

9 Alaska

AK STAR

GRADE 7

MATH

PRACTICE TESTS

Standards Aligned Problem Solving
For Comprehensive Assessment Programs

Program



9 PRINTED TESTS



2 ONLINE TESTS



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



BUILT FOR ACAP
Standards-Aligned



**STRENGTHEN
SKILLS**



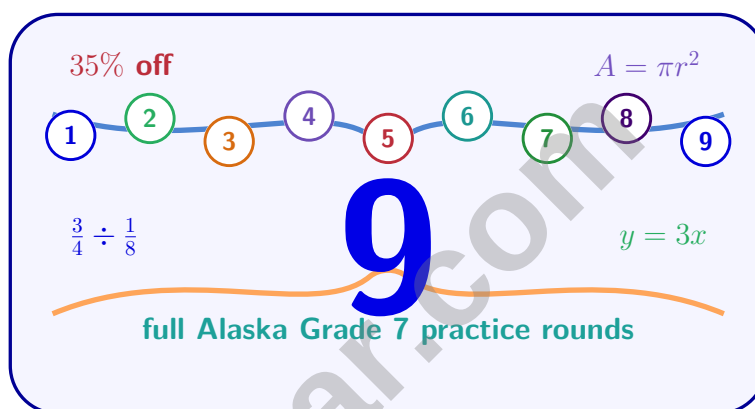
**SHARPEN
THINKING**



BE TEST-READY
Improve Performance

9 Alaska AK STAR Grade 7 Math Practice Tests

Standards-Aligned Alaska Practice for Proportional Reasoning, Expressions, Geometry, Statistics, and Probability



Nine complete 40-question Grade 7 AK STAR practice rounds with proportional relationships, percents, rational numbers, expressions, equations, geometry, statistics, probability, answer keys, and clear explanations for every item.

Jay Daie and Reza Nazari



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Welcome, Alaska Grade 7 Problem Solver!

Nine focused rounds for sharper AK STAR math thinking

This book gives you nine full Grade 7 AK STAR math practice tests. Each round is built to help you notice structure, compare quantities, use proportional reasoning, handle rational numbers, and explain your thinking with care.

Your Alaska 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 nine-session plan for confident Grade 7 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 a proportion, equation, diagram, number line, 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.

Alaska 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?

Nine AK STAR tests, 360 questions, and a complete review path

Part	What You Will Practice
Tests 1–3	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Tests 4–6	Expressions, equations, inequalities, scale drawings, geometry, and multi-step problem solving.
Tests 7–9	Statistics, probability, mixed review, stamina, and choosing efficient strategies.
Answer Pages	Compact keys and explanations that show why each answer works.

The tests are mixed on purpose. Grade 7 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) Factor: $5x + 25$

☐ A. $5(x + 5)$

☐ C. $5(x + 25)$

☐ B. $5x(1 + 5)$

☐ D. $25(x + 1)$

2) Three students each flip a coin. What is the probability that all three get heads?

☐ A. $\frac{1}{2}$

☐ C. $\frac{3}{8}$

☐ B. $\frac{1}{8}$

☐ D. $\frac{1}{4}$

3) A bag contains marbles of three colors. Maria draws a marble, records the color, and replaces it. After 300 draws, the results are:

Color	Red	Blue	Green
Count	105	95	100

If Maria draws one more marble, which color is she most likely to draw based on experimental probability?

☐ A. All equally likely

☐ C. Green

☐ B. Blue

☐ D. Red

4) A waiter receives a \$12 tip on a \$60 bill. What percentage tip did the customer leave?

☐ A. 15%

☐ C. 20%

☐ B. 18%

☐ D. 25%

5) In a back-to-back stem-and-leaf plot, Class A (left) shows leaves 6, 3, 1 for stem 8, and Class B (right) shows leaves 2, 5, 7. Reading from the plot, which value belongs to Class A with stem 8?

☐ A. 82

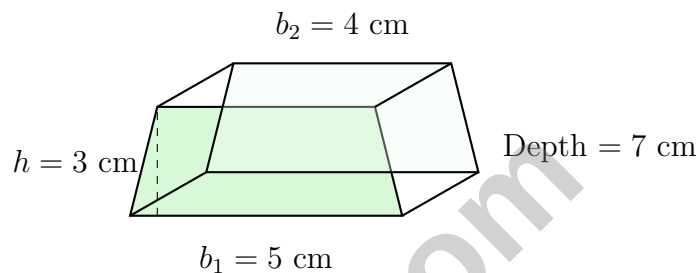
☐ C. 85

☐ B. 83

☐ D. 87



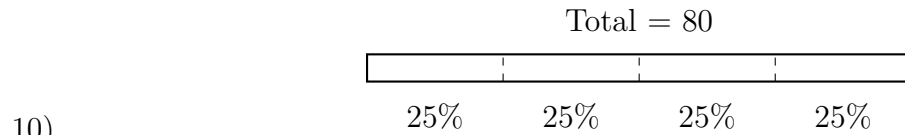
- 6) A survey of 180 farms found 45 grow organic crops. The region has 3600 farms. About how many are expected to grow organic crops?



- 7) A trapezoidal prism has a trapezoidal base with parallel sides 5 cm and 4 cm, height 3 cm, and prism depth 7 cm. What is the volume?
- ☐ A. 94.5 cm³
☐ C. 126 cm³
☐ B. 115.5 cm³
☐ D. 189 cm³
- 8) In a circle, how many different radii can you draw?
- ☐ A. 1
☐ C. Infinitely many
☐ B. 2
☐ D. 10
- 9) A garden plot is 30 meters long. A scale model uses a scale of 1 cm : 3 m. How long is the model plot?
- ☐ A. 1 cm
☐ C. 30 cm
☐ B. 90 cm
☐ D. 10 cm



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The bar model shows a number divided into equal parts. What is 25% of 80?

☐ A. 15

☐ C. 25

☐ B. 30

☐ D. 20

11) What is $12 + (-5)$?

☐ A. 7

☐ C. 17

☐ B. -7

☐ D. -17

12)

Sale Analysis		
Item	Original	Sale Price
Widget	\$20	\$16
Gadget	\$30	\$24

A store applies consistent discount rates. Based on the table, what is the discount percent for both items?

☐ A. 10%

☐ C. 25%

☐ B. 33%

☐ D. 20%


1)

Scenario	Principal	Annual Rate	Years
Account 1	\$1000	6%	2
Account 2	\$1200	4%	2

Which account earns more interest, and by how much?

☐ A. Account 1 by \$20

☐ C. Account 1 by \$24

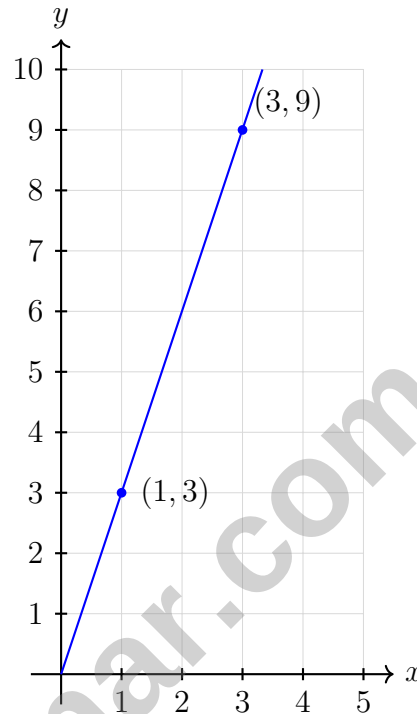
☐ B. Account 2 by \$20

☐ D. Both earn the same

2) To find the unit price when $\frac{2}{5}$ pound costs \$4, which expression correctly computes the price per pound?

☐ A. $4 \times \frac{2}{5}$
☐ C. $\frac{2}{5} \div 4$
☐ B. $\frac{2}{5} + 4$
☐ D. $4 \div \frac{2}{5} = 4 \times \frac{5}{2}$


- 3) A coordinate plane shows a line passing through $(1, 3)$ and $(3, 9)$. Does this line represent a proportional relationship?



- ☐ A. Cannot tell without more points ☐ C. Yes; constant slope is 3
- ☐ B. No; points are not at origin ☐ D. Yes; line passes through origin
- 4) A proportional relationship is modeled by the equation $y = \frac{7}{2}x$. What is the value of y when $x = 6$?

- ☐ A. $y = 12$ ☐ C. $y = \frac{7}{12}$
- ☐ B. $y = 18$ ☐ D. $y = 21$



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1)

Account Type	Annual Interest Rate
Savings Account	1.5%
Money Market	3%
Certificate of Deposit (CD)	4%

Keisha has \$2 000 to deposit. If she wants to maximize her interest earnings in one year without restrictions, which account should she choose?

- ☐ A. Savings Account
 ☐ C. Certificate of Deposit
☐ B. Money Market
 ☐ D. None; interest rates are equal

2)

x	$x + 3$	$2(x + 3)$	$2(x + 3) - 5$
1	4	8	3
2	5	10	5
3	6	12	7

If $2(x + 3) - 5 = 11$, what is x ? Show steps and verify.

- ☐ A. $x = 3$
☐ C. $x = 7$
☐ B. $x = 5$
☐ D. $x = 9$

3) A blueprint uses a scale of $\frac{1}{8}$ inch : 1 foot. If a wall in the blueprint is 2 inches long, what is the actual length of the wall?

- ☐ A. 8 feet
 ☐ C. 16 feet
☐ B. 12 feet
 ☐ D. 20 feet

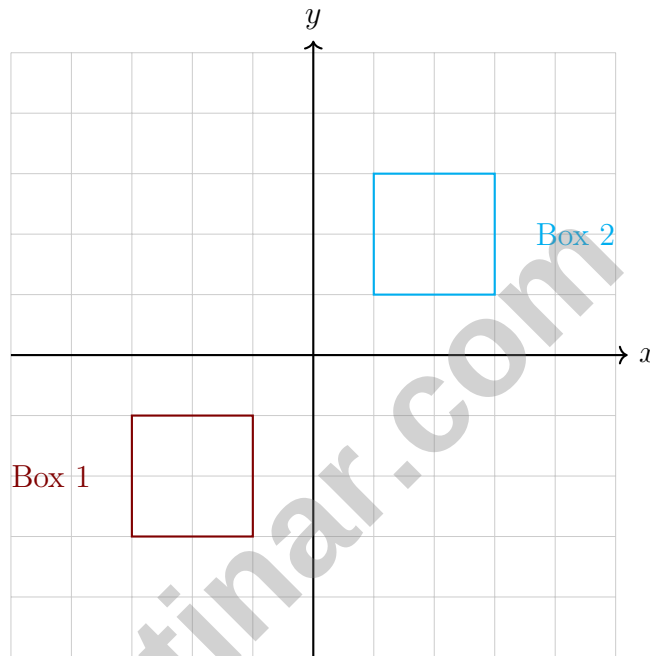
4) A cone with base radius r and height h is cut horizontally at height $\frac{h}{3}$ from the base. The radius of the circular cross-section is:

- ☐ A. $\frac{r}{3}$
☐ C. $\frac{r}{2}$
☐ B. $\frac{2r}{3}$
☐ D. r



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5) Angle P and angle Q are vertical angles. If angle $P = 84^\circ$, what is the measure of angle Q ?

☐ A. 6°
☐ C. 276°
☐ B. 96°
☐ D. 84°


6)

Box 1 is transformed to Box 2. A student claims this is a reflection over the line $y = x$. Is the student correct? Why or why not?

☐ A. Yes; the coordinates are swapped

☐ C. Yes; dimensions are preserved

☐ B. No; this is a 180° rotation plus translation

☐ D. No; reflection over $y = x$ would map $(-3, -3)$ to $(-3, -3)$, not $(1, 1)$


Alaska AK STAR Grade 7 Practice Test Answer Keys**How to use this section with a Grade 7 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 Alaska AK STAR practice test.

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Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

- 1) **Choice A is correct.** (7.EE.1-7.EE.2) The GCF of $5x$ and 25 is 5 . Divide both terms by 5 to get $5(x + 5)$.
- 2) **Choice B is correct.** (7.SP.5-7.SP.8) $P(\text{HHH}) = \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{8}$.
- 3) **Choice D is correct.** (7.SP.6) Red has the highest experimental probability: $\frac{105}{300} = 0.35$. From observed patterns, Red appeared most frequently, so we predict it is most likely on the next draw.
- 4) **Choice C is correct.** (7.RP.3) Tip percentage = $\frac{12}{60} = 0.20 = 20\%$.
- 5) **Choice B is correct.** (7.SP.1-7.SP.4) In a back-to-back plot, Class A's leaves for stem 8 are 6, 3, 1, representing 86, 83, 81. One of these is 83.
- 6) **The correct answer is 900.** (7.SP.1-7.SP.4) $\frac{45}{180} = \frac{x}{3600}$. Reduce: $\frac{1}{4} = \frac{x}{3600} \Rightarrow x = 900$.
- 7) **Choice A is correct.** (7.G.4-7.G.6) Base area = $\frac{1}{2}(5 + 4) \times 3 = \frac{1}{2} \times 9 \times 3 = 13.5 \text{ cm}^2$. Volume = $13.5 \times 7 = 94.5 \text{ cm}^3$.
- 8) **Choice C is correct.** (7.G.4-7.G.6) You can draw a radius from the center to any point on the circle, so there are infinitely many radii.
- 9) **Choice D is correct.** (7.RP.1-7.RP.3) Divide actual by scale ratio: $30 \text{ m} \div 3 \text{ m per cm} = 10 \text{ cm}$.
- 10) **Choice D is correct.** (7.RP.3) 25% of 80 is $\frac{1}{4} \times 80 = 20$.
- 11) **Choice A is correct.** (7.NS.1b) Subtract the smaller absolute value from the larger: $|12| - |-5| = 12 - 5 = 7$. The larger absolute value is positive, so the answer is 7.
- 12) **Choice D is correct.** (7.RP.3) Widget: discount = $(20 - 16)/20 = 4/20 = 0.20 = 20\%$. Gadget: discount = $(30 - 24)/30 = 6/30 = 0.20 = 20\%$. Both are 20% off.
- 13) **Choice D is correct.** (7.RP.1-7.RP.3) From the first pair: $\frac{2/3}{1/5} = \frac{2}{3} \times 5 = \frac{10}{3} \text{ mph}$.
- 14) **Choice D is correct.** (7.RP.1-7.RP.3) Divide: $\frac{1/2}{1/4} = \frac{1}{2} \times \frac{4}{1} = 2$. For every 1 cup sugar, you need 2 cups flour.
- 15) **Choice D is correct.** (7.RP.3) Set up the proportion: $\frac{1}{20} = \frac{p}{100}$. Cross-multiply: $p = 5$, so $\frac{1}{20} = 0.05 = 5\%$.
- 16) **Choice D is correct.** (7.RP.3) Option 1 interest: $3\% \times \$1,000 = \30 . Option 2 interest: $5\% \times \$1,000 = \50 . Difference: $\$50 - \$30 = \$20$.
- 17) **Choice A is correct.** (7.NS.1-7.NS.3) Final level = $12.5 - 2.3 + 1.8 - 0.5 = 11.5 \text{ cm}$.
- 18) **Choice A is correct.** (7.EE.1-7.EE.2) Combine: $(5p + 2p) + (3 - 9) = 7p - 6$.
- 19) **Choice D is correct.** (7.RP.1-7.RP.3) The ratio flour:sugar is $2 : 3$, so $f = \frac{2}{3}s$ where the constant of proportionality is $\frac{2}{3}$.
- 20) **The correct answer is 3.** (7.G.1-7.G.5) All three corresponding side lengths match, so the triangles are congruent by SSS.
- 21) **The correct answer is A,C.** (7.G.4-7.G.6) Large square: $20 \times 20 = 400 \text{ m}^2$ (A). Small square: $5 \times 5 = 25 \text{ m}^2$. Remaining: $400 - 25 = 375 \text{ m}^2$ (C). The cutout is $\frac{25}{400} = \frac{1}{16}$ of the original area, not $\frac{1}{20}$.
- 22) **Choice A is correct.** (7.EE.1-7.EE.2) The diagram shows a discount reduces price from p to $0.9p$. This means $0.9p = p - 0.1p$, factoring as $p(1 - 0.1)$.
- 23) **Choice C is correct.** (7.EE.4a) Distribute: $2x - 16 = 10$. Add 16: $2x = 26$. Divide by 2: $x = 13$.
- 24) **Choice B is correct.** (7.G.1-7.G.5) Original scale 1:2 means $1 \text{ cm} = 2 \text{ m}$. New scale 1:4 means $1 \text{ cm} = 4 \text{ m}$. Real-world distance per cm doubled (2 to 4), so drawing shrinks. Scale factor ratio: $4 \div 2 = 2$, so drawing shrinks by $1 \div 2 = 0.5$. New length: $8 \times 0.5 = 4 \text{ cm}$ (or $8 \div 2 = 4 \text{ cm}$).
- 25) **Choice D is correct.** (7.G.1-7.G.5) The linear scale factor equals the ratio of distances from the apex. The cut is 6 cm from the apex out of a total height of 9 cm, so the scale factor is $\frac{6}{9} = \frac{2}{3}$.
- 26) **Choice A is correct.** (7.SP.5-7.SP.8) Odd cards: 1, 3, 5. $P(\text{first odd}) = \frac{3}{6} = \frac{1}{2}$. Given first is odd, $P(\text{second odd}) = \frac{2}{5}$. So $P(\text{both}) = \frac{1}{2} \times \frac{2}{5} = \frac{1}{5}$.
- 27) **Choice A is correct.** (7.NS.2) $(2 \times 3) \times (-5) = 6 \times (-5) = -30$. Positive times negative is negative.
- 28) **Choice B is correct.** (7.NS.1-7.NS.3) $\sqrt{16} = 4 \text{ cm}$ since $4 \times 4 = 16$.



Hi, Confident Learner!

◇ This high-stamina book gave you nine substantial Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. Grade 7 math can feel big because it brings together rational numbers, expressions, equations, geometry, probability, and data. ◇

★ **Remember this:** But big topics become manageable when you practice one skill at a time. That is what you have been doing with every test in this book. ★

Confidence Builders

- **Know the Goal:** Identify what the question asks.
- **Use Vocabulary:** Math words point to math actions.
- **Show Work:** Give yourself something to check.
- **Celebrate Effort:** Practice is proof that you are moving.

Grade 7 test-day tip: When reviewing, do not only mark wrong answers. Write one sentence about what you learned from each one.

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

Jay Daie

Your Confidence Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **9** full-length Math practice tests and **2** online tests to help Grade 7 students build confidence, strengthen skills, and excel on standardized assessments.

Each practice test is carefully crafted to reflect the latest standards and includes a variety of question types, realistic test conditions, and detailed answer explanations.

Perfect for classroom use, homework, test preparation, and extra practice at home.

THIS BOOK INCLUDES:

9 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answer Explanations



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Give your child the tools to build strong math skills, confidence, and a positive attitude toward learning.

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Build a solid foundation through targeted practice and review.



Better Problem Solving

Develop logical thinking and effective solution strategies.



Deeper Understanding

Reinforce key concepts with clear explanations and meaningful practice.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Achieve Success

Build confidence and perform your best on test day.

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- ✓ The Number System
- ✓ Expressions & Equations
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- ✓ Measurement & Conversions
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2 ONLINE TESTS

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