130^\circ$ (or sum of remote interior angles: $41 + 89 = 130^\circ$).
- 23) **Choice D is correct.** **(8.NCC.1)** $\sqrt{3} \approx 1.73$, so $\sqrt{3} + 1 \approx 2.73$, which falls between 2 and 3. Distractors A, C, and D represent underestimation, overestimation, and far overestimation of $\sqrt{3}$.
- 24) **Choice D is correct.** **(8.GM.1)** Interest: $I = 4000 \times 0.03 \times 3 = \360 . Final: $4000 + 360 = \$4,360$.
- 25) **Choice C is correct.** **(8.NCC.3)** $(2^5)^2 = 2^{5 \cdot 2} = 2^{10}$. The other choices do not simplify to 2^{10} .
- 26) **Choice C is correct.** **(8.FN.1)** Unit rate $k = \frac{48}{2} = 24$ bacteria per hour.
- 27) **The correct answer is 98.** **(8.GM.4)** Adjacent angles on a line are supplementary, so $180 - 82 = 98$.



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Hi, Grade 8 Math Star!

◇ You finished this practice set with real effort. Grade 8 math asks you to connect ideas, explain your thinking, and stay steady through multi-step problems. ◇

★ **Remember this:** Every page you completed helped build stronger habits: reading carefully, choosing a method, showing work, and checking whether the answer makes sense. You practiced across 8 full Grade 8 practice tests, and that repeated effort matters. ★

What You Built

- **Focus:** You stayed with challenging questions.
- **Accuracy:** You learned to slow down when details matter.
- **Reasoning:** You practiced explaining why a method works.
- **Readiness:** You are more prepared than when you started.

Grade 8 test-day tip: Before test day, review the questions that made you pause. Those are the best teachers.

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

Jay Daie

Your Grade 8 Math Friend

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?



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Questions designed to cover essential Grade 8 math standards.



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Engaging problems that connect math to everyday life.



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BUILD SKILLS & BOOST CONFIDENCE

Strengthen understanding and feel prepared for test day.



COVERS ALL ESSENTIAL TOPICS

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- ✓ Expressions & Equations
- ✓ Ratios & Proportional Relationships
- ✓ Linear Equations
- ✓ Functions
- ✓ Geometry
- ✓ Measurement & Data
- ✓ Statistics & Probability
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Better Results.