

6 Arizona AASA

GRADE 8 MATH PRACTICE TESTS

Standards Aligned Problem Solving For
Comprehensive Assessment Programs



6 PRINTED
TESTS



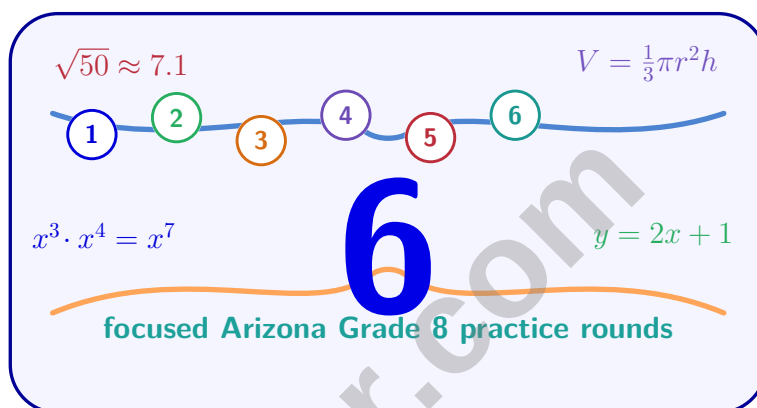
2 ONLINE
TESTS



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

6 Arizona AASA Grade 8 Math Practice Tests

Standards-Aligned Grade 8 Practice for Algebra, Geometry, Functions, and Data



Six complete 40-question Grade 8 AASA 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, Arizona Grade 8 Problem Solver!

Six focused rounds for sharper AASA math thinking

This book gives you six full Grade 8 AASA 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 Arizona 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.

Arizona 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 AASA 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) A researcher measures the marginal relative frequency of a category as $\frac{\text{cell}}{\text{row total}}$ instead of $\frac{\text{row total}}{\text{grand total}}$. What type of frequency did the researcher calculate?

- ☐ A. Marginal relative frequency (correct). ☐ C. Row-conditional relative frequency.
☐ B. Joint relative frequency. ☐ D. Column-conditional relative frequency.

2) Which number can be expressed as a fraction?

- ☐ A. $\sqrt{11}$ ☐ C. $\frac{8}{3}$
☐ B. 2π ☐ D. $\sqrt{2} + 1$

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

3)

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

4) Which is the best estimate of $3\sqrt{5}$?

- ☐ A. 4.5 ☐ C. 6.7
☐ B. 6.0 ☐ D. 9.8



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- 5) 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

- 6) 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?



- 7) Simplify $(y^4)^3$.

☐ A. y^7
☐ B. y^1

☐ C. y^{-12}
☐ D. y^{12}

- 8) What is the error in this work: $\sqrt[3]{100} = 10$?

☐ A. $10^3 = 100$
☐ B. $10^2 = 1000$

☐ C. $10^3 = 1000$, not 100
☐ D. $\sqrt[3]{100} = 100^3$

- 9) Convert 42,000 to scientific notation.

☐ A. 4.2×10^3
☐ B. 4.2×10^5

☐ C. 42×10^2
☐ D. 4.2×10^4



- 10) The distance from Earth to the Moon is approximately 3.8×10^8 meters. The distance from Earth to the Sun is approximately 1.5×10^{11} meters. How many times farther is the Sun than the Moon?

☐ A. $\approx 3.9 \times 10^3$

☐ C. $\approx 3.9 \times 10^2$

☐ B. $\approx 2.5 \times 10^{-3}$

☐ D. $\approx 5.3 \times 10^{18}$

- 11) If 6 pounds of almonds cost \$30, what is the constant of proportionality (unit price)?

☐ A. \$4 per pound

☐ C. \$6 per pound

☐ B. \$8 per pound

☐ D. \$5 per pound

- 12) If a square has side length $(x + 3)$, and a smaller square inside has side length $(x - 3)$, what is the difference in their areas?

☐ A. 6

☐ C. $12x$

☐ B. 9

☐ D. x^2

- 13) Which table represents a NONLINEAR function?

x	0	1	2	3
y	1	2	4	8

☐ A. No, y increases

☐ C. Yes, the y -values are doubling

☐ B. Yes, the first differences are not constant

☐ D. No, the x -values are equally spaced

- 14) A student's test score improves by 3 points for every hour of study. What is the slope if hours are on the x -axis?

☐ A. $\frac{1}{3}$

☐ C. 6

☐ B. -3

☐ D. 3



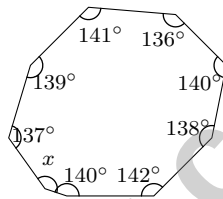
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1) A student claims: "If legs are a and b , then hypotenuse $= a \times b$." Is this correct?

- ☐ A. Yes, the formula is correct ☐ C. No; the correct formula is $c = a + b$
☐ B. No; the correct formula is $c = \sqrt{a^2 + b^2}$ ☐ D. No; the correct formula is $c = \sqrt{a + b}$

2) Which pair of figures is NOT similar?

- ☐ A. Two circles with radii 3 and 6 ☐ C. A rectangle 2×4 and a rectangle 3×6
☐ B. A 3-4-5 triangle and a 6-8-10 triangle ☐ D. A square 5×5 and a rectangle 5×10

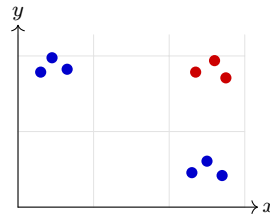


3)

A nonagon (9-sided polygon) has eight interior angles: $140^\circ, 142^\circ, 138^\circ, 140^\circ, 136^\circ, 141^\circ, 139^\circ, 137^\circ$. Find the ninth angle.

- ☐ A. 145° ☐ C. 150°
☐ B. 147° ☐ D. 152°





4)

A scatter plot of rainfall (inches) versus plant height (cm) shows several clusters of points. One cluster has points at low rainfall and low plant height. Another cluster shows points at high rainfall and high plant height. A third small cluster is at high rainfall but very low plant height. Which cluster represents an unexpected or unusual situation?

- ☐ A. Low rainfall, low plant height (expected) ☐ C. High rainfall, low plant height (unexpected)
☐ B. High rainfall, high plant height (expected) ☐ D. Cannot determine what is unusual from a scatter plot
- 5) If the MAD of a data set is 0, and you add a new value equal to the current mean, what happens to the MAD?
- ☐ A. MAD becomes positive ☐ D. Cannot determine without knowing the data
☐ B. MAD stays 0
☐ C. MAD doubles



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1) An exterior angle of a triangle is 117° . If one of the remote interior angles is 68° , what is the other remote interior angle?

☐ A. 49°

☐ C. 112°

☐ B. 68°

☐ D. 180°

2) Which function is NOT proportional (i.e., does not pass through the origin)?

☐ A. $y = 3x$

☐ C. $y = 2x + 1$

☐ B. $y = 5x$

☐ D. $y = \frac{1}{2}x$

3) A shape is made of a right triangle (legs 6 in and 8 in) with a rectangle (length 6 in, width 2 in) attached to the longer leg. Find the total area.

☐ A. 12 in^2

☐ C. 36 in^2

☐ B. 24 in^2

☐ D. 48 in^2

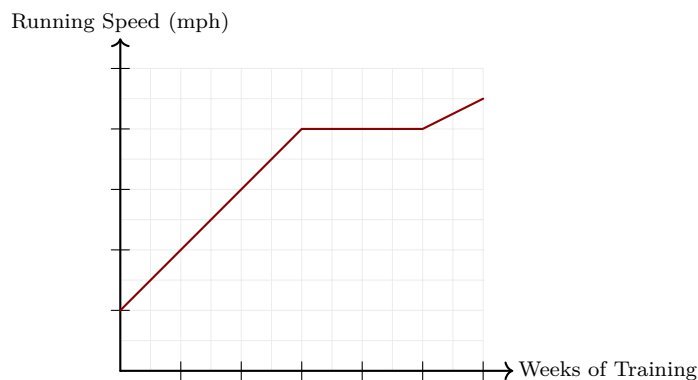
4) A student dilates a triangle with scale factor 2 and claims the new triangle's perimeter is twice the original. Is this correct?

☐ A. No, the perimeter is multiplied by 4☐ C. No, the area is multiplied by 2☐ B. Yes, linear measurements scale by 2☐ D. Only if the triangle is equilateral

5) How many solutions does the system $\begin{cases} y = \frac{1}{2}x + 1 \\ y = \frac{1}{2}x + 4 \end{cases}$ have? Explain why.



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& answers



6)

A runner trains for 6 weeks. Speed increases for the first 3 weeks, stays constant for 2 weeks (maintenance phase), then improves slightly. During weeks 3–5, what is the runner's speed trend?

- | | |
|---|---|
| ☐ A. Speed continues to increase | ☐ C. Speed decreases |
| ☐ B. Speed remains constant | ☐ D. Speed fluctuates randomly |

7) A right triangle has legs of $\sqrt{32}$ and $\sqrt{4}$. What is the hypotenuse in simplified radical form?

- | | |
|--|---|
| ☐ A. $\sqrt{36}$ (which is 6) | ☐ C. $\sqrt{28}$ |
| ☐ B. 6 | ☐ D. $\sqrt{68}$ |

8) A pyramid with height 10 m has a volume of 1200 m^3 . What is the area of its base?

- | | |
|---|---|
| ☐ A. 120 m^2 | ☐ C. 360 m^2 |
| ☐ B. 240 m^2 | ☐ D. 400 m^2 |



Arizona AASA 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 Arizona AASA practice test.



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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice C is correct.** (8.SP.A.4) Dividing a cell by its row total is the definition of row-conditional frequency. The researcher either mislabeled their calculation or confused marginal (row total / grand total) with conditional (cell / row total).
- 2) **Choice C is correct.** (8.NS.A.1) $\frac{8}{3}$ is already expressed as a fraction, so it is rational. All other options are irrational: $\sqrt{11}$ is a non-perfect-square root, 2π is an irrational multiple of π , and $\sqrt{2} + 1$ is an irrational plus a rational (still irrational).
- 3) **Choice D is correct.** (8.NS.A.2) From the table, $3^2 = 9$ and $4^2 = 16$. Since $9 < 11 < 16$, we have $3 < \sqrt{11} < 4$.
- 4) **Choice C is correct.** (8.NS.A.2) $\sqrt{5} \approx 2.24$, so $3\sqrt{5} \approx 3 \times 2.24 = 6.72$.
- 5) **Choice D is correct.** (8.G.B.7) Remaining = $\$3,000 - (\$900 + \$400 + \$300 + \$200) = \$3,000 - \$1,800 = \$1,200$.
- 6) **The correct answer is 90.** (8.SP.A.2) Substitute $x = 6$: $y = 5(6) + 60 = 30 + 60 = 90$.
- 7) **Choice D is correct.** (8.EE.A.1) When raising a power to another power, multiply exponents: $(y^4)^3 = y^{4 \cdot 3} = y^{12}$.
- 8) **Choice C is correct.** (8.EE.A.2) A cube root asks what number cubed gives 100. Since $10^3 = 1000$, 10 is not the cube root of 100.
- 9) **Choice D is correct.** (8.EE.A.3) Move the decimal 4 places left to get 4.2; the exponent is positive 4. Thus $42,000 = 4.2 \times 10^4$.
- 10) **Choice C is correct.** (8.EE.A.4) Divide: $\frac{1.5 \times 10^{11}}{3.8 \times 10^8} \approx \frac{1.5}{3.8} \times 10^3 \approx 0.39 \times 10^3 = 3.9 \times 10^2$.
- 11) **Choice D is correct.** (8.EE.B.5) Unit price $k = \frac{30}{6} = 5$ dollars per pound.
- 12) **Choice C is correct.** (8.EE.C.7) Difference of squares: $(x+3)^2 - (x-3)^2 = [(x+3) + (x-3)][(x+3) - (x-3)] = (2x)(6) = 12x$.
- 13) **Choice B is correct.** (8.F.A.3) The differences between consecutive y -values are $2 - 1 = 1$, $4 - 2 = 2$, $8 - 4 = 4$. These are not constant, which indicates the function is nonlinear.
- 14) **Choice D is correct.** (8.EE.B.5) The rate of change is +3 points per hour of study. The slope is 3.
- 15) **Choice C is correct.** (8.G.C) The solution $p = 5, s = 10$ satisfies both equations: $5 + 10 = 15$ (true) and $2(5) + 10 = 20$ (true). Moreover, both p and s are non-negative integers, making it valid in a real-world context.
- 16) **Choice B is correct.** (8.F.A.1) Substitute $x = 4$: $f(4) = 2(4) - 5 = 8 - 5 = 3$.
- 17) **Choice B is correct.** (8.G.C.9) $SA = 2(12 \times 8 + 12 \times 5 + 8 \times 5) = 2(96 + 60 + 40) = 2(196) = 392 \text{ in}^2$.
- 18) **Choice C is correct.** (8.G.B.8) SOLID line (includes boundary) and shading BELOW indicate $y \leq x + 1$.
- 19) **The correct answer is A, C.** (8.G.A.4) Correct: (A) Corresponding angles are congruent — definition of similarity. (C) Corresponding sides are proportional — they scale by a constant factor k . Incorrect: (B) Equal length is congruence, not similarity. (D) Congruence requires equality; similarity allows scaling. (E) Scale factor can be any positive number; $k < 1$ is a reduction, still similarity.
- 20) **Choice C is correct.** (8.G.A.1) Using $(x, y) \rightarrow (-y, x)$: $(2, 0) \rightarrow (0, 2)$, $(2, 1) \rightarrow (-1, 2)$, matching the End figure.
- 21) **Choice D is correct.** (8.EE.B.6) Check $(2, 8)$: $\frac{3}{2}(2) + 5 = 8$, so the point lies on the line. The slope is $\frac{3}{2}$ and the y -intercept is 5; a perpendicular line would have slope $-\frac{2}{3}$, not $\frac{2}{3}$.
- 22) **Choice A is correct.** (8.EE.C.7) Subtract $4x$ and add 12: $4x = 20$. Divide by 4: $x = 5$.
- 23) **Choice D is correct.** (8.EE.C.7) Dividing by -5 requires flipping $<$ to $>$. The correct step is $x - 1 > -2$, so the correct solution is $x > -1$, not $x < -1$.
- 24) **Choice B is correct.** (8.G.C.9) Use $V = \pi r^2 h$: $942 = 3.14 \times r^2 \times 12$. Since $3.14 \times 12 = 37.68$, $r^2 = 942 \div 37.68 = 25$, so $r = 5$ cm.
- 25) **The correct answer is $\frac{1}{6}$.** (8.SP.B.5) Favorable outcomes: $(1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1)$. That's 6 of 36. $P = \frac{6}{36} = \frac{1}{6}$.
- 26) **Choice A is correct.** (8.G.B.7) Co-interior angles are supplementary when a transversal cuts parallel lines. So $y = 180 - 136 = 44^\circ$.
- 27) **Choice C is correct.** (8.SP.A.3) The slope -0.05 is the rate of change in M per unit increase in d . Since d is measured in hundreds of miles, each 100-mile interval causes MPG to drop by 0.05.



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Hi, Persistent Problem Solver!

◇ Some Grade 8 questions ask you to hold several ideas in your mind at once. That can feel hard, and that is exactly why practice matters. ◇

★ **Remember this:** You showed persistence by continuing through the set. That habit is powerful because difficult problems often open after one more good attempt. You practiced across 6 full Grade 8 practice tests, and that repeated effort matters. ★

Persistence Tools

- **Try a Smaller Case:** Use an easier number to see the pattern.
- **Draw It:** Make the situation visible.
- **Restate It:** Say the question in your own words.
- **Check One Step:** Fix the first unclear place.

Grade 8 test-day tip: When stuck, do not restart everything. Find the first step you trust, then rebuild from there.

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

Jay Daie

Your Persistence Coach

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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