7 Alaska AK STAR

Grade 7 Math Practice Tests

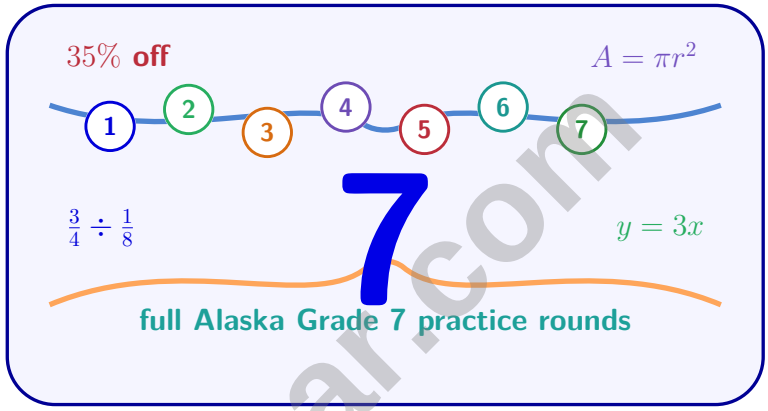
ONLINE

7 PRINTED TESTS + 2 ONLINE TESTS

Standards Aligned Problem Solving For Comprehensive Assessment Programs

8 Alaska AK STAR Grade 7 Math Practice Tests

Focused readiness for Alaska Grade 7 ratios, percents, equations, geometry, statistics, and probability



Eight 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!

Eight focused rounds for sharper AK STAR math thinking

This book gives you seven 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.

How to Use This Book

An eight-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?

Eight AK STAR tests, 280 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 7–8	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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1) A map has a scale of 2 cm : 3 km. If two towns are 10 cm apart on the map, how far apart are they in reality?

☐ A. 12 km
☐ B. 15 km
☐ C. 18 km
☐ D. 20 km

2) A die is rolled 150 times. The results are shown in the table below.

Outcome	1	2	3	4	5	6
Frequency	20	18	25	28	31	28

Which outcome has the highest estimated probability based on this simulation?

☐ A. 2
☐ B. 4
☐ C. 5
☐ D. 6

3) What is $2\frac{1}{2} \times 4$?

☐ A. 8
☐ B. 9
☐ C. 10
☐ D. 12

4) A restaurant bill is \$45. Marcus leaves an 18% tip. How much is the tip?

☐ A. \$6.75
☐ B. \$14.40
☐ C. \$10.80
☐ D. \$8.10

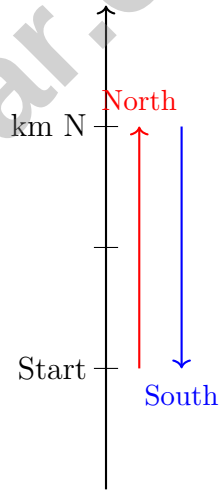
5) The table below shows a savings account with \$400 earning 5% annual compound interest:

Year	Interest Earned	Balance
0	–	\$400
1	\$20	\$420
2	?	?
3	\$23.10	\$506.25

What is the balance at the end of year 2?

☐ A. \$440
☐ B. \$450
☐ C. \$442
☐ D. \$441

6) A scout hikes 8 kilometers north, then 8 kilometers south. Using a signed number model where north is positive, what is the total displacement?



☐ A. 16 km north
☐ B. 8 km north
☐ C. 0 km (back at start)
☐ D. 8 km south

7) At noon, the temperature is $3°C$. By midnight, the temperature falls to $-12°C$. How many degrees did the temperature drop?

8) How would you verify that a simple interest problem is correct? Which step is essential?

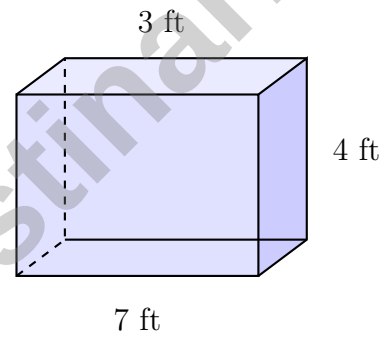
☐ A. Use the formula $A = P(1 + rt)$ to check that the total amount is correct

☐ B. Divide the interest by the principal to ensure the rate matches the given rate

☐ C. Compare the answer to other students' work

☐ D. Plug the values back into the formula and recalculate

9)



This isometric view shows a rectangular prism with dimensions 7 ft × 4 ft × 3 ft. Calculate the surface area.

☐ A. 98 ft^2

☐ B. 122 ft^2

☐ C. 166 ft^2

☐ D. 336 ft^2

1)

Simulated Roll	1	2	3	4
Frequency	48	52	45	55

A spinner with 4 equal sections is spun 200 times to estimate probabilities. Which two sections have relative frequencies closest to the theoretical probability of 0.25?

☐ A. Sections 1 and 2
☐ B. Sections 2 and 4
☐ C. Sections 1 and 3
☐ D. Sections 3 and 4

2) Simplify: $-3(x+2)-2x$.

☐ A. $-3x-6-2x=-5x-6$
☐ B. $-5x-2$
☐ C. $x-6$
☐ D. $-5x+6$

3) A box plot shows video download times (in seconds) for two internet providers. Provider A: Q1 = 8, Median = 12, Q3 = 16. Provider B: Q1 = 6, Median = 12, Q3 = 20. Which provider has more consistent performance?

☐ A. Provider A (IQR = 8, tighter spread)
☐ B. Provider B (IQR = 14, more flexible)
☐ C. Both providers are identical
☐ D. Provider B (faster upper quartile)

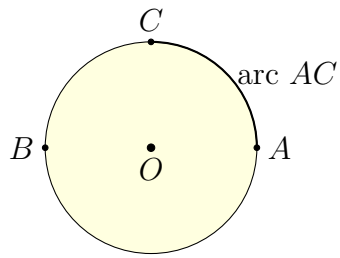
4) A rectangular garden is 10 m wide and 8 m tall. A triangular section is removed from the bottom, with the triangle's base being 10 m and height 2 m. What is the remaining area?

☐ A. 70 m^2
☐ B. 80 m^2
☐ C. 90 m^2
☐ D. 100 m^2

5) A cube has side length 5 inches. What is its volume?

☐ A. 125 in^3
☐ B. 75 in^3
☐ C. 25 in^3
☐ D. 15 in^3

6) In the circle below, which of the following is an arc?



☐ A. The segment OA
☐ B. The curve from A to C
☐ C. The chord AC
☐ D. The point O

7) A cube's edge length is s cm. If the surface area is 600 cm^2, which equation correctly represents this relationship?

☐ A. $6s = 600$
☐ B. $s^3 = 600$
☐ C. $6s^2 = 600$
☐ D. $2s + 2s + 2s = 600$

8) The temperature in the morning was $-8°C$. It rose $15°C$ by afternoon. Then it dropped $5°C$ by evening. What was the evening temperature?

1) The additive inverse (opposite) of -14 is which value?

☐ A. 14
☐ B. -14
☐ C. 0
☐ D. $\frac{1}{14}$

2) A checking account allows you to write checks and make debit card purchases, but typically offers little to no interest. A savings account accrues interest but limits withdrawals. If you want to access your money frequently for bills, which account is better?

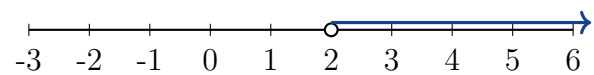
☐ A. Savings account
☐ B. Neither; use credit instead
☐ C. Both equally
☐ D. Checking account

3) A store advertises *"Save 30% on all winter coats!"* If a coat originally costs \$120, what is the sale price?

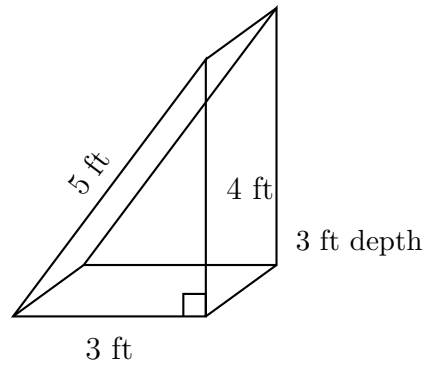
☐ A. \$36
☐ B. \$150
☐ C. \$90
☐ D. \$84

4) A movie ticket costs \$9 and popcorn costs \$4 per order. If you spend \$25 total, how many orders of popcorn did you buy?

5) On a number line, which correctly represents $q > 2$?



☐ A. Closed circle at 2 pointing right
☐ B. Open circle at 2 pointing left
☐ C. Open circle at 2 pointing right
☐ D. Closed circle at 2 pointing left



6) A triangular prism has a right triangular base with legs 3 ft and 4 ft (hypotenuse 5 ft), and the prism has depth 3 ft. Find the surface area.

☐ A. 12 ft^2
☐ B. 24 ft^2
☐ C. 48 ft^2
☐ D. 72 ft^2

7) If an angle measures 29°, what is the measure of an angle supplementary to it?

☐ A. 29°
☐ B. 61°
☐ C. 151°
☐ D. 209°

8) A point is moved from $(-3, 1)$ to $(4, 6)$ by a single transformation. Which of the following best describes this transformation?

☐ A. Translation by $(7, 5)$
☐ B. Reflection over the origin
☐ C. Rotation of 90°
☐ D. Reflection over the x-axis

9) Two similar triangles have a perimeter of 24 inches and 36 inches respectively. If the smaller triangle has an area of 48 square inches, what is the area of the larger triangle?

☐ A. 72 square inches
☐ B. 96 square inches
☐ C. 108 square inches
☐ D. 144 square inches

Alaska System of Academic Readiness 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 System of Academic Readiness practice test.

Practice Test Answers and Explanations

Practice Test 1 Answers and Explanations

1) **Choice B is correct.** 7.G.1-7.G.5 Set up the ratio: $\frac{2 \text{ cm}}{3 \text{ km}} = \frac{10 \text{ cm}}{x}$. Cross-multiply: $2x = 30$, so $x = 15$ km.
2) **Choice C is correct.** 7.SP.5-7.SP.8 Outcome 5 has the highest frequency (31 out of 150), so $P(5) \approx \frac{31}{150} \approx 0.207$.
3) **Choice C is correct.** 7.NS.2 $2\frac{1}{2} = \frac{5}{2}$. So $\frac{5}{2} \times 4 = \frac{20}{2} = 10$.
4) **Choice D is correct.** 7.RP.3 Tip amount $= 0.18 \times 45 = \$8.10$.
5) **Choice D is correct.** 7.RP.3 Year 2 balance: $420 \times 1.05 = 441$. Interest earned: $441 - 420 = 21$.
6) **Choice C is correct.** 7.NS.1-7.NS.3 $+8$ (north) and -8 (south) are opposites. Their sum is zero: $8 + (-8) = 0$. The scout returns to the starting point.
7) **The correct answer is** 15 **.** 7.NS.1-7.NS.3 The temperature drop is $3 - (-12) = 3 + 12 = 15$ degrees.
8) **Choice D is correct.** 7.RP.3 To verify a simple interest calculation, substitute all values back into $I = Prt$ (or $A = P + I$) to check that the result is correct. This is a standard verification method in math.
9) **Choice B is correct.** 7.G.4-7.G.6 $SA = 2(\ell w + \ell h + wh) = 2(7 \cdot 4 + 7 \cdot 3 + 4 \cdot 3) = 2(28 + 21 + 12) = 2(61) = 122$ ft^2.
10) **Choice A is correct.** 7.NS.1b Both numbers are negative. Add absolute values: $|-47| + |-26| = 47 + 26 = 73$. Keep the negative sign: $-47 + (-26) = -73$.
11) **Choice A is correct.** 7.EE.1 Combine: $\frac{3}{5}x + \frac{2}{5}x = \frac{5}{5}x = x$.
12) **Choice A is correct.** 7.EE.1-7.EE.2 GCF of 4 and 8 is 4. Factor: $4x + 8y = 4(x + 2y)$.
13) **Choice A is correct.** 7.EE.4b Check: $2(5) - 1 = 10 - 1 = 9$, and $9 > 7$ is true. So $x = 5$ is indeed a solution.
14) **Choice B is correct.** 7.NS.2d $1 \div 2 = 0.5$. This is terminating since the denominator is a power of 2.
15) **The correct answer is** 1.5 **.** 7.RP.1-7.RP.3 The unit rate is $6 \div 4 = 1.5$.
16) **Choice A is correct.** 7.NS.1-7.NS.3 6.3×10^{-8} means move the decimal 8 places left: $6.3 \to 0.000000063$.
17) **Choice C is correct.** 7.EE.1-7.EE.2 Product of 2 and n is $2n$. Three more than $2n$ is $3 + 2n$.
18) **The correct answer is A,C.** 7.RP.3 Choice A: $50\% = \frac{1}{2}$. Choice B: $75\% = \frac{3}{4}$, not $\frac{2}{3}$. Choice C: $\frac{3}{4} = 0.75 = 75\%$. Choice D is false because $\frac{1}{5} = 20\%$, not 25%.
19) **Choice B is correct.** 7.EE.1-7.EE.2 First apply power rule: $(h^2)^3 = h^{2\times3} = h^6$. Then apply product rule: $h^6 \cdot h^4 = h^{6+4} = h^{10}$.
20) **Choice B is correct.** 7.EE.3-7.EE.4 Divide by 3: $n - 2 = 5$. Add 2: $n = 7$.
21) **Choice B is correct.** 7.G.1-7.G.5 If $G + (-5, 2) = (1, -4)$, then $G = (1, -4) - (-5, 2) = (1 - (-5), -4 - 2) = (1 + 5, -6) = (6, -6)$.
22) **Choice B is correct.** 7.G.1-7.G.5 Scale factor $\frac{2}{5}$ means smaller = larger $\times \frac{2}{5} = 100 \times \frac{2}{5} = 40$ cm.
23) **The correct answer is** 150 **.** 7.RP.3 Calculate $\frac{3}{5} \times 250 = \frac{3\times250}{5} = \frac{750}{5} = 150$ students.
24) **Choice D is correct.** 7.G.4-7.G.6 Incorrect: $3.14 \times 8^2 = 3.14 \times 64 = 200.96$ in^2. Correct: $r = 4$, so $A = 3.14 \times 16 = 50.24$ in^2.
25) **Choice B is correct.** 7.G.4-7.G.6 Original: $V_1 = \pi r^2 h$. New: $V_2 = \pi r^2 (3h) = 3\pi r^2 h = 3V_1$. Volume is directly proportional to height.
26) **Choice D is correct.** 7.SP.1-7.SP.4 Sampling only during evening hours is convenient for the surveyor but misses members who visit at other times, introducing convenience bias.
27) **Choice C is correct.** 7.SP.1-7.SP.4 Percentage $= \frac{90}{360} \times 100\% = \frac{1}{4} \times 100\% = 25\%$.
28) **The correct answer is** \$129.71 **.** 7.RP.3 Apply the 15% discount to get $140(0.85) = 119$. Then add 9% tax: $119(1.09) = 129.71$.
29) **Choice C is correct.** 7.SP.5-7.SP.8 By the counting principle: $4 \times 6 \times 3 = 72$ complete meal combinations.
30) **Choice B is correct.** 7.NS.1-7.NS.3 Convert to common denominator 4: $3\frac{3}{4} - 1\frac{2}{4} = 2\frac{1}{4}$.
31) **Choice A is correct.** 7.NS.1-7.NS.3 Negative divided by positive is negative: $-72 \div 8 = -9$.
32) **Choice A is correct.** 7.NS.1-7.NS.3 Elevation gain: $250 - 100 = 150$ meters.

Hi, Brave Learner!

◇ No one gets stronger by only doing easy problems. The questions that slowed you down were part of the training. This broad and demanding book gave you seven strong Grade 7 practice tests, so you had repeated chances to build accuracy, pacing, and confidence. ◇

⋆ **Remember this:** Mistakes are not proof that you cannot do math. They are directions. They show what to review, what to ask about, and what to practice next. ⋆

How to Use Mistakes

- **Name It:** Was it reading, setup, arithmetic, or checking?
- **Fix It:** Correct the work while the question is fresh.
- **Repeat It:** Try one similar problem soon.
- **Remember It:** Write the lesson in your own words.

Grade 7 test-day tip: Treat every corrected error as a point you are preparing to earn next time.

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

Jay Daie

Your Brave-Learning Coach

Practice Today. Succeed Tomorrow!

This book includes 7 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:

- **7** Full-Length Printed Tests
- **2** Online Practice Tests
- Detailed Answer 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

Stronger Math Skills
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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- Percents & Decimals
- Statistics & Probability
- Data Analysis
- Measurement & Conversions
- Algebraic Thinking
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