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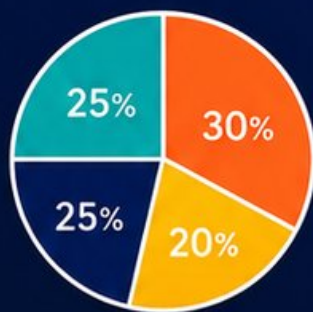
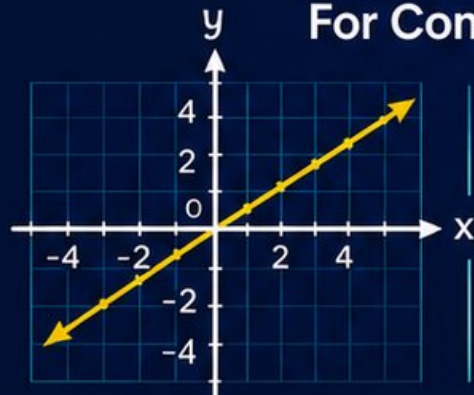
Arkansas
ATLAS

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

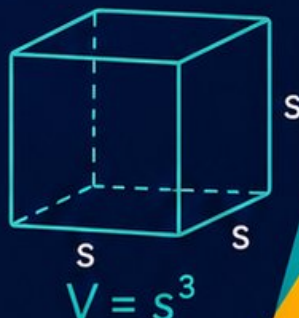


$$y = mx + b$$

$$2x - 3y = 6$$

$$\sqrt{x^2 + y^2}$$

$$A = bh$$

4 PRINTED
TESTS2 ONLINE
TESTS

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



4 Arkansas ATLAS Grade 8 Math Practice Tests

Four Standards-Aligned ATLAS Tests with Review and Explanations



Four 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!

Four focused rounds for sharper ATLAS math thinking

This book gives you four 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 four-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?

Four ATLAS tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Real numbers, exponents, scientific notation, equations, and careful reading.
Tests 3–4	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

Table of Contents

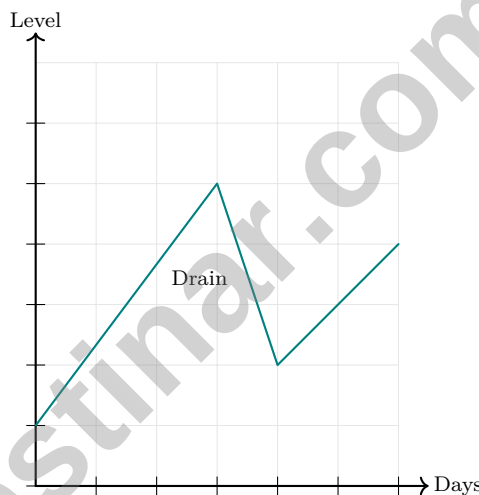
★ Practice Test 1	_____	14
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1) If an equation simplifies to $0 = 5$ after subtracting variables and constants from both sides, what does this tell you?

- ☐ A. The equation has exactly one solution
- ☐ B. The solution is $x = 0$
- ☐ C. The equation has infinitely many solutions
- ☐ D. The equation has no solution

2) To solve the system $y = 2x - 3$ and $y = -x + 6$, which method is most efficient?

- ☐ A. Elimination
- ☐ B. Graphing
- ☐ C. Substitution
- ☐ D. Guess and check



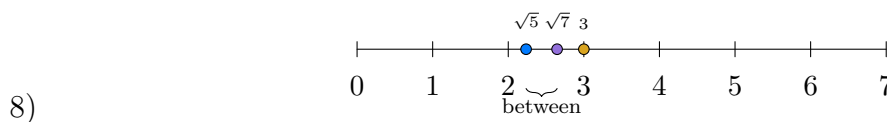
3)

A water tank fills, then drains, then fills again. Based on the graph:

- ☐ A. The tank drains from day 1 to day 3
- ☐ B. The tank drains from day 3 to day 3
- ☐ C. The tank drains from day 3 to day 4
- ☐ D. The tank never fills again after day 3



- 4) Two lines intersect and form four angles. If one angle measures 72° , what are the measures of the other three angles?
- ☐ A. $72^\circ, 72^\circ, 72^\circ$ ☐ C. $108^\circ, 108^\circ, 108^\circ$
☐ B. $72^\circ, 108^\circ, 108^\circ$ ☐ D. $90^\circ, 90^\circ, 90^\circ$
- 5) A data analyst fits two different trend lines to a scatter plot. Line A has MAD (mean absolute deviation of residuals) = 0.3, while Line B has MAD = 0.8. Which conclusion is justified?
- ☐ A. Line B is better because it has a higher MAD ☐ C. Both lines are equally good
☐ B. Line A is better because residuals are closer to zero ☐ D. We cannot compare lines using MAD alone
- 6) A point $Q(6, 8)$ is dilated to $Q'(3, 4)$. If the dilation center is the origin, what is the scale factor?
- ☐ A. 2 ☐ C. 3
☐ B. $\frac{1}{2}$ ☐ D. $\frac{1}{3}$
- 7) A business profit function is $P(x) = 50x - 200$, where x is the number of units sold. What is the profit when 10 units are sold?
- ☐ A. \$300 ☐ C. \$200
☐ B. \$250 ☐ D. \$500



Based on the number line, which statement is correct?

- ☐ A. $\sqrt{5}$ and $\sqrt{7}$ are both less than 1 ☐ C. 3 is irrational
☐ B. $\sqrt{7} > 3$ ☐ D. $2 < \sqrt{5} < \sqrt{7} < 3$

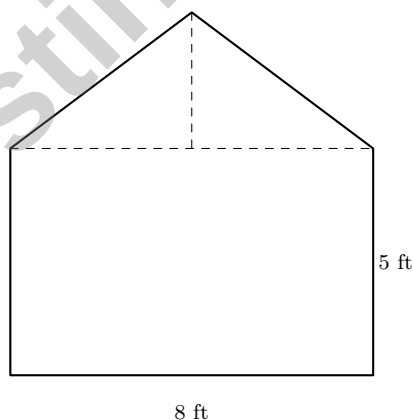


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- 9) How many ways can a principal select 2 teachers from a staff of 12 to attend a conference (where one is the lead attendee and one is the backup)?
- ☐ A. $\binom{12}{2} = 66$ ☐ C. $12^2 = 144$
☐ B. $12 \times 11 = 132$ ☐ D. $12!$
- 10) What is $0.3\overline{45}$ as a fraction?
- ☐ A. $\frac{345}{1000}$ ☐ C. $\frac{345}{999}$
☐ B. $\frac{3}{45}$ ☐ D. $\frac{342}{990} = \frac{19}{55}$
- 11) Which is the best estimate of $3\sqrt{5}$?
- ☐ A. 4.5 ☐ C. 6.7
☐ B. 6.0 ☐ D. 9.8
- 12) A laptop costs \$1,200 cash. The store's installment offer is \$110/month for 12 months. Which analysis correctly explains why someone might choose installments despite the extra cost?
- ☐ A. Installments save money (\$120 is refunded later) ☐ C. Installments are always cheaper than paying cash
☐ B. The store benefits, so customers should too ☐ D. The customer doesn't have \$1,200 cash now but can afford \$110/month
- 13) The number of stars in the observable universe is estimated at 10^{24} . Which is closest to this value?
- ☐ A. 1 trillion ☐ C. 1 quadrillion
☐ B. 1 sextillion ☐ D. 1 septillion



- 1) A student estimates $\sqrt{99} \approx 9.9$. Is this estimate above or below the actual value?
- ☐ A. Too high ☐ C. Exactly correct
☐ B. Cannot be determined ☐ D. Too low
- 2) A swimming pool is being drained. The water level drops $\frac{1}{2}$ foot every $\frac{1}{4}$ hour. What is the slope?
- ☐ A. -2 feet per hour ☐ C. $-\frac{1}{8}$ feet per hour
☐ B. 2 feet per hour ☐ D. $\frac{1}{8}$ feet per hour
- 3) A coffee shop has fixed costs of \$400 per day and variable costs of \$2 per cup sold. If cups sell for \$5 each, about how many cups must be sold to break even?
- ☐ A. 100 cups ☐ C. 134 cups
☐ B. 120 cups ☐ D. 160 cups
- 4) A garden is shaped like a pentagon composed of a rectangle (8 ft by 5 ft) with a triangle on top (base 8 ft, height 3 ft). What is the perimeter if all sides are connected?



- ☐ A. 28 ft ☐ C. 36 ft
☐ B. 32.5 ft ☐ D. 40 ft



5)

	H	T
1	H1	T1
2	H2	T2

A coin is flipped and a spinner labeled 1, 2 is spun. What is the probability of getting an outcome where the coin is heads?

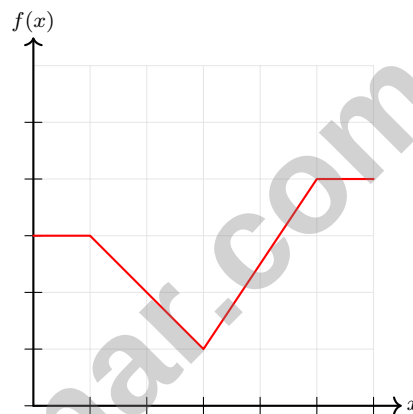
☐ A. $\frac{1}{4}$

☐ B. $\frac{1}{2}$

☐ C. $\frac{1}{3}$

☐ D. $\frac{3}{4}$

6)



On which interval is the rate of change the most negative?

☐ A. From $x = 0$ to $x = 1$

☐ B. From $x = 1$ to $x = 3$

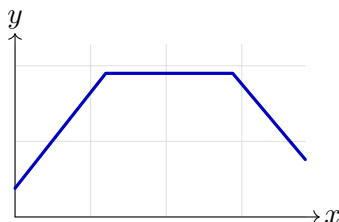
☐ C. From $x = 3$ to $x = 5$

☐ D. From $x = 5$ to $x = 6$



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- 1) A runner's speed increases for the first 5 minutes, stays constant for 10 minutes, then decreases as they cool down. Which graph shape represents this?



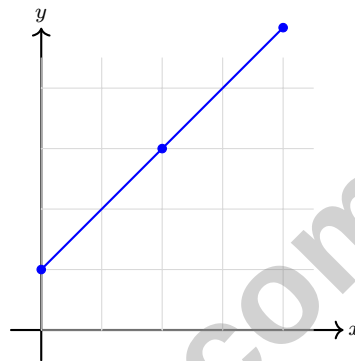
- ☐ A. Three straight segments: rising, flat, falling
☐ B. A curve that rises steeply, then flat, then falls
☐ C. A U-shaped parabola
☐ D. A line with constant positive slope
- 2) What is the range of $\{(-1, 4), (-3, -2), (0, 4), (2, 7), (3, -2)\}$?
- ☐ A. $\{-3, -1, 0, 2, 3\}$
☐ B. $\{-2, 4, 7\}$
☐ C. $\{-2, 4\}$
☐ D. $\{-1, 0, 2, 3\}$
- 3) Two stores sell notebooks. Store A: 4 notebooks for \$8. Store B: 5 notebooks for \$12. Which has the lower unit price?
- ☐ A. Store A (\$2.40 each)
☐ B. Store B (\$2.40 each)
☐ C. Store A (\$2 each)
☐ D. Same price
- 4) Which describes a zero slope?
- ☐ A. A horizontal line
☐ B. A vertical line
☐ C. A diagonal line with positive rate of change
☐ D. A line with undefined slope



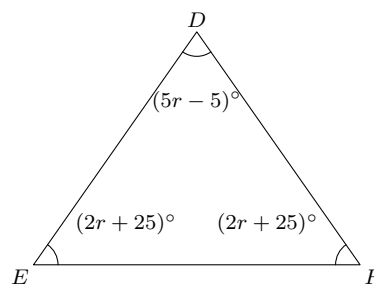
5) Sarah is 5 years older than Tom. In 5 years, the sum of their ages will be 45. How old is Tom now?

☐ A. 12☐ C. 15☐ B. 18☐ D. 20

6) The graph shows function g . What is $g(2)$?

☐ A. 2☐ C. 1☐ B. 3☐ D. 4

7) In isosceles triangle DEF with $DE = DF$, the vertex angle at D is $(5r - 5)^\circ$. Each base angle is $(2r + 25)^\circ$. Find r .

☐ A. 10☐ C. 20☐ B. 15☐ D. 25

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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.ALG.1)** A false statement like $0 = 5$ means no value of the variable satisfies the equation.
- 2) **Choice C is correct.** **(8.NCC.6)** Since both equations are already solved for y , substitution (setting them equal) is immediate: $2x - 3 = -x + 6$, so $3x = 9$, and $x = 3$. Elimination would require rearranging; graphing is slower for exact answers.
- 3) **Choice C is correct.** **(8.FN.9)** The graph rises from day 0 to day 3, then decreases from day 3 to day 4 as the tank drains. After day 4, the level increases again as the tank refills.
- 4) **Choice B is correct.** **(8.GM.4)** Vertical angles are congruent. Adjacent angles are supplementary: $180 - 72 = 108^\circ$. The four angles are $72^\circ, 108^\circ, 72^\circ, 108^\circ$.
- 5) **Choice B is correct.** **(8.SP.2)** A lower MAD indicates smaller residuals overall, meaning the trend line passes closer to the data points.
- 6) **Choice B is correct.** **(8.GM.11)** Scale factor is $\frac{3}{6} = \frac{1}{2}$ (or $\frac{4}{8} = \frac{1}{2}$). This is a reduction.
- 7) **Choice A is correct.** **(8.FN.1)** Substitute $x = 10$: $P(10) = 50(10) - 200 = 500 - 200 = 300$. Profit is \$300.
- 8) **Choice D is correct.** **(8.NCC.5)** From the number line, $\sqrt{5} \approx 2.236$ and $\sqrt{7} \approx 2.646$, both between 2 and 3. So $2 < \sqrt{5} < \sqrt{7} < 3$. All three numbers are plotted, and only 3 is rational; $\sqrt{5}$ and $\sqrt{7}$ are irrational.
- 9) **Choice B is correct.** **(8.SP.4)** Lead attendee: 12 choices. Backup: 11 remaining choices. Using permutation: $\frac{12!}{10!} = 12 \times 11 = 132$.
- 10) **Choice D is correct.** **(8.SP.2)** Let $x = 0.\overline{345} = 0.34545\dots$. Then $10x = 3.\overline{45}$ and $1000x = 345.\overline{45}$. Subtracting: $990x = 342$, so $x = \frac{342}{990} = \frac{19}{55}$.
- 11) **Choice C is correct.** **(8.NCC.1)** $\sqrt{5} \approx 2.24$, so $3\sqrt{5} \approx 3 \times 2.24 = 6.72$.
- 12) **Choice D is correct.** **(8.GM.1)** Total with installments: $110 \times 12 = \$1,320$ (cost is \$120 extra). Someone might choose this if they lack \$1,200 upfront but have steady monthly income. This illustrates the trade-off between affordability and cost.
- 13) **Choice D is correct.** **(8.NCC.3)** 10^{24} is 1 septillion (each set of 3 powers of 10 adds one step up: million, billion, trillion, etc.).
- 14) **Choice D is correct.** **(8.SP.2)** Since the square root function is increasing and $26 < 27$, we have $\sqrt{26} < \sqrt{27}$. Therefore $\sqrt{27}$ is larger.
- 15) **Choice C is correct.** **(8.GM.1)** Two triangular bases: $2 \times \frac{1}{2}(8)(3) = 24 \text{ cm}^2$. Perimeter of triangle: $8 + 5 + 5 = 18 \text{ cm}$. Lateral area: $6 \times 18 = 108 \text{ cm}^2$. Total = $24 + 108 = 132 \text{ cm}^2$.
- 16) **The correct answer is -1.** **(8.FN.8)** Using $(0, 5)$ and $(3, 2)$: slope = $\frac{2-5}{3-0} = \frac{-3}{3} = -1$.
- 17) **Choice B is correct.** **(8.GM.10)** Reflecting across the vertical line $x = 1$: distance from $(0, 2)$ to the line is 1 unit left. The image is 1 unit right of the line at $(2, 2)$.
- 18) **Choice A is correct.** **(8.FN.2)** Solve for y : $2x - y = 4 \Rightarrow -y = -2x + 4 \Rightarrow y = 2x - 4$.
- 19) **Choice D is correct.** **(8.GM.6)** Slope: $\frac{4-2}{1-0} = 2$. Using $(0, 2)$: $y = 2x + 2$. Shading ABOVE requires $\geq$ with a solid line.
- 20) **Choice A is correct.** **(8.GM.1)** Volume of a cone: $V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times 3.14 \times 5^2 \times 12 = \frac{1}{3} \times 942 = 314 \text{ m}^3$.
- 21) **The correct answer is A,D.** **(8.FN.1)** The line goes through $(0, 0)$ and $(8, 4)$, so the slope and constant of proportionality are $\frac{4}{8} = 0.5$. A point on the line must have $y = 0.5x$; when $x = 6$, $y = 3$, so $(6, 3)$ is on the line.
- 22) **Choice C is correct.** **(8.SP.6)** Substitute $x = 6$: $R = 20 + 3(6) = 20 + 18 = \38 .
- 23) **Choice D is correct.** **(8.NCC.3)** $c^0 = 1$; so $c^0 \cdot c^5 = 1 \cdot c^5 = c^5$.
- 24) **Choice C is correct.** **(8.NCC.7)** $10 \times 10 = 100$, so $x = 10$ (taking the positive root).
- 25) **The correct answer is \$35.** **(8.FN.3)** Compute $25 + 0.10(100) = 35$.
- 26) **The correct answer is 80.** **(8.GM.6)** Square = $8 \times 8 = 64 \text{ cm}^2$. Each triangle = $\frac{1}{2} \times 8 \times 2 = 8 \text{ cm}^2$. Two triangles = 16 cm^2 . Total = $64 + 16 = 80 \text{ cm}^2$.



Hi, Momentum Builder!

◇ Finishing a Grade 8 practice book is not a small thing. It means you practiced persistence, patience, and flexible problem solving. ◇

★ **Remember this:** Some questions were quick. Others probably made you stop and think. Both kinds helped you grow because practice turns effort into confidence. This version gave you 4 opportunities to rehearse test-day habits. ★

Momentum Habits

- **Start Clean:** Write down what the problem gives you.
- **Pick a Tool:** Use a table, model, equation, or graph.
- **Keep Moving:** Skip and return when needed.
- **Review Smart:** Study mistakes without judging yourself.

Grade 8 test-day tip: If a problem feels stuck, change tools. A graph, table, or sketch can make the same idea clearer.

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

Jay Daie

Your Math Momentum Partner

PRACTICE TODAY, ACHIEVE TOMORROW!

Give your child the confidence and skills they need with **4 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!

4



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



4 PRINTED TESTS



2 ONLINE TESTS



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