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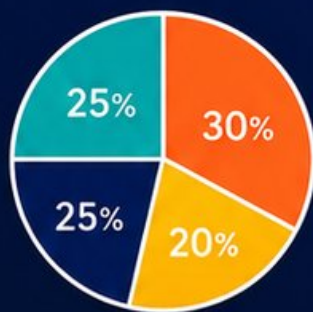
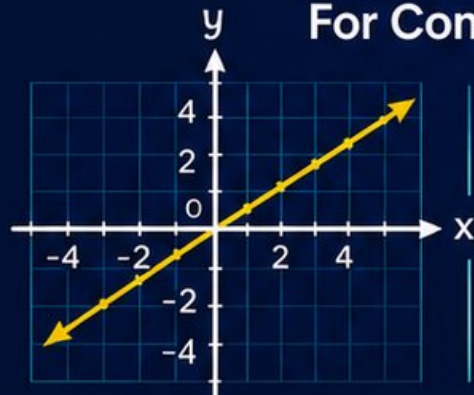
Arizona AASA

GRADE 8

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

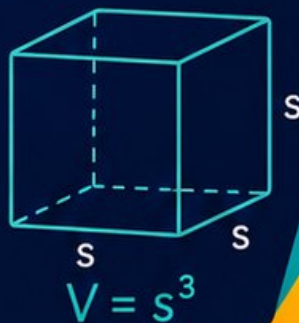


$$y = mx + b$$

$$2x - 3y = 6$$

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

$$A = bh$$



4 PRINTED TESTS



2 ONLINE TESTS

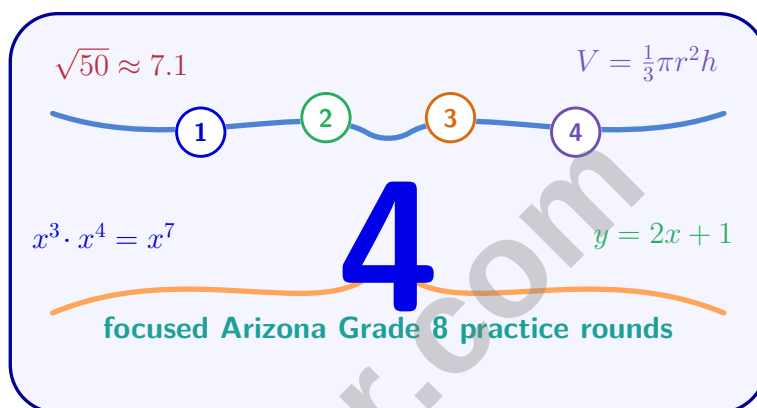


Use these **two additional online practice tests** for extra review after the printed tests in this book.



4 Arizona AASA Grade 8 Math Practice Tests

Focused AASA Practice for Grade 8 Skills and Test Readiness



Four 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!

Four focused rounds for sharper AASA math thinking

This book gives you four 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 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.

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?

Four AASA 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

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1) Which expression expands to $x^2 + 20x + 100$?

☐ A. $2(x + 10)^2$

☐ C. $(x + 10)(x + 100)$

☐ B. $(x + 10)^2$

☐ D. $(x + 50)^2$

2) A water tank contains saltwater at 2% concentration. To reduce the concentration to 1%, how much pure water must be added to 100 liters of the 2% solution?

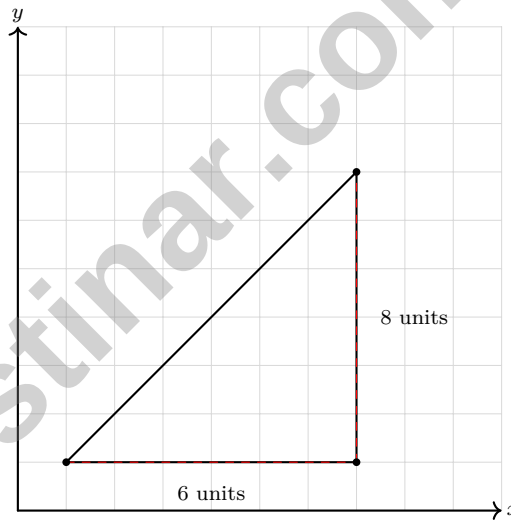
☐ A. 50 L

☐ C. 100 L

☐ B. 75 L

☐ D. 150 L

3) A right triangle is shown on a coordinate grid. The legs of the triangle are horizontal and vertical, with lengths 6 and 8 units. What is the length of the hypotenuse?



Which equation correctly uses the Pythagorean Theorem to find the hypotenuse?

☐ A. $c^2 = 6^2 + 8^2 = 100$, so $c = 10$

☐ C. $c^2 = 6 + 8 = 14$

☐ B. $c = 6 + 8 = 14$

☐ D. $c = \sqrt{6 + 8} = \sqrt{14}$



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4) Which of the following is NOT a valid interior angle for a regular polygon?

☐ A. 162°

☐ C. 144°

☐ B. 108°

☐ D. 130°

5) When rolling two six-sided dice, what is the probability of rolling a sum of 7?

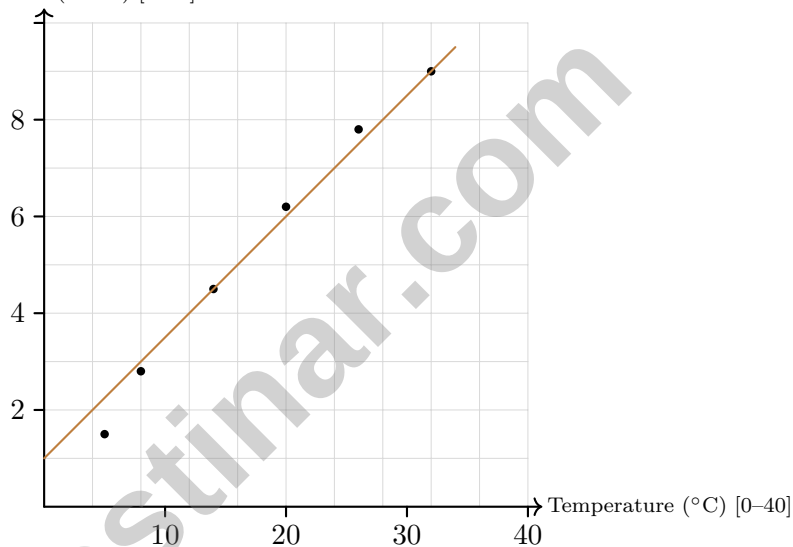
☐ A. $\frac{1}{5}$

☐ C. $\frac{1}{12}$

☐ B. $\frac{1}{6}$

☐ D. $\frac{7}{36}$

Ice Cream Sales (\$1000) [0–10]



6)

The scatter plot shows temperature versus ice cream sales. What is the approximate y -intercept (sales when temperature is 0°C)?

☐ A. \$1000

☐ C. \$2000

☐ B. \$0

☐ D. \$3000



7) A scale factor of 0.75 applied to a figure means the new figure is:

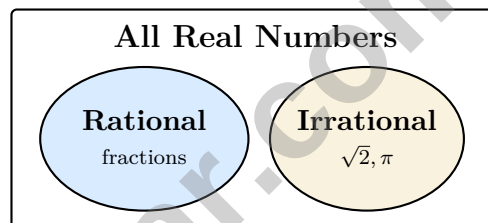
- ☐ A. Larger than the original ☐ C. 25% of the original size
☐ B. 75% of the original size ☐ D. 75% larger than the original

8) The table shows a function. Find $f(0)$.

x	-1	0	1	2
$f(x)$	2	3	4	5

- ☐ A. 3 ☐ C. 4
☐ B. 2 ☐ D. 0

Venn Diagram



9)

Which number belongs in the Irrational circle?

- ☐ A. -4 (negative integer) ☐ C. $\sqrt{23}$ (square root)
☐ B. $\frac{7}{9}$ (fraction) ☐ D. 2.25 (decimal)

10) What denominator appears when a repeating decimal has a 4-digit repeating block?

- ☐ A. 10 ☐ C. 999
☐ B. 100 ☐ D. 9999



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- 1) A bag contains 6 cards labeled 1, 2, 3, 4, 5, 6. If two cards are drawn with replacement, how many total outcomes are possible?

- ☐ A. 12 ☐ C. 36
☐ B. 30 ☐ D. 42

- 2) A table shows the relationship between hours worked and pay earned.

Hours	2	4	6	8
Pay (\$)	18	36	54	72

What is the rate of change (slope) of pay with respect to hours worked?

- ☐ A. \$8 per hour ☐ C. \$10 per hour
☐ B. \$12 per hour ☐ D. \$9 per hour

- 3) A concert venue sells adult tickets for \$15 and student tickets for \$8. If 120 total tickets were sold for \$1,520, how many student tickets were sold?

- ☐ A. 40 ☐ C. 80
☐ B. 60 ☐ D. 100

- 4) A password requires choosing a color and a number from 1 to 9. There are 5 colors available. How many different passwords are possible?

- ☐ A. $5 + 9 = 14$ ☐ C. $9^5 = 59,049$
☐ B. $5 \times 9 = 45$ ☐ D. $\frac{9}{5} = 1.8$

- 5) A car travels at a constant speed of 60 mph. After starting, the distance d (in miles) traveled after h hours is given by which equation?

- ☐ A. $d = 60h$ ☐ C. $d = h + 60$
☐ B. $d = 60h + 1$ ☐ D. $d = \frac{60}{h}$

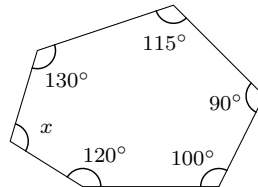


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6) What is the distance between the points $(1, 2)$ and $(4, 6)$?

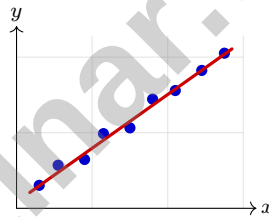
☐ A. 5

☐ C. $\sqrt{7}$
☐ B. 7

☐ D. $\sqrt{26}$


7)

A hexagon has five known interior angles: 120° , 100° , 90° , 115° , 130° . What is the sixth angle?

☐ A. 145°
☐ C. 165°
☐ B. 155°
☐ D. 175°


8)

Which is the BEST description of a “line of best fit” on a scatter plot?

☐ A. A line that passes through every data point

☐ C. A line that generally shows the overall trend of the data

☐ B. A line that passes through no data points

☐ D. A line that only passes through the outliers


1) Compare the values: $\sqrt{36}$ and $\sqrt[3]{216}$. Which is larger?

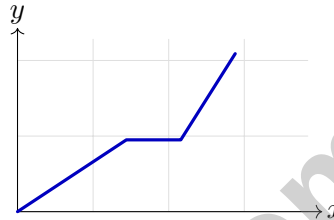
☐ A. $\sqrt{36}$ is larger

☐ C. They are equal

☐ B. $\sqrt[3]{216}$ is larger

☐ D. Cannot be determined

2) Sketch or describe a graph showing: a person walks for 2 hours (increasing distance), rests for 1 hour (no change in distance), then runs for 1 hour (distance increases again, faster). What geometric shapes make up this graph?



3) Two congruent rectangles have a perimeter of 48 cm. If one side of the rectangle is 10 cm, find the length of an adjacent side.



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4) Factor $x^2 - 13x + 42$.

☐ A. $(x - 6)(x - 7)$

☐ C. $(x - 21)(x - 2)$

☐ B. $(x - 14)(x + 1)$

☐ D. $(x - 3)(x - 14)$

5) A table shows values for x and y . What is the rate of change?

x	0	2	4	6
y	-2	2	6	10

☐ A. 2

☐ C. 4

☐ B. $\frac{1}{2}$

☐ D. -2

6) How much of a 100% alcohol solution must be mixed with 500 mL of 20% alcohol solution to create a 50% solution?

☐ A. 100 mL

☐ C. 300 mL

☐ B. 200 mL

☐ D. 400 mL

7) A function f shows the distance (in miles) from home after t minutes of driving. Which describes what $f(20)$ means?

☐ A. After driving for 20 miles, you are at some time

☐ C. The distance from home after 20 minutes of driving

☐ B. After 20 minutes of driving, you are 20 miles from home

☐ D. It takes 20 minutes to drive some distance



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 B is correct.** **(8.EE.C.7)** $(x + 10)^2 = x^2 + 2(10)(x) + 100 = x^2 + 20x + 100$. Pattern: $a^2 + 2ab + b^2 = (a + b)^2$.
- 2) **Choice C is correct.** **(8.G.C)** Initial salt amount: $0.02(100) = 2$ L. After adding x liters of pure water, total volume is $100 + x$ and salt amount is still 2 L. Setting concentration to 1%: $\frac{2}{100+x} = 0.01$, so $2 = 0.01(100 + x) = 1 + 0.01x$, giving $0.01x = 1$, thus $x = 100$ L.
- 3) **Choice A is correct.** **(8.G.B.8)** By the Pythagorean Theorem, $c^2 = 6^2 + 8^2 = 36 + 64 = 100$. Taking the square root: $c = \sqrt{100} = 10$.
- 4) **Choice D is correct.** **(8.G.A.5)** Check: 108° (pentagon), 144° (decagon), 162° (20-gon) are all valid. For 130° : solving $\frac{(n-2) \times 180}{n} = 130$ gives $n \approx 12.86$, which is not a whole number.
- 5) **Choice B is correct.** **(8.SP.B.5)** Favorable outcomes: (1,6), (2,5), (3,4), (4,3), (5,2), (6,1). That's 6 outcomes. Total: $6 \times 6 = 36$. So $P(\text{sum} = 7) = \frac{6}{36} = \frac{1}{6}$.
- 6) **Choice A is correct.** **(8.SP.A.2)** Tracing the trend line back to $x = 0$ (zero temperature), the line intersects the y -axis at approximately $y = 1$ on the scale, which represents \$1000 in sales.
- 7) **Choice B is correct.** **(8.G.A.4)** A scale factor of 0.75 means each length in the new figure is 75% of the matching original length.
- 8) **Choice A is correct.** **(8.F.A.1)** Look up $x = 0$ in the table; the corresponding $f(x)$ value is 3.
- 9) **Choice C is correct.** **(8.NS.A.1)** $\sqrt{23}$ is irrational because 23 is not a perfect square. The other values are all rational: -4 is an integer, $\frac{7}{9}$ is a fraction, and $2.25 = \frac{9}{4}$ is a terminating decimal.
- 10) **Choice D is correct.** **(8.NS.A.1)** For a pure repeating decimal with block length n , the denominator is $\underbrace{99 \dots 9}_n$. A 4-digit block uses 9999.
- 11) **Choice D is correct.** **(8.NS.A.2)** Since $1^2 = 1$ and $2^2 = 4$, and $1 < 2 < 4$, we have $1 < \sqrt{2} < 2$.
- 12) **Choice C is correct.** **(8.NS.A.2)** Since $7^2 = 49$ and $7.1^2 = 50.41$, we have $\sqrt{50} \approx 7.07$.
- 13) **Choice D is correct.** **(8.EE.A.3)** Scientific notation requires the coefficient to be at least 1 but less than 10. Only 6.0×10^3 meets this condition.
- 14) **Choice A is correct.** **(8.G.C.9)** Lateral surface area requires the slant height (from apex to midpoint of base edge), not the altitude (perpendicular distance from apex to base center). The altitude is 8 cm, but the slant height is $\sqrt{8^2 + 5^2} = \sqrt{89} \approx 9.4$ cm. Using altitude is a common error.
- 15) **Choice B is correct.** **(8.G.A.1)** Reflect (x, y) across x -axis: $(x, -y)$. Then across y -axis: $(-x, -y)$. A 180° rotation also gives $(-x, -y)$.
- 16) **Choice D is correct.** **(8.EE.B.6)** The y -intercept is where the line crosses the y -axis, which occurs at $(0, 2)$.
- 17) **Choice A is correct.** **(8.EE.C.7)** Subtract 8 from both sides: $2x = 12$. Divide by 2: $x = 6$. Check: $2(6) + 8 = 12 + 8 = 20$ ✓.
- 18) **The correct answer is A, B.** **(8.EE.A.2)** When $x = 6$: $6^2 = 36$ (choice A is correct) and $6^3 = 216$ (choice B is correct). For choice C: $6^2 = 36 \neq 64$. For choice D: $6^3 = 216 \neq 144$. For choice E: $6^2 = 36 \neq 25$.
- 19) **Choice A is correct.** **(8.EE.C.7)** Subtract 8: $-3x < -6$. Divide by -3 (FLIP): $x > 2$.
- 20) **Choice B is correct.** **(8.G.B.8)** Check boundary: $-2(-1) + 1 = 2 + 1 = 3$. The point IS on $-2x + y = 3$. But for strict inequality $<$, the boundary is excluded, so $(-1, 1)$ is NOT in the solution.
- 21) **Choice C is correct.** **(8.G.C.9)** $V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times 3.14 \times 729 = 3052.08 \text{ ft}^3$.
- 22) **Choice B is correct.** **(8.SP.A.3)** Break-even when $R = 0$: $0 = 45s - 200 \Rightarrow s = \frac{200}{45} \approx 4.44$. Loss occurs when $s < 4.44$, or below 5 shirts.
- 23) **Choice D is correct.** **(8.EE.A.1)** Quotient rule for each variable: $\frac{a^4}{a^2} = a^2$ and $\frac{b^3}{b} = b^2$. Result: a^2b^2 .
- 24) **Choice D is correct.** **(8.EE.A.4)** Rewrite with common exponent: $2.5 \times 10^4 + 0.3 \times 10^4 = (2.5 + 0.3) \times 10^4 = 2.8 \times 10^4$.
- 25) **Choice C is correct.** **(8.EE.B.5)** Proportional relationship: $y = 3x$. For $x = 12$: $y = 3(12) = 36$ gallons.



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A Note for a Careful Thinker

Hi, Careful Thinker!

◇ This carefully paced book gave you four steady Grade 8 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. This book gave you room to practice the kind of thinking eighth graders need: modeling linear relationships, solving systems, connecting algebra and geometry, and interpreting data. ◇

★ **Remember this:** The goal was never just to finish pages. The goal was to become the kind of student who knows how to begin, how to adjust, and how to check. ★

Your Careful-Thinking Toolkit

- **Read Twice:** First for the story, second for the math.
- **Label Values:** Give each number a job.
- **Check Signs:** Negatives and inequalities deserve attention.
- **Use Evidence:** Let the work prove the answer.

Grade 8 test-day tip: On test day, underline the question before solving. It keeps your answer aimed at the right target.

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

Jay Daie

Your Math Practice Coach

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.