

6 Arkansas ATLAS

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



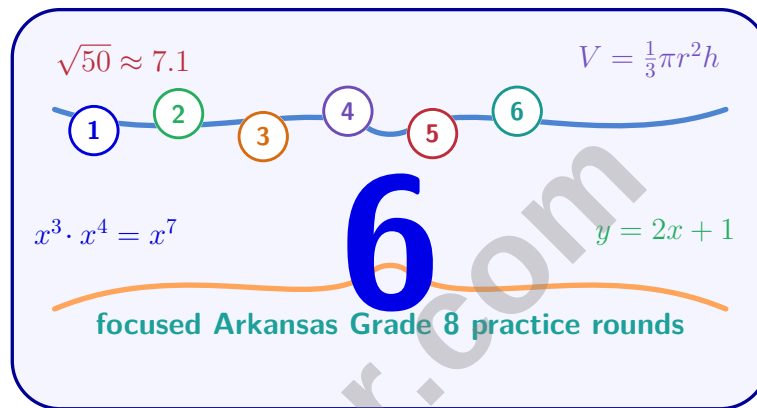
2 ONLINE
TESTS



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

6 Arkansas ATLAS Grade 8 Math Practice Tests

Targeted Grade 8 Math Prep with Review, Answer Keys, and Explanations



Six 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!

Six focused rounds for sharper ATLAS math thinking

This book gives you six 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 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.

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?

Six ATLAS 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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1) Factor completely: $5x^2 + 35x + 50$.

☐ A. $5(x^2 + 7x + 10)$

☐ C. $5(x + 2)(x + 5)$

☐ B. $(5x + 5)(x + 10)$

☐ D. $5(x + 10)(x + 1)$

Numbers	
Rational	Irrational
$\frac{1}{2}, 0.5$	$\sqrt{2}, \pi$

2)

Which number should be placed in the Rational section?

☐ A. $\sqrt{13}$

☐ C. $-\frac{9}{2}$

☐ B. $2 + \sqrt{5}$

☐ D. $\sqrt{\pi}$

3) To the nearest tenth, $\sqrt{35} \approx ?$

☐ A. 5.7

☐ C. 6.1

☐ B. 6.3

☐ D. 5.9

4) Which estimate has the largest error (furthest from the true value)?

Expression	Estimate
$\sqrt{9}$	3
$\sqrt{10}$	3.2
$\sqrt{11}$	3.3
$\sqrt{12}$	3.6

☐ A. $\sqrt{9} = 3$

☐ C. $\sqrt{11} \approx 3.3$

☐ B. $\sqrt{10} \approx 3.2$

☐ D. $\sqrt{12} \approx 3.6$



5) A payday loan charges \$15 for every \$100 borrowed for 2 weeks. What is the APR equivalent?

☐ A. 15%

☐ C. 390%

☐ B. 30%

☐ D. 780%

6) Which pair of expressions is equivalent?

Expression 1	Expression 2
A.	$x^2 \cdot x^3$ and x^6
B.	$(x^3)^2$ and x^5
C.	$\frac{x^6}{x^2}$ and x^4
D.	$x^4 + x^2$ and x^6

☐ A. Option A

☐ C. Option C

☐ B. Option B

☐ D. Option D

7) What is $\sqrt[3]{125}$?

☐ A. 25

☐ C. 15

☐ B. 11

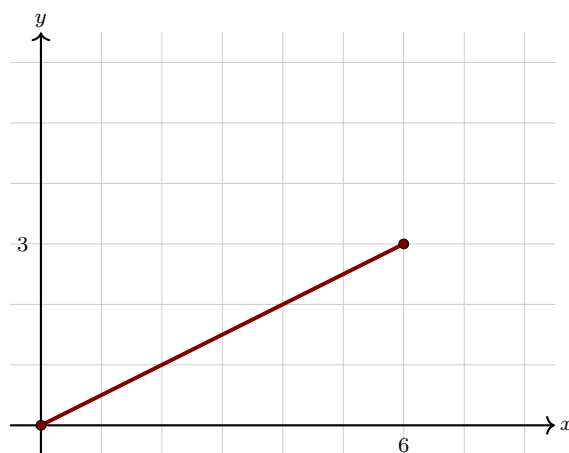
☐ D. 5

8) What power of 10 completes the conversion $304,000,000 = 3.04 \times ?$

☐ A. 10^7
☐ C. 10^9
☐ B. 10^6
☐ D. 10^8


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9)



What is the unit rate shown in the graph?

☐ A. 3 units of y per unit of x
☐ C. $\frac{1}{2}$ unit of y per unit of x
☐ B. 2 units of y per unit of x
☐ D. 6 units of y per unit of x

- 10) A scatter plot shows the number of hours a student studies versus their test score. The trend line has equation $y = 5x + 60$. If a student studies for 6 hours, what is the predicted test score?

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

☐ A. $(1, -3)$
☐ C. $(3, 1)$
☐ B. $(2, -1)$
☐ D. $(4, 3)$


1)

Decimal Types

Terminating	Repeating
0.5, 0.75	0.12

Which decimal is rational?

☐ A. 0.123456... (non-repeating)☐ C. 0.454545... (repeating)☐ B. π ☐ D. e (Euler's number)

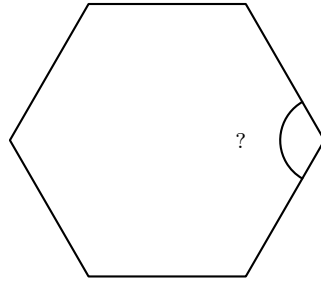
2) Triangle A has sides 5, 12, 13. Triangle B has sides 7.5, 18, 19.5. Triangle C has sides 10, 24, 26. Which triangles are similar to Triangle A ?

☐ A. Only Triangle B ☐ C. Both Triangle B and C ☐ B. Only Triangle C ☐ D. Neither Triangle B nor C

3) A right triangle has a hypotenuse of 25 meters and one leg of 7 meters. What is the length of the other leg?



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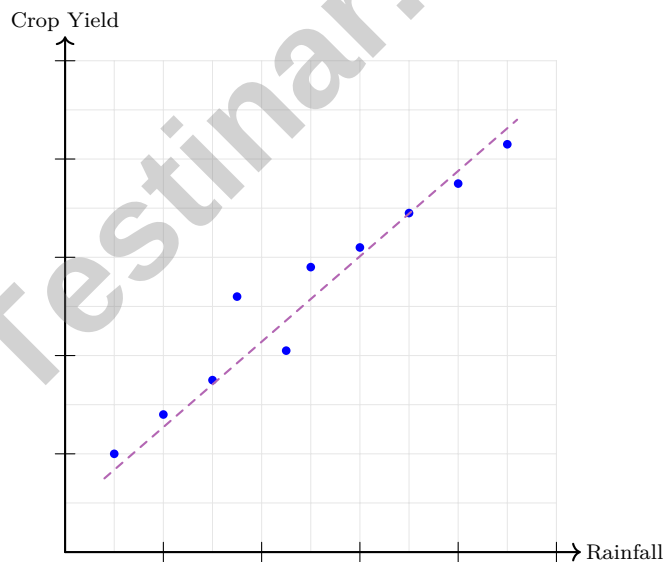


4)

A regular hexagon is shown with one interior angle marked. What is the measure of the marked interior angle?

☐ A. 100°
☐ C. 120°
☐ B. 110°
☐ D. 130°

- 5) A scatter plot of rainfall versus crop yield shows $r = 0.68$. A farmer reads this and concludes: “**More rain always means higher yields.**” Is this conclusion reasonable?



- | | |
|---|--|
| ☐ A. No; correlation of 0.68 indicates a moderate relationship, not always | ☐ C. No; rainfall has no effect on yields at all |
| ☐ B. Yes; positive correlation means the relationship always holds | ☐ D. Yes; any positive correlation guarantees the outcome |



1) If $f(x) = x^2 - 4x + 3$, what is $f(2)$?

☐ A. -1

☐ C. 3

☐ B. 0

☐ D. 7

2) A table shows that when $x = 1$, $y = 7$ and when $x = 5$, $y = 23$. What is the slope?

x	1	5
y	7	23

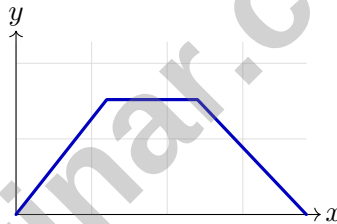
☐ A. 4

☐ C. $\frac{1}{4}$

☐ B. 8

☐ D. 16

3) A graph of a function shows distance from home (in miles) vs. time. The graph rises, then is flat, then falls. Which real-world scenario matches?



☐ A. Drive somewhere, stop, then drive home

☐ C. Stay home, then drive faster

☐ B. Walk faster and faster until stopping

☐ D. Drive home directly from work

4) Two angles in a triangle measure 29° and 71° . Find the third angle.

☐ A. 42°

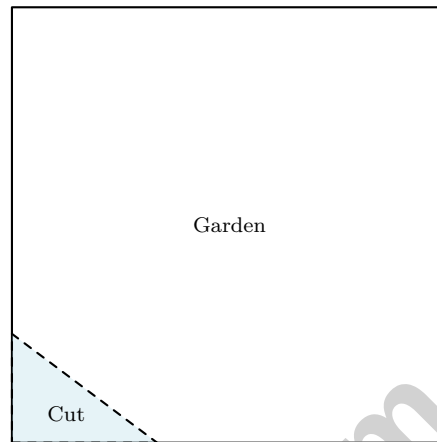
☐ C. 80°

☐ B. 70°

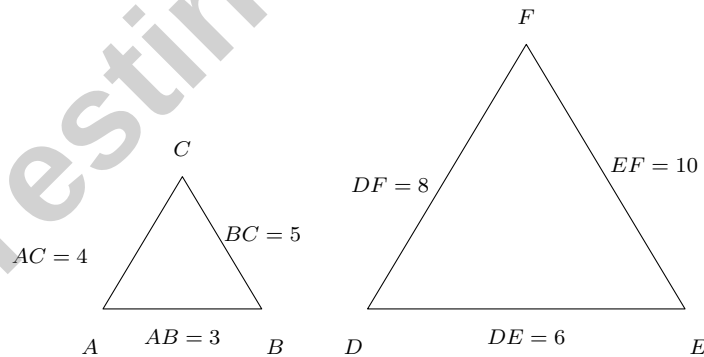
☐ D. 100°



- 5) A garden has the shape of a square with side length 12 m with a triangular corner cut out (base 4 m, height 3 m). What is the remaining area of the garden?



- ☐ A. 138 m^2
☐ C. 141 m^2
☐ B. 140 m^2
☐ D. 144 m^2
- 6) Two triangles are shown below. Triangle ABC has sides 3, 4, 5. Triangle DEF has sides 6, 8, 10. Are these triangles similar?



- ☐ A. No, because the sides are different lengths
 ☐ C. No, the angles are not equal
☐ B. Yes, each side of DEF is twice the corresponding side of ABC
☐ D. Cannot be determined



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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 C is correct.** **(8.ALG.1)** GCF is 5: $5x^2 + 35x + 50 = 5(x^2 + 7x + 10) = 5(x + 2)(x + 5)$.
- 2) **Choice C is correct.** **(8.NCC.5)** Only $-\frac{9}{2}$ is rational (a fraction of two integers). The others are irrational: $\sqrt{13}$ is a non-perfect-square root, $2 + \sqrt{5}$ is a sum involving an irrational, and $\sqrt{\pi}$ is the root of an irrational.
- 3) **Choice D is correct.** **(8.SP.2)** $5.9^2 = 34.81$ and $6^2 = 36$. Since 35 is closer to 34.81 than to 36, $\sqrt{35} \approx 5.9$.
- 4) **Choice D is correct.** **(8.NCC.1)** $\sqrt{9} = 3$ (exact), $\sqrt{10} \approx 3.162$ (error 0.04), $\sqrt{11} \approx 3.317$ (error 0.02), $\sqrt{12} \approx 3.464$ (error 0.14). Option D has error of 0.14, much larger than others.
- 5) **Choice C is correct.** **(8.GM.1)** Rate per 2 weeks: $\$15 / \$100 = 15\%$ per 2 weeks. There are $52 \text{ weeks} / 2 = 26$ two-week periods in a year. APR: $0.15 \times 26 = 3.9 = 390\%$.
- 6) **Choice C is correct.** **(8.NCC.3)** Check each: (A) $x^5 \neq x^6$; (B) $x^6 \neq x^5$; (C) $x^4 = x^4$ ✓; (D) addition, not a law.
- 7) **Choice D is correct.** **(8.NCC.7)** $5 \times 5 \times 5 = 125$, so $\sqrt[3]{125} = 5$.
- 8) **Choice D is correct.** **(8.NCC.3)** Moving the decimal 8 places left to get 3.04 gives the exponent 8.
- 9) **Choice C is correct.** **(8.FN.1)** Unit rate is slope: $\frac{3}{6} = \frac{1}{2}$. For every 1 unit of x , y increases by $\frac{1}{2}$.
- 10) **The correct answer is 90.** **(8.SP.2)** Substitute $x = 6$: $y = 5(6) + 60 = 30 + 60 = 90$.
- 11) **Choice A is correct.** **(8.ALG.3)** Substitute $y = 2x - 5$ into $4x - y = 7$: $4x - (2x - 5) = 7$, so $2x + 5 = 7$ and $x = 1$. Then $y = 2(1) - 5 = -3$, so the solution is $(1, -3)$.
- 12) **Choice C is correct.** **(8.FN.3)** A relation is a function only if each input has exactly one output. If input 5 appears three times but with the same output, it is still a function (just redundantly listed).
- 13) **Choice B is correct.** **(8.FN.3)** $y = 3x - \frac{1}{5}$ is in the form $y = mx + b$ with $m = 3$ and $b = -\frac{1}{5}$, so it is linear.
- 14) **Choice D is correct.** **(8.FN.8)** Change in altitude is -2000 feet over 5 minutes. Slope = $\frac{-2000}{5} = -400$ feet per minute.
- 15) **Choice C is correct.** **(8.NCC.6)** Let p = pennies, n = nickels, and d = dimes. Then $n = 2p$ and $d = 2n = 4p$. The total is $p + 2p + 4p = 7p = 70$, so $p = 10$.
- 16) **Choice B is correct.** **(8.FN.1)** Locate $x = -1$ and read the corresponding y -value from the graph: $y = 2$. So $f(-1) = 2$.
- 17) **Choice B is correct.** **(8.GM.1)** Base area = $4^2 = 16 \text{ cm}^2$. Four triangular faces each have area $\frac{1}{2}(4)(6) = 12 \text{ cm}^2$, so the lateral area is 48 cm^2 . Total surface area = $16 + 48 = 64 \text{ cm}^2$.
- 18) **The correct answer is A,C.** **(8.GM.11)** Correct: (A) All linear measurements (sides, perimeter) are multiplied by 2.5. (C) Area is multiplied by $(2.5)^2 = 6.25$. Incorrect: (B) Angles are congruent in dilation, not scaled. (D) Perimeter is multiplied, not divided, by 2.5. (E) Dilation preserves shape; polygon type does not change.
- 19) **The correct answer is 0.7.** **(8.SP.5)** Total: 10 marbles. Not blue: $5 + 2 = 7$. $P(\text{not blue}) = \frac{7}{10} = 0.7$.
- 20) **Choice A is correct.** **(8.GM.10)** 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.)
- 21) **Choice D is correct.** **(8.FN.2)** The y -intercept is the constant term b in $y = mx + b$, which is 4.
- 22) **The correct answer is 60.** **(8.SP.4)** Apply the Counting Principle: $3 \times 5 \times 4 = 60$ different sandwiches.
- 23) **Choice D is correct.** **(8.ALG.1)** A: Identity (infinitely many). B: Subtract $3x$: $4 = 7$ (false, no solution). C and D: Unique solutions.
- 24) **Choice C is correct.** **(8.ALG.1)** Solving $2x - 3 < 5$ gives $2x < 8$, so $x < 4$. Of the listed choices, only $x = 3$ satisfies the inequality.
- 25) **Choice A is correct.** **(8.GM.6)** Substitute $(0, 0)$: $2(0) + 3(0) = 0$ ✓. The origin is on the line.
- 26) **Choice A is correct.** **(8.GM.5)** $d = \sqrt{(7 - 0)^2 + (24 - 0)^2} = \sqrt{49 + 576} = \sqrt{625} = 25$.
- 27) **Choice C is correct.** **(8.GM.1)** Radius $r = 8 \text{ mm}$. $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 512 = 2143.57 \text{ mm}^3$.
- 28) **Choice A is correct.** **(8.SP.6)** In $d = mt + b$ form, $m = 45$ is the slope. Here it represents speed: 45 miles per hour.



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Hi, Math Hero!

◇ This deep and steady book gave you six full Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. You showed up for Grade 8 practice again and again. That is what real growth looks like: steady effort, honest review, and a willingness to try. ◇

★ **Remember this:** A math hero is not someone who never misses a question. A math hero learns from the miss and comes back stronger. ★

Hero Habits

- **Courage:** You try problems that are not automatic.
- **Honesty:** You review what needs work.
- **Patience:** You let skills grow over time.
- **Pride:** You recognize the effort you gave.

Grade 8 test-day tip: Save one solved problem you are proud of. Looking back at progress helps motivation stay strong.

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

Jay Daie

Your Math Hero Guide

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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