

6

ALASKA
AK STAR

GRADE

7

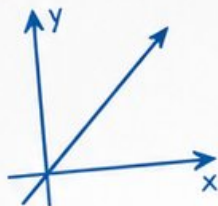
MATH

PRACTICE TESTS



Standards Aligned
Problem Solving For
Comprehensive
Assessment Programs

$$y = mx + b$$



$$2(x - 3) = 4x + 6$$

6 PRINTED
TESTS2 ONLINE
TESTS

USE THESE TWO
ADDITIONAL ONLINE
PRACTICE TESTS
FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.



Build
Confidence



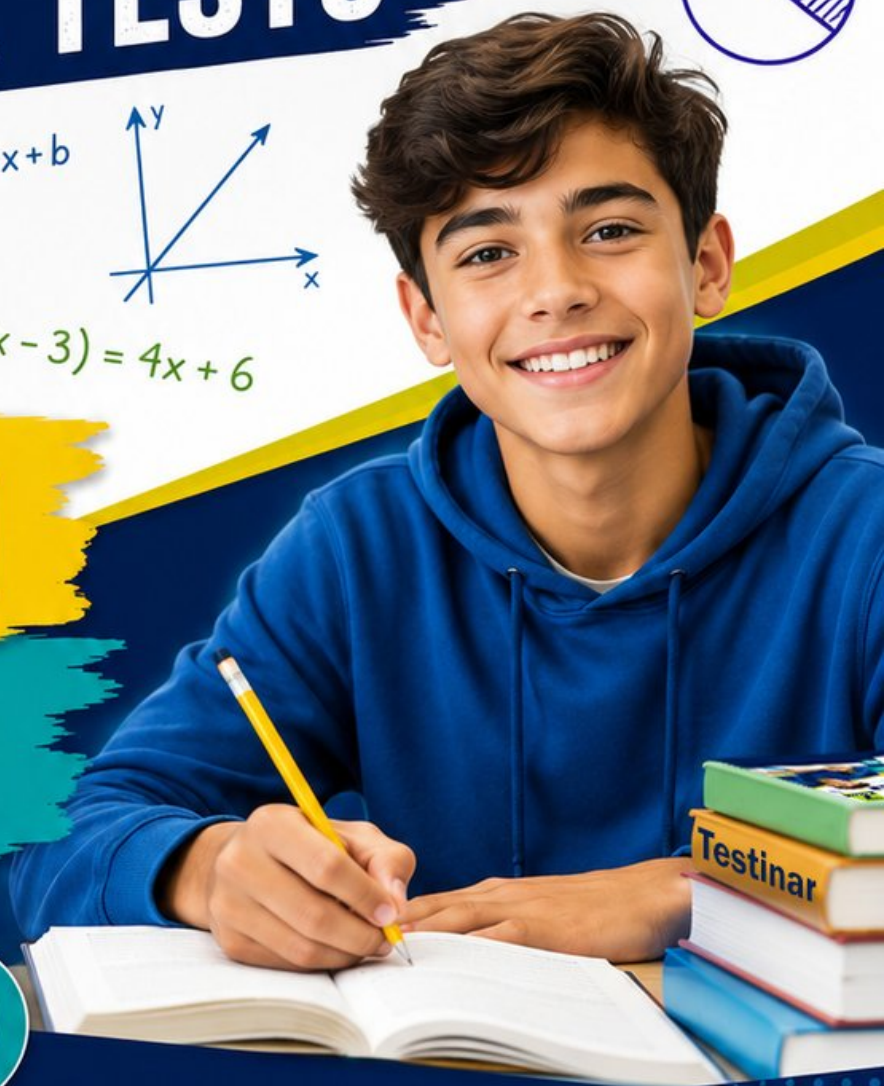
Strengthen
Math Skills



Detailed Answers
& Explanations

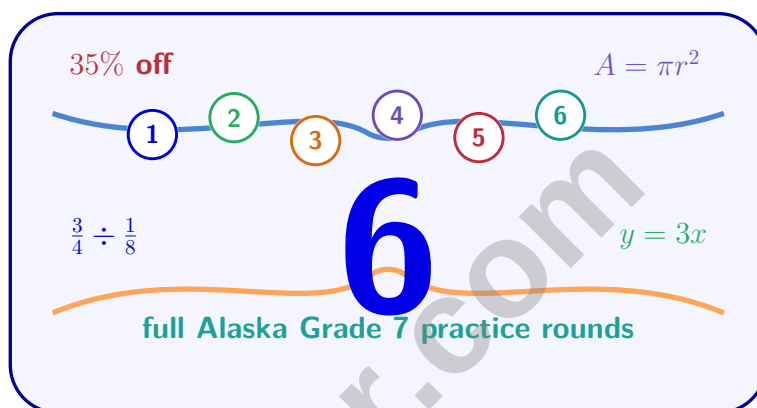


Improve Test
Performance



6 Alaska AK STAR Grade 7 Math Practice Tests

Standards-Aligned Practice with Review, Answer Keys, and Explanations



Six 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!

Six focused rounds for sharper AK STAR math thinking

This book gives you six 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 six-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?

Six AK STAR tests, 240 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.
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) Two similar triangles have perimeters of 20 inches and 50 inches. If the smaller triangle has one side of 4 inches, what is the length of the corresponding side in the larger triangle?

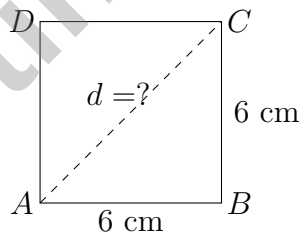
☐ A. 8 inches ☐ C. 12.5 inches
☐ B. 10 inches ☐ D. 20 inches

- 2) A streaming service charges \$12 per month. Which equation represents the total cost C for m months?

☐ A. $C = m + 12$ ☐ C. $m = 12C$
☐ B. $C = \frac{12}{m}$ ☐ D. $C = 12m$

- 3) A store gives a \$5 coupon for every 6 items purchased. If you buy x bundles of 6 items, each bundle costs \$8, and your total before coupon is \$48, which equation represents your savings per bundle?

☐ A. $6(8 - 5) = 18$ ☐ C. $6(8) - 5 = 48$
☐ B. $x(8 - 5) = 48$ ☐ D. $(8 - 5)x = 18$



4)

A square has a side length of 6 cm. What is the length of its diagonal?

☐ A. 6 cm ☐ C. 12 cm
☐ B. $6\sqrt{2}$ cm ☐ D. $\sqrt{36}$ cm



5) A museum posts a survey on its website for visitors to complete. What is the PRIMARY limitation of this method?

- ☐ A. The survey is too long ☐ C. It requires payment from visitors
☐ B. It excludes non-internet users and creates voluntary response bias ☐ D. It uses systematic random sampling

6) A scatter plot shows the relationship between the price of a bicycle (x-axis, in dollars) and the number sold per month (y-axis). The points show a downward trend. What does this suggest?

- ☐ A. Expensive bikes never sell ☐ C. Price and sales are unrelated
☐ B. Lower-priced bikes tend to sell more ☐ D. The store should lower all prices

7) A point is translated from $(-2, 3)$ to $(4, -1)$. Write the translation vector (a, b) in the form (a, b) .

8) Two sales reps' weekly commission earnings (in dollars):

Rep	Mean	Median
Rep A	\$1200	\$1400
Rep B	\$1200	\$1000

Which statement best describes their earnings?

- ☐ A. Both reps earn identical amounts weekly ☐ C. Rep A's median exceeds the mean (low outliers); Rep B's mean exceeds median (high outliers)
☐ B. Rep A has low-earning weeks pulling the mean down; Rep B has high-earning weeks ☐ D. Rep B earns more on average



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- 9) A deck contains 52 cards: 13 hearts, 13 diamonds, 13 clubs, and 13 spades. A card is drawn at random. What is the probability of drawing a heart or a diamond?

☐ A. $\frac{1}{4}$
☐ B. $\frac{1}{2}$

☐ C. $\frac{3}{13}$
☐ D. $\frac{1}{3}$

- 10) Which of the following represents the complete sample space for flipping a coin and choosing a number from $\{1, 2, 3\}$?

$\{H1, H2, H3, T1, T2, T3\}$

☐ A. 3 outcomes
☐ B. 4 outcomes

☐ C. 5 outcomes
☐ D. 6 outcomes

- 11) A weather report analyzed 365 days of data. It rained on 78 days. What is the experimental probability that it will rain on any given day, based on this data?

☐ A. 0.17
☐ B. 0.21

☐ C. 0.31
☐ D. 0.78

- 12) A student has a $\frac{2}{3}$ probability of passing math and a $\frac{3}{4}$ probability of passing history. Assuming independence, what is the probability of passing EXACTLY ONE of these two subjects?

☐ A. $\frac{1}{2}$
☐ B. $\frac{5}{12}$

☐ C. $\frac{7}{12}$
☐ D. $\frac{11}{12}$

- 13) Raw data: 55, 52, 58, 51, 56, 53, 59. After creating a stem-and-leaf plot and ordering, what is the value at the second position?

☐ A. 51
☐ B. 52

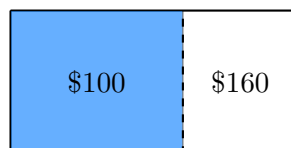
☐ C. 53
☐ D. 55



- 1) A scholarship fund grows from \$5,000 to \$5,512.50 in two years under annual compound interest. What is the interest rate?

- ☐ A. 4% ☐ C. 5.12%
☐ B. 10% ☐ D. 5%

Before After



2)

A before-and-after bar diagram shows a quantity increasing from \$100 to \$160. What is the percent increase?

- ☐ A. 40% ☐ C. 37.5%
☐ B. 62.5% ☐ D. 60%

- 3) The stem-and-leaf plot shows test scores:

Stem	Leaves
7	1, 3, 6, 8
8	0, 4, 7, 9
9	2, 5, 8

What is the range of the test scores?



- 4) To simulate the probability of rolling a sum of 8 or higher with two dice, which initial step is necessary?
- ☐ A. Determine all possible outcomes that satisfy the condition
- ☐ B. Roll the dice only once
- ☐ C. Use only a spinner with 4 sectors
- ☐ D. Assume equal likelihood of all sums
- 5) A student picks a shirt (Red, Blue, or Green) and shoes (Sneakers or Boots). How many outfits are possible?
- ☐ A. 5
- ☐ B. 6
- ☐ C. 8
- ☐ D. 9
- 6) A penny, nickel, and dime were tossed together 200 times. The number of times exactly 2 coins landed on heads was 53. What is the experimental probability of getting exactly 2 heads when tossing the three coins?
- ☐ A. $\frac{2}{3}$
- ☐ B. $\frac{53}{200}$
- ☐ C. 0.27
- ☐ D. 0.375
- 7) Which of the following describes mutually exclusive events?
- ☐ A. Rolling a 3 AND rolling an even number on one die roll
- ☐ B. Spinning red AND spinning blue on one spinner
- ☐ C. Drawing a heart AND drawing a face card
- ☐ D. Flipping heads AND flipping tails on one coin flip
- 8) A survey predicted 450 people would attend a concert. If the actual attendance was 500, what is the percent error?
- ☐ A. 11.1%
- ☐ B. 50%
- ☐ C. 10%
- ☐ D. 9%



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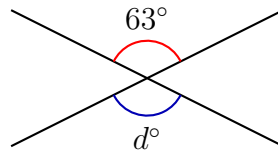
1) Solve: $2.5x + 1 = 6$

☐ A. $x = 1$

☐ B. $x = 2$

☐ C. $x = 3$

☐ D. $x = 4$



2)

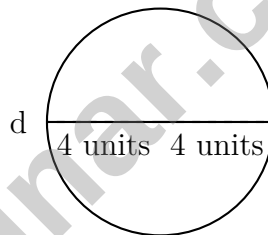
Two lines intersect. One angle measures 63° . What is the measure of the vertically opposite angle d ?

☐ A. 27°

☐ B. 63°

☐ C. 117°

☐ D. 153°



3)

The diameter of this circle is 8 units. What is the circumference? Use $\pi \approx 3.14$.

☐ A. 12.56 units

☐ B. 25.12 units

☐ C. 50.24 units

☐ D. 200.96 units

4) Two spinners are used to simulate rolling two dice. Each spinner has 6 equal sections numbered 1–6. If each spinner is spun once in a trial, how many different outcomes are in the sample space?

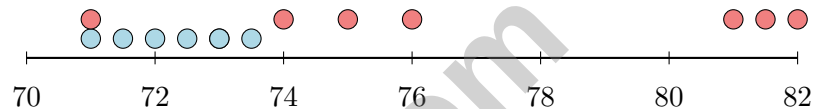


- 5) A restaurant bill comes to \$72. The customer leaves a 20% tip. How much is the tip?

- 6) The dot plots below show the daily temperatures (in °F) for two months:

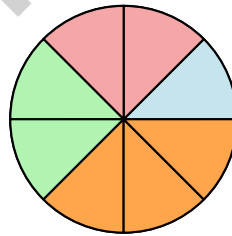
Month 2:

Month 1:



Which month is more consistent in temperature?

- ☐ A. Month 1 (tighter cluster) ☐ C. Both have equal consistency
☐ B. Month 2 (wider spread) ☐ D. Cannot tell from dot plots



7)

A spinner has 8 equal sections: 1 blue, 2 red, 2 green, and 3 yellow. What is the probability of landing on yellow?

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



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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 B is correct.** (7.G.1-7.G.5) The scale factor is $\frac{50}{20} = 2.5$. The corresponding side is $4 \times 2.5 = 10$ inches.
- 2) **Choice D is correct.** (7.RP.1-7.RP.3) Multiply the monthly rate by the number of months. The equation is $C = 12m$.
- 3) **Choice D is correct.** (7.EE.4a) This uses the distributive property form $a(b - c)x$ to represent the cost per bundle times the number of bundles.
- 4) **Choice B is correct.** (7.G.1-7.G.5) Diagonal of a square with side s is $s\sqrt{2} = 6\sqrt{2}$ cm.
- 5) **Choice B is correct.** (7.SP.1-7.SP.4) Online surveys miss non-internet users and only attract interested respondents who choose to complete the survey, introducing coverage bias and voluntary response bias.
- 6) **Choice B is correct.** (7.SP.1-7.SP.4) A downward trend means that as price increases, sales tend to decrease. This is a negative association, not a guarantee or causal statement.
- 7) **The correct answer is (6, -4).** (7.G.1-7.G.5) The translation vector is found by subtracting the starting point from the ending point: $(4, -1) - (-2, 3) = (4 - (-2), -1 - 3) = (4 + 2, -4) = (6, -4)$.
- 8) **Choice C is correct.** (7.SP.1-7.SP.4) Mean < Median indicates low outliers pulling the mean down. Mean > Median indicates high outliers pulling the mean up. Rep A: $1200 < 1400$ (low outliers). Rep B: $1200 > 1000$ (high outliers).
- 9) **Choice B is correct.** (7.SP.5-7.SP.8) Hearts + diamonds = $13 + 13 = 26$. $P(\text{heart or diamond}) = \frac{26}{52} = \frac{1}{2}$.
- 10) **Choice D is correct.** (7.SP.5-7.SP.8) The sample space lists all 6 pairs: H1, H2, H3, T1, T2, T3.
- 11) **Choice B is correct.** (7.SP.6) Relative frequency of rainy days: $\frac{78}{365} \approx 0.214 \approx 0.21$. This experimental probability predicts future rain likelihood.
- 12) **Choice B is correct.** (7.SP.5-7.SP.8) Pass math AND fail history: $\frac{2}{3} \cdot \frac{1}{4} = \frac{2}{12}$. Fail math AND pass history: $\frac{1}{3} \cdot \frac{3}{4} = \frac{3}{12}$. Total: $\frac{2}{12} + \frac{3}{12} = \frac{5}{12}$.
- 13) **Choice B is correct.** (7.SP.1-7.SP.4) Ordered: 51, 52, 53, 55, 56, 58, 59. The 2nd value is 52.
- 14) **Choice B is correct.** (7.SP.5-7.SP.8) $0.4 = \frac{4}{10} = \frac{2}{5}$ (simplified form).
- 15) **The correct answer is 14.** (7.G.4-7.G.6) $C = 2\pi r \Rightarrow 88 = 2 \times \frac{22}{7} \times r \Rightarrow 88 = \frac{44}{7}r \Rightarrow r = 88 \times \frac{7}{44} = 14$ cm.
- 16) **Choice C is correct.** (7.SP.1-7.SP.4) Proportion from sample: $\frac{40}{60} = \frac{2}{3}$. Apply to population: $\frac{2}{3} \times 3000 = 2000$ expected successes.
- 17) **Choice D is correct.** (7.RP.3) Estimate X: $\frac{|55-60|}{60} \times 100\% \approx 8.3\%$. Estimate Y: $\frac{|62-60|}{60} \times 100\% \approx 3.3\%$. Estimate Y has smaller error, making it the better estimate.
- 18) **Choice A is correct.** (7.EE.1-7.EE.2) Distribute $\frac{1}{4}$: $\frac{1}{4}(8b) - \frac{1}{4}(12) = 2b - 3$.
- 19) **Choice D is correct.** (7.RP.1-7.RP.3) Actual dimensions: $8 \times 2.5 = 20$ m; $6 \times 2.5 = 15$ m. Area = $20 \times 15 = 300$ m².
- 20) **Choice C is correct.** (7.RP.3) 22% of 400 is $0.22 \times 400 = 88$ books.
- 21) **The correct answer is B,C.** (7.G.1-7.G.5) B and C are equivalent and correct: two angles are equal (50° each), so by the Isosceles Triangle Theorem, the sides opposite those angles must be equal. A is wrong (equilateral requires all angles 60°). D is wrong (two angles are the same).
- 22) **Choice D is correct.** (7.RP.3) In $I = Prt$, interest is directly proportional to principal, rate, and time. If any of these increases, interest increases by the same factor.
- 23) **Choice D is correct.** (7.NS.1-7.NS.3) Subtracting a negative is the same as adding its opposite: $4 - (-7) = 4 + 7 = 11$.
- 24) **Choice A is correct.** (7.RP.3) Discount = $0.15 \times 80 = \$12$. Sale price = $80 - 12 = \$68$.
- 25) **Choice A is correct.** (7.NS.1b) The student added $|-7| + |4| = 7 + 4 = 11$ and kept the negative sign. For opposite signs, subtract: $|-7| - |4| = 7 - 4 = 3$, so the correct answer is -3 .
- 26) **Choice B is correct.** (7.EE.1) Convert to common denominator: $\frac{2}{3}m = \frac{4}{6}m$. Then $\frac{4}{6}m + \frac{1}{6}m = \frac{5}{6}m$.
- 27) **Choice A is correct.** (7.EE.1-7.EE.2) GCF is 3. Factor out the negative: $-6x - 9 = -3(2x + 3)$. Check: $-3(2x + 3) = -6x - 9$.
- 28) **Choice B is correct.** (7.EE.4b) Add 4: $3x \leq 15$. Divide by 3: $x \leq 5$.
- 29) **Choice C is correct.** (7.SP.1-7.SP.4) 37.5% of 800 = $0.375 \times 800 = 300$ students.



Hi, Persistent Problem Solver!

◇ Some Grade 7 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 7 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 7 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. SUCCEED TOMORROW!

This book includes **6** 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:

6 Full-Length Printed Tests

2 Online Practice Tests

 Detailed Answers & Explanations



MORE PRACTICE. GREATER RESULTS.

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

WHAT YOU'LL GAIN



Build Confidence

Practice regularly to feel prepared and test-ready.



Strengthen Math Skills

Develop key math concepts and problem solving abilities.



Improve Understanding

Learn with clear explanations and step-by-step solutions.



Test Confidence

Familiarize with test formats and improve accuracy and speed.



Boost Performance

Apply your knowledge and achieve your best score!

TOPICS COVERED

- ✓ Ratios & Proportions
- ✓ The Number System
- ✓ Expressions & Equations
- ✓ Geometry
- ✓ Percents & Decimals
- ✓ Statistics & Probability
- ✓ Data Analysis
- ✓ Measurement & Conversions
- ✓ Algebraic Thinking
- ✓ And More!



2 ONLINE TESTS

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



2 EXTRA ONLINE TEST ACCESS CODE IS INSIDE THE BOOK!

Don't lose it—your extra practice and success start here!



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