

# 5

# FULL-LENGTH

# Alaska

# AK STAR

## GRADE 5 MATH

### ★ PRACTICE TESTS ★



**5 FULL-LENGTH  
PRACTICE TESTS**



**COMPLETE  
STANDARDS  
REVIEW**



**SKILL PRACTICE,  
WORD PROBLEMS,  
AND MORE!**

$$\frac{3}{4} + \frac{2}{4} = \frac{5}{4}$$



$$12 \times 3 = 36$$



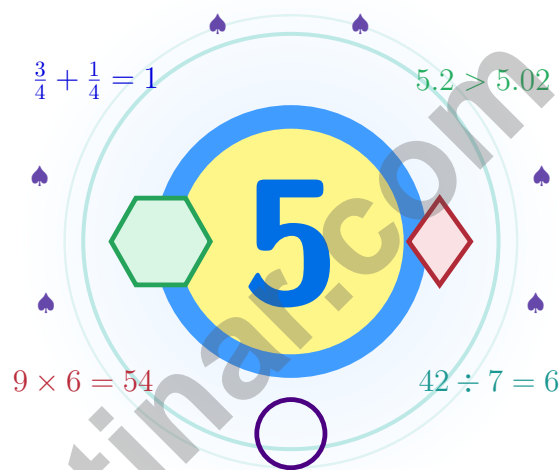
$$\frac{7}{10} = 0.7$$



**BUILT FOR SUCCESS. DESIGNED TO HELP EVERY STUDENT.**

# 5 Alaska AK STAR Grade 5 Math Practice Tests

*Your practice journey starts here, one smart checkpoint at a time*



Five full tests, a friendly quick review, smart strategy pages, and student-tested support that turn Grade 5 practice in The Last Frontier into a steady quest of real growth.

**Jay Daie and Reza Nazari**



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# Welcome to the Math Quest, Alaska

Your practice journey starts here, one smart checkpoint at a time

## Quest Briefing for Alaska Grade 5 Math Crew

This book is your practice zone, not a place to be perfect. Each of the five tests gives you a chance to notice clues, choose a strategy, check your thinking, and come back stronger for the next round. Mathematicians in the Last Frontier work the way explorers cross Denali – one careful step at a time, watching every detail, never bluffing past a tricky bend.

Some questions will feel easy right away. Some will make you slow down, draw, estimate, or retry. That is excellent news. It means your math brain is doing real work.

### Watch

Watch what the question really wants from you.

### Try

Try a strategy that matches the size of the numbers.

### Polish

Polish your steps, units, and final answer.

**A strong quest habit for Alaska:** slow down, write neatly, estimate before you solve, and keep going even when a problem looks tricky at first. That is exactly how confident math students are built.

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# How to Use This Book

A simple routine that turns five tests into real growth

## Step 1: Plan

**Plan a quiet hour for one full test.**  
Wake up important ideas before you begin so your brain is ready to use them.

## Step 2: Practice

**Take the test with calm focus.**  
Find a quiet space, work carefully, and let accuracy matter more than speed.

## Step 3: Inspect

**Inspect every answer like a careful builder.**  
Circle missed questions and look for patterns. Which skill or habit needs another try?

## Step 4: Adjust

**Adjust what needs adjusting for the next test.**  
Read the explanation, repair the work, and carry that lesson into the next test.



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## Grade 5 Mathematics Reference Materials

### PERIMETER AND AREA

Perimeter of Rectangle  $P = 2l + 2w$  or  $P = 2(l + w)$

Area of Rectangle  $A = l \times w$

Area of Triangle  $A = \frac{1}{2} \times b \times h$

Volume of Rectangular Prism  $V = l \times w \times h$

### LENGTH

#### Customary

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#### Metric

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### CAPACITY

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1 pound (lb) = 16 ounces (oz)

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### TIME

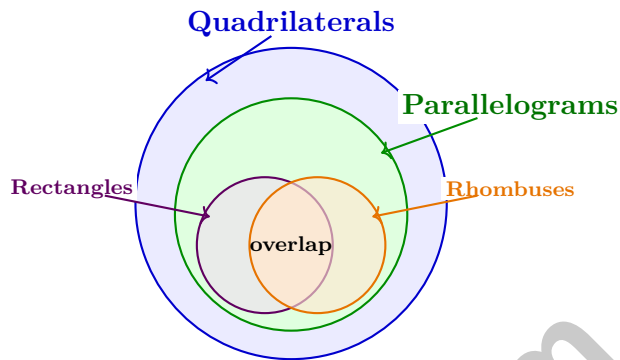
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- 1) A Venn diagram has a large circle labeled Quadrilaterals. Inside it is a circle labeled Parallelograms. Inside Parallelograms, the Rectangle and Rhombus circles overlap. Where should a square be placed?



- A. In Quadrilaterals, outside Parallelograms
  - B. In Rectangle only, outside Rhombus
  - C. In Rhombus only, outside Rectangle
  - D. In the overlap of Rectangle and Rhombus
- 2) Write the decimal for “three and forty-seven hundredths”.

*Record your answer in the space provided.*





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- 1) Which set of dimensions gives the larger volume?

Set X  
 $2 \times 2 \times 2$

Set Y  
 $1 \times 2 \times 1$

- A. Set X
- B. Set Y
- C. Both are equal
- D. Cannot be determined
- 2) At a school carnival, tickets cost \$0.75 each. How much do 48 tickets cost?
- A. \$30.00
- B. \$24.00
- C. \$36.00
- D. \$42.00
- 3) Compare without calculating:  $(4 + 8) \times (3 + 2)$    $4 \times 3 + 8 \times 2$
- A. Cannot tell
- B.  $<$
- C.  $=$
- D.  $>$
- 4) A band plays  $\frac{1}{4}$  of a song. The band wants to play it in 5 equal segments. How long is each segment relative to the whole song?
- A.  $\frac{1}{20}$  of the song
- B.  $\frac{5}{4}$  of the song
- C.  $\frac{1}{9}$  of the song
- D.  $\frac{1}{1}$  of the song
- 5) A composite solid has two non-overlapping parts. Part A has volume 75 cubic inches. Part B has volume 55 cubic inches. What is the total volume?
- A. 130 cubic inches
- B. 90 cubic inches
- C. 100 cubic inches
- D. 145 cubic inches



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- 1) Which expression represents “the quotient of 48 and 6, minus the product of 2 and 3”?
- A.  $(48 - 6) \div 2 \times 3$                        C.  $48 - 6 \div (2 \times 3)$   
 B.  $48 \div (6 - 2) \times 3$                        D.  $48 \div 6 - 2 \times 3$
- 2) A garden center has 6,500 seeds. They will divide them equally among 100 small packets. How many seeds are in each packet?
- A. 6.5     C. 650  
 B. 65     D. 65,000
- 3) Evaluate:  $(6 + 9) \times (2 \times 2) - 12$
- A. 40     C. 52  
 B. 60     D. 48
- 4) A jogger runs at different paces:

Distance	Time
3 km	20 minutes
4.5 km	30 minutes

What is the total time in minutes and the total distance in meters?

- A. 50 minutes, 7,500 meters                       C. 50 minutes, 7,505 meters  
 B. 50 minutes, 7,550 meters                       D. 55 minutes, 7,500 meters
- 5) Which set of decimals is ordered from least to greatest?
- A. 0.8, 0.72, 0.86, 1.0                       C. 0.86, 0.8, 0.72, 1.0  
 B. 0.72, 0.8, 0.86, 1.0                       D. 1.0, 0.86, 0.8, 0.72



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1) A rectangular prism has a base area of  $48 \text{ ft}^2$  and height 5 ft. What is the volume?

- A.  $200 \text{ ft}^3$                        C.  $240 \text{ ft}^3$   
 B.  $220 \text{ ft}^3$                        D.  $260 \text{ ft}^3$

2) Coordinate Pattern:

$x$	$y$
1	2
2	5
3	8
4	11

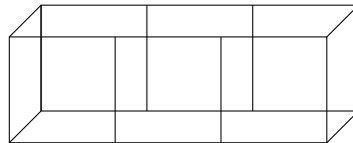
Which rule describes the relationship?

- A. Multiply the input by 3, then subtract 1       C. Double the input, then add 1  
 B. Add 1 to the input                                       D. Multiply the input by 4, then subtract 2

3) A length is 25.982 meters. Round to the nearest whole meter.

- A. 25 m                                       C. 25.98 m  
 B. 25.9 m                                       D. 26 m

4) A concrete block is  $12 \text{ in.} \times 8 \text{ in.} \times 4 \text{ in.}$ . Which unit should be used to describe the amount of space the block occupies?



Block:  $12 \times 8 \times 4 \text{ in.}$

- A. inches                                       C. cubic inches  
 B. square inches                                       D. pounds



## Practice Test Answer Keys

### How to use this section:

1. check your answer
2. circle missed questions
3. rework them before reading the explanation

**Good correction habits build strong scores.**

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## Practice Test Answers and Explanations

### Practice Test 1 Answers and Explanations

- 1) **Choice D is correct.** **(5.G.4)** A square has four right angles, so it is a rectangle. It also has four equal sides, so it is a rhombus. Therefore, it belongs in the overlap of Rectangle and Rhombus.
- 2) **The correct answer is 3.47.** **(5.NBT.3)** Read the place value to decide whether the decimal uses tenths, hundredths, or thousandths. Three wholes, then 47 hundredths: 3.47. This confirms the answer.
- 3) **Choice A is correct.** **(5.NBT.6)** Start with first two digits:  $81 \div 34 \approx 2$ . Check:  $34 \times 2 = 68$ , and  $81 - 68 = 13$ . This is correct.
- 4) **Choice C is correct.** **(5.MD.3)** The labels are in half-inches. The total is  $(2 \times 4) + (4 \times 2) + (6 \times 2) + (8 \times 1) + (10 \times 1) = 46$  half-inches. Since 2 half-inches make 1 inch,  $46 \div 2 = 23$  inches.
- 5) **Choice A is correct.** **(5.NBT.2)** The product is correct:  $25 \times 100 = 2500$ . A more precise way to say the rule is that multiplying by 100 shifts the digits two places left in the place-value chart.
- 6) **Choice B is correct.** **(5.MD.6)** Volume =  $30 \times 25 \times 8 = 6000$  cubic feet.
- 7) **Choice A is correct.** **(5.G.1)** In an ordered pair  $(x, y)$ , the first number tells how far to move right, and the second number tells how far to move up.
- 8) **Choice A is correct.** **(5.NF.1)** To add unlike fractions, first convert to a common denominator.  $1\frac{3}{4} = 1\frac{6}{8}$ , then add.
- 9) **Choice C is correct.** **(5.NF.6)** The unit fraction is the amount being shared, so divide  $\frac{1}{3}$  by 4. The equation is  $\frac{1}{3} \div 4 = n$ .
- 10) **Choice C is correct.** **(5.MD.7)** The base layer has  $9 \times 6 = 54$  square units. Divide the volume by the base area:  $378 \div 54 = 7$ , so the height is 7 feet.
- 11) **Choice C is correct.** **(5.OA.1)** The diagram separates the multiplication and division nicely:  $8 \times 5 = 40$  and  $12 \div 3 = 4$ . Then  $40 - 4 + 7 = 43$ .
- 12) **The correct answer is 4.** **(5.G.3)** All four angles of a rectangle are right angles.
- 13) **Choice B is correct.** **(5.NF.2)**  $\frac{11}{12}$  is close to 1, and  $\frac{2}{7}$  is closer to  $\frac{1}{2}$  than to 0. So  $\frac{11}{12} - \frac{2}{7} \approx 1 - \frac{1}{2} = \frac{1}{2}$ .
- 14) **Choice A is correct.** **(5.NBT.7)**  $3.6 \div 3 = 1.2$  m. Divide  $36 \div 3 = 12$ , then place decimal one place from right.
- 15) **Choice B is correct.** **(5.G.2)** Rule X gives  $2 \times 3 = 6$ . Rule Y gives  $2 \times 3 + 1 = 7$ .
- 16) **Choice A is correct.** **(5.NF.2)**  $\frac{6}{12} = \frac{6 \div 6}{12 \div 6} = \frac{1}{2}$  in simplest form.
- 17) **Choice D is correct.** **(5.NF.7)**  $8 \div \frac{1}{4} = 8 \times 4 = 32$ . She can water 32 plants.
- 18) **Choice B is correct.** **(5.OA.3)** Keep doubling after 80: the 6th term is 160, and the 7th term is 320.
- 19) **Choices A, C are correct.** **(5.OA.3)** The table shows Step 0, Step 1, and Step 2. Pattern P is three times Pattern Q for each nonzero matching pair. At Step 2 the values are  $P = 12$  and  $Q = 4$ , while B reverses the relationship and D swaps the coordinates.
- 20) **Choice A is correct.** **(5.MD.7)** The blue region shows 3 out of 7 columns. The red region shows 2 out of 4 rows. The overlap is  $\frac{3}{7} \times \frac{1}{2} = \frac{3}{14}$ .
- 21) **Choice D is correct.** **(5.G.2)** For  $x = 1$ :  $4(1) = 4$  check; for  $x = 2$ :  $4(2) = 8$  check; for  $x = 3$ :  $4(3) = 12$  check.
- 22) **Choice A is correct.** **(5.OA.2)** Start with the difference  $12 - 7$ . “Double” means multiply that difference by 2, and “then add 3” puts +3 at the end.
- 23) **The correct answer is 48.** **(5.NBT.2)** Move the decimal point one place left:  $480 \rightarrow 48$ .
- 24) **Choice A is correct.** **(5.NF.1)** The correct answer is  $\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}$ . The student incorrectly added numerators and denominators.
- 25) **Choice C is correct.** **(5.NF.6)** Start with one unit fraction,  $\frac{1}{3}$ , and share it into 6 equal parts. Each part is  $\frac{1}{3} \div 6 = \frac{1}{18}$  of the whole.
- 26) **Choice D is correct.** **(5.MD.6)**  $V = 8 \times 6 \times 5 = 240 \text{ cm}^3$ .
- 27) **The correct answer is 4.62.** **(5.NBT.7)** Line up decimal points and subtract place by place.  $7.00 - 2.38 = 4.62$ . This confirms the answer.
- 28) **The correct answer is 340.** **(5.NBT.2)** Multiplying by 100 moves the decimal point two places to the right:  $3.4 \rightarrow 340$ .



## Hey there, Master Gamer!

★ Level mastery achieved! You've conquered five complete game worlds, defeating mathematical boss battles and collecting skill power-ups like a professional gamer! Each test level presented unique challenges and hidden obstacles, but you've learned the patterns, mastered the controls, and leveled up your abilities significantly. Your character stats are at maximum capacity! ★

◇ **Here's what elite gamers understand:** mastering difficult games requires repeated playthroughs, learning from defeats, and developing strategic thinking. They study level designs, practice timing, and memorize successful strategies. You've done exactly that through these five test levels! You've learned the mathematical game mechanics, and now you're ready for the championship tournament! ◇

### Character Stats Maxed Out

**Problem-Solving Power:** Leveled up to Expert tier through consistent training!

**Strategic Thinking:** Unlocked advanced tactical abilities through practice!

**Endurance Meter:** Can maintain focus through extended gaming sessions!

**Boss Battle Ready:** Prepared to defeat the final test day challenge!

**Gaming wisdom:** professional players stay calm during competitive matches because they've practiced under pressure. Test day is your championship match. When you encounter a challenging problem-boss, remember your five training sessions. You've defeated tougher enemies before. Use your best strategies, stay focused, and claim victory!

Want to share your gaming strategies or discuss a particularly clever solution combo? Send your achievements to [reza@testinar.com](mailto:reza@testinar.com). Let's celebrate your wins!

**Reza Nazari & Jay Daie**

Your Math Coaches for Showing Your Work

# 5 FULL-LENGTH TESTS. STRONG SKILLS. BRIGHTER RESULTS.



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Realistic tests that build familiarity, boost focus, and improve test readiness.



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and problem-  
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