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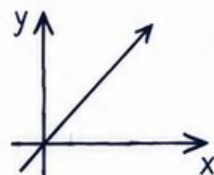
Alaska AK STAR

GRADE
7
MATH

PRACTICE TESTS

Standards Aligned
Problem Solving
For Comprehensive
Assessment Programs

$$y = mx + b$$



$$\frac{2x}{3} + \frac{x}{6} = 2$$



$$V = \frac{1}{3} \pi r^2 h$$

**4 PRINTED TESTS****2 ONLINE TESTS**

USE THESE TWO
**ADDITIONAL ONLINE
PRACTICE TESTS**

FOR EXTRA REVIEW AFTER
THE PRINTED TESTS
IN THIS BOOK.



Build
Confidence



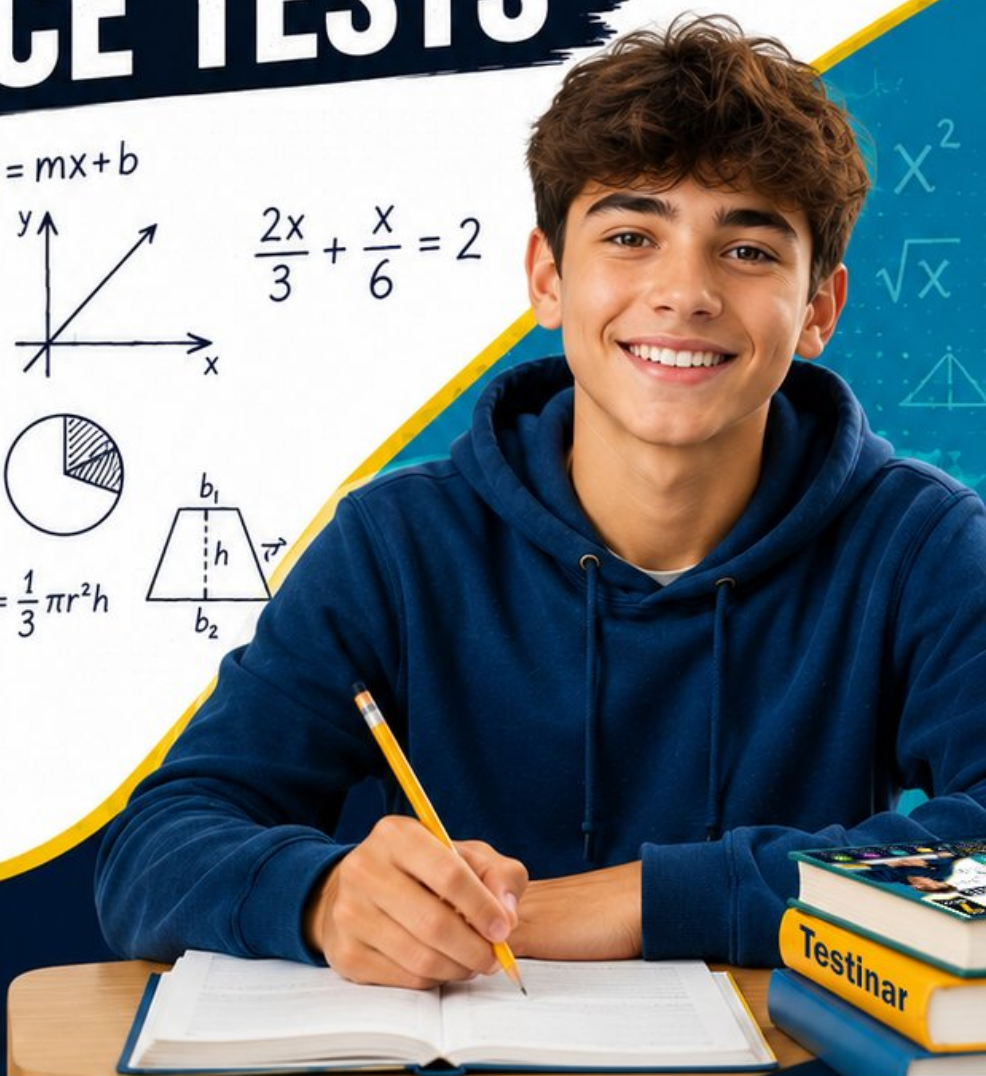
Strengthen
Math Skills



Detailed Answers
& Explanations

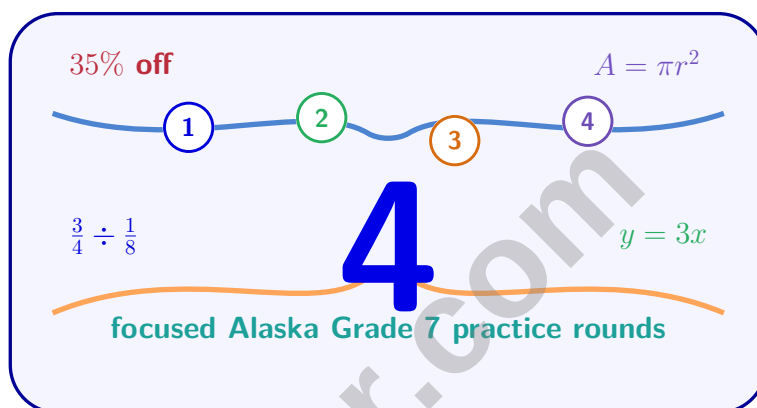


Improve Test
Performance



4 Alaska AK STAR Grade 7 Math Practice Tests

Focused AK STAR Practice with Keys and Clear Explanations



Four 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!

Four focused rounds for sharper AK STAR math thinking

This book gives you four 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 four-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?

Four AK STAR tests, 160 questions, and a focused review path

Part	What You Will Practice
Tests 1–2	Proportional relationships, unit rates, percents, rational-number operations, and careful reading.
Tests 3–4	Expressions, equations, inequalities, scale drawings, geometry, data, probability, 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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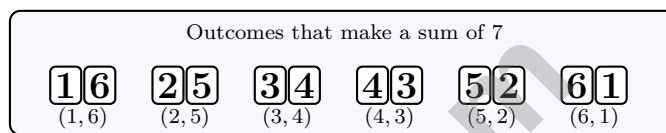
- 1) Two spinners, each with sections A, B, C in equal parts, are spun. How many outcomes are in the sample space?
- ☐ A. 3 ☐ C. 9
☐ B. 6 ☐ D. 12
- 2) A circle has diameter 20 ft. What is its circumference to the nearest tenth? Use $\pi \approx 3.14$.
- ☐ A. 31.4 ft ☐ C. 125.6 ft
☐ B. 62.8 ft ☐ D. 314 ft
- 3) A school must choose between two lunch-line systems. System A averages 8 minutes wait with MAD 0.5 minutes. System B averages 8.2 minutes with MAD 1.8 minutes. For student experience, which is better?
- ☐ A. System B (slightly faster average) ☐ C. Both are equally acceptable
☐ B. System A (consistent experience, predictable waits) ☐ D. Requires knowing the number of students
- 4) A bag contains 2 dimes, 3 nickels, and 5 pennies. A coin is picked at random. What is the probability of not picking a penny?
- ☐ A. $\frac{3}{10}$ ☐ C. $\frac{7}{10}$
☐ B. $\frac{5}{10}$ ☐ D. $\frac{1}{5}$
- 5) An ice cream shop offers 4 cone types (Sugar, Cake, Waffle, Chocolate) and 10 flavors. When ordering with cone and flavor, how many total combinations exist?
- ☐ A. 14 ☐ C. 35
☐ B. 20 ☐ D. 40



6) A box plot compares reaction times (in milliseconds) for two drivers. Driver A: Median 550, IQR 100; Driver B: Median 600, IQR 200. Which driver is more reliable?

- ☐ A. Driver A (faster median and more consistent)
☐ B. Driver B (slower but more variable)
☐ C. Both drivers are equally reliable
☐ D. Driver B (higher median indicates faster response)

7) A toss of two dice together was repeated 360 times. The number of times the sum was 7 was recorded as 58 times. What is the experimental probability of rolling a sum of 7?



☐ A. $\frac{1}{6}$
☐ B. $\frac{58}{360}$
☐ C. 0.16
☐ D. $\frac{7}{360}$

8) In a school, 30% of students play soccer and 25% play basketball. If 5% play both, what is the probability a student plays soccer OR basketball?

- ☐ A. 0.55
☐ B. 0.50
☐ C. 0.40
☐ D. 0.35

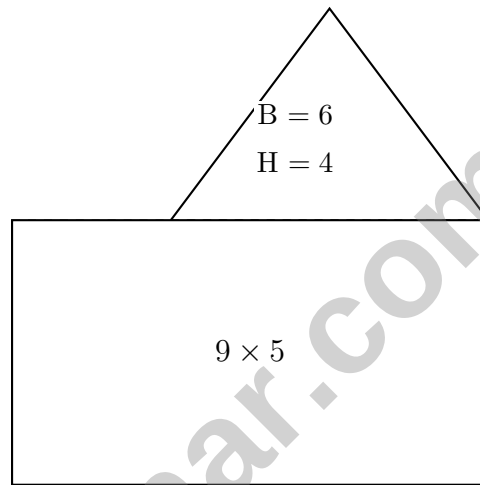
9) A student mistakenly writes: “Stem 2 with leaves 3, 5, 7 represents 3, 5, 7.” What is the error?

- ☐ A. The leaves are not in ascending order
☐ B. The student forgot to combine the stem with each leaf
☐ C. The stems and leaves are reversed
☐ D. There is no error; the representation is correct



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- 10) A business has a loss of \$55 (represented as -55). To break even, what signed number must be added to the loss?



11)

A student saw this composite figure (rectangle $9\text{ m} \times 5\text{ m}$ with triangle on top, base 6 m , height 4 m) and calculated the total as $45 + 12 = 57\text{ m}^2$. Is this correct? If not, what is the error?

- ☐ A. Yes, 57 m^2 is correct.
 ☐ C. No; should be $45 + 18 = 63\text{ m}^2$.
- ☐ B. No; forgot the $\frac{1}{2}$ in triangle formula; true area is $45 + 24 = 69\text{ m}^2$.
 ☐ D. No; the dimensions don't match the shape shown.

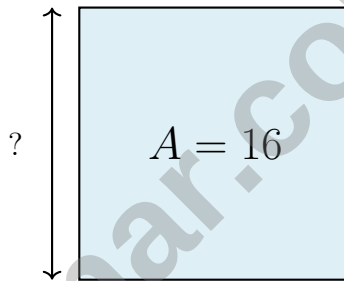


- 1) A distance-time table shows a runner's proportional pace.

Time (min)	Distance (mi)
5	1
10	2
15	3
20	4

What is the constant of proportionality (miles per minute)?

- ☐ A. 0.1 mi/min ☐ C. 10 mi/min
☐ B. 5 mi/min ☐ D. 0.2 mi/min



2)

What is the side length of the square?

- ☐ A. 2 ☐ C. 4
☐ B. 3 ☐ D. 5

- 3) A pair of jeans costs \$80. After a 20% discount, express the final price in factored form.

- ☐ A. $80(1 - 0.2)$ ☐ C. $0.8(80)$
☐ B. $80(0.2)$ ☐ D. 80×20



4) What is $0.7 \times (-10)$?

☐ A. -7

☐ C. 6

☐ B. -6

☐ D. 7

5) A hiker starts at an elevation of 500 feet and descends 750 feet. What is the hiker's final elevation? (Represent descent as a negative change.)

6) Evaluate: $\frac{5}{12} + \frac{1}{3}$. Express your answer as a fraction in simplest form.

7) A beverage mix uses 1 part juice concentrate for every 5 parts water. Complete the ratio table:

Juice (parts)	1	3	x
Water (parts)	5	y	35

What is $x + y$?

☐ A. 17

☐ C. 22

☐ B. 20

☐ D. 25



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1) Solve: $4x < 20$

☐ A. $x > 5$

☐ B. $x < 5$

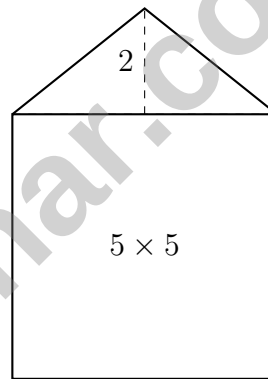
☐ C. $x \geq 5$

☐ D. $x < 80$

2) Two box plots compare monthly rainfall (in inches) for Region A and Region B. Region A: IQR (Interquartile Range) = 3 inches; Region B: IQR = 8 inches. What does this comparison reveal?

- ☐ A. Region A has more variable rainfall
- ☐ B. Region B has a wider middle 50% of data (more variability in the middle)

- ☐ C. Both regions have identical rainfall patterns
- ☐ D. Region A receives more total rain annually



3)

A decorative tile is a square ($5 \text{ cm} \times 5 \text{ cm}$) with an isosceles triangle attached to the top (base 5 cm, height 2 cm). What is the total area?

☐ A. 10 cm^2

☐ B. 25 cm^2

☐ C. 30 cm^2

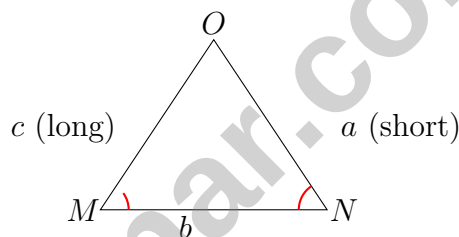
☐ D. 35 cm^2



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- 4) A bank account starts with a balance of \$250.75. The account loses \$12.50 per month for 5 months. What is the final balance?

- 5) A rectangular prism has length 15 cm and width 6 cm. If the height is tripled from 2 cm to 6 cm, how much does the volume increase?

☐ A. 180 cm^3
☐ C. 540 cm^3
☐ B. 360 cm^3
☐ D. 720 cm^3


6)

A triangle has sides labeled a (short), b (medium), and c (long). The angle opposite the shortest side is:

☐ A. Always 60°
☐ C. The smallest angle

☐ B. The largest angle

☐ D. Exactly 90°

- 7) A circle has a diameter of 13.4 mm. What is its radius?

☐ A. 6.7 mm

☐ C. 20.1 mm

☐ B. 13.4 mm

☐ D. 26.8 mm


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 C is correct.** (7.SP.5-7.SP.8) For two spinners each with 3 outcomes, the sample space has $3 \times 3 = 9$ outcomes: $(A, A), (A, B), (A, C), (B, A), (B, B), (B, C), (C, A), (C, B), (C, C)$.
- 2) **Choice B is correct.** (7.G.4-7.G.6) $C = \pi d = 3.14 \times 20 = 62.8$ ft.
- 3) **Choice B is correct.** (7.SP.1-7.SP.4) System A's small MAD (0.5 min) means students wait reliably 8 minutes. System B's large MAD (1.8 min) means unpredictable waits: some 6 min, some 10+ min. Consistency matters for user experience.
- 4) **Choice B is correct.** (7.SP.5-7.SP.8) Total coins = $2 + 3 + 5 = 10$. Non-penny coins = $2 + 3 = 5$. $P(\text{not penny}) = \frac{5}{10} = \frac{1}{2}$.
- 5) **Choice D is correct.** (7.SP.5-7.SP.8) Cone types: 4; flavors: 10. Total: $4 \times 10 = 40$ combinations.
- 6) **Choice A is correct.** (7.SP.3) Reliability combines speed and consistency. Driver A has a faster (lower) median (550 vs. 600) and smaller IQR (100 vs. 200), meaning more predictable reaction times.
- 7) **Choice B is correct.** (7.SP.6) Experimental probability = $\frac{58}{360} \approx 0.161$. Note that the theoretical probability of rolling a sum of 7 is $\frac{6}{36} = \frac{1}{6} \approx 0.167$, which is very close to the experimental result.
- 8) **Choice B is correct.** (7.SP.5-7.SP.8) Using $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$: $0.30 + 0.25 - 0.05 = 0.50$.
- 9) **Choice B is correct.** (7.SP.1-7.SP.4) Stem 2 with leaves 3, 5, 7 represents 23, 25, 27, not 3, 5, 7.
- 10) **The correct answer is 55.** (7.NS.1-7.NS.3) To cancel out the loss of -55 , you add its opposite, which is $+55$. Then $-55 + 55 = 0$ (break even).
- 11) **Choice A is correct.** (7.G.4-7.G.6) Rectangle: $9 \times 5 = 45 \text{ m}^2$. Triangle: $\frac{1}{2} \times 6 \times 4 = 12 \text{ m}^2$. Total: $45 + 12 = 57 \text{ m}^2$. The student correctly applied the triangle area formula.
- 12) **Choice B is correct.** (7.G.4-7.G.6) Volume of a rectangular prism is length $\times$ width $\times$ height, so $12 \times 5 \times 3 = 180 \text{ cm}^3$.
- 13) **The correct answer is -30 .** (7.NS.2) Change per minute is -7.5 meters. After 4 minutes: $(-7.5) \times 4 = -30$ meters.
- 14) **Choice C is correct.** (7.G.1-7.G.5) By the Triangle Inequality, the sum of the two shorter sides must exceed the longest side.
- 15) **Choice B is correct.** (7.G.4-7.G.6) The shaded region bounded by two radii (OP and OQ) and the arc PQ is a sector.
- 16) **Choice D is correct.** (7.G.1-7.G.5) The Triangle Inequality requires the sum of any two sides to exceed the third. With sides 5 and 9: we need $5 + 9 > c$, so $c < 14$ m. Also $5 + c > 9$, so $c > 4$ m. Thus $4 < c < 14$. The value 15 exceeds this range.
- 17) **The correct answer is 100.** (7.NS.1-7.NS.3) Perimeter = $4s = 40$, so $s = 10$ cm. Area = $s^2 = 10^2 = 100 \text{ cm}^2$.
- 18) **Choice B is correct.** (7.SP.5-7.SP.8) Experimental probability = $\frac{\text{times event occurred}}{\text{total trials}} = \frac{10}{60}$.
- 19) **The correct answer is \$24.** (7.EE.1-7.EE.2) A 50% markup adds 50% to the cost: selling price = $c + 0.5c = 1.5c$. With $c = 16$: $1.5(16) = 24$. The selling price is \$24.
- 20) **Choice B is correct.** (7.SP.1-7.SP.4) Group 1: $\frac{24}{80} = 0.30$ or 30%; Group 2: $\frac{35}{100} = 0.35$ or 35%; Group 3: $\frac{27}{90} = 0.30$ or 30%. Group 2 is different.
- 21) **The correct answer is B,C.** (7.RP.1-7.RP.3) Option B: cost = $1.50 \times$ pounds (proportional, of form $y = kx$). Option C: distance = speed $\times$ time (proportional). Option A is a general trend but not a strict proportional relationship. Option D: height does not scale proportionally with age (growth rates vary).
- 22) **Choice D is correct.** (7.RP.3) Account A: $1000 \times 0.06 \times 3 = \180 . Account B: $1500 \times 0.02 \times 3 = \90 . Account A earns more interest.
- 23) **Choice B is correct.** (7.NS.1-7.NS.3) The error is choice B. The student forgot to flip the sign of -6 to $+6$. The correct process: $-4 - (-6) = -4 + 6 = 2$. The student mistakenly added $-4 + (-6) = -10$ instead.
- 24) **Choice D is correct.** (7.RP.3) Tax = $0.09 \times 85 = \$7.65$. Total = $85 + 7.65 = \$92.65$.
- 25) **Choice B is correct.** (7.SP.1-7.SP.4) $252^\circ \div 360^\circ \times 100 = 70\%$.
- 26) **Choice D is correct.** (7.RP.1-7.RP.3) Unit rate = $\frac{6}{3/5} = 6 \times \frac{5}{3} = 10$ dollars per pound.



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The Power of Showing Work

Hi, Organized Solver!

◇ You practiced Grade 7 skills that often require more than one step. That means your written work matters. ◇

★ **Remember this:** Showing work is not extra. It is how you track your thinking, find errors, and prove that your answer did not happen by luck. You practiced across 4 full Grade 7 practice tests, and that repeated effort matters. ★

Organized Work Habits

- **One Line Per Step:** Keep the path readable.
- **Box the Answer:** Make the final result easy to find.
- **Use Labels:** Tell what each value represents.
- **Check the Path:** Follow your steps backward if needed.

Grade 7 test-day tip: When a problem has several steps, write less on each line. Space makes checking easier.

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

Jay Daie

Your Organized-Work Coach

PRACTICE TODAY. SUCCEED TOMORROW!

This book includes **4** 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.



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2 Online Practice Tests

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Practice regularly to feel prepared and test-ready.



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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!

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