Alaska AK STAR Grade 9 Math Quizzes

Quick Topic Assessments with Answer Key

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QUICK QUIZZES FOR EVERY TOPIC

Algebra 1 Math Quizzes

Topic Quizzes • Chapter Reviews • Answer Key

Quick, focused quizzes are one of the best ways to find out what you really know — and what you still need to work on.

This book has a short quiz for every Algebra 1 topic. Each one takes about 10–15 minutes and covers the most important skills for that section. Take a quiz, score it, and see exactly where you stand.

Use it after studying a topic, the night before a test, or anytime you want a fast check-in on your algebra skills.

Take the Quiz

10–15 minutes per quiz

Score It

Check every answer in the key

Review & Retry

Study what you missed then quiz again

How to Use This Book

1. ## Pick a topic you've been studying

Look through the table of contents and find the quiz that matches the topic you just covered in class or in your study guide.

2. ## Set a timer for 10–15 minutes

Give yourself a reasonable time limit. Working with a timer helps you build speed and stay focused — just like a real test.

3. ## Answer every question

Try each problem. If you get stuck, skip it and come back at the end. Don't leave any question blank — a good guess is better than no answer.

4. ## Check your answers

Use the answer key in the back. Mark each question right or wrong. Write your score on the quiz page and track your progress over time.

5. ## Review what you missed

Go back to the problems you got wrong. Read the topic explanation, study the method, then try the quiz again in a few days. Your score should improve every time.

Track Your Scores

*Every quiz in this book has a **Name / Date / Score** bar at the top. After you finish a quiz, check your answers using the answer key in the back, then write your score on that bar.*

How to Track Your Progress

1. ***Write your score** on the quiz page right after you grade it.*
2. ***Circle any quiz** where you scored below 70 %.*
3. ***Review the topic**, then retake the quiz in a few days.*
4. ***Compare your scores** — you'll see improvement every time!*

Tip: *Your score should go up every time you retake a quiz. That's how you know you're learning!*

Use the score bar on each quiz page to record your results.

PRACTICE & TRACK

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For Parents, Teachers & Students

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- ***Practice Tests*** *— When you're ready, take a full practice test and analyze your score online*

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CHAPTER

1

Foundations of Algebra

What's Inside

1.1 Classifying Real Numbers

Learning Goals

- Classify numbers into all applicable real number subsets
- Describe how the number subsets nest inside each other

The Real Number Subsets

Every number belongs to one or more subsets of the **real numbers**:

- **Natural numbers:** $1, 2, 3, \ldots$ (counting numbers)
- **Whole numbers:** $0, 1, 2, 3, \ldots$ (naturals plus zero)
- **Integers:** $\ldots, -2, -1, 0, 1, 2, \ldots$ (whole numbers and negatives)
- **Rational numbers:** any $\frac{a}{b}$ where a, b are integers and $b \neq 0$
- **Irrational numbers:** decimals that never end and never repeat ($\sqrt{2}$, π)

These sets nest like rings in a **Venn diagram**:

Natural $\subset$ Whole $\subset$ Integer $\subset$ Rational $\subset$ **Real**

Irrational numbers sit beside Rational, inside Real. Every real number is either rational **or** irrational—never both.

Classify Into All Subsets

Place each number in **every** subset that applies.

1. 7: Natural, Whole, Integer, Rational, Real
2. 0: Whole, Integer, Rational ($\frac{0}{1}$), Real
3. -3: Integer, Rational ($\frac{-3}{1}$), Real
4. $\frac{2}{3} = 0.\overline{6}$: Rational (repeats), Real
5. $0.75 = \frac{3}{4}$: Rational (terminates), Real

6. $\pi = 3.14159\ldots$: *Irrational, Real*
7. $\sqrt{3} = 1.732\ldots$: *Irrational, Real*

Rational Numbers	*Irrational Numbers*
• *Written as* $\frac{a}{b}$, $b \neq 0$	• *Cannot be written as* $\frac{a}{b}$
• *Decimals terminate or repeat*	• *Decimals never terminate or repeat*
• *Examples:* $\frac{3}{4}$, -2, $0.\overline{6}$	• *Examples:* $\sqrt{2}$, π, $\sqrt{10}$

"Every integer is rational! Write it over 1: $-5 = \frac{-5}{1}$, $0 = \frac{0}{1}$. *"*

Classifying Real Numbers

1. *Classify* -7 *into all applicable subsets.*
2. *Classify* $\sqrt{3}$ *into all applicable subsets.*
3. *Classify* 0.75 *into all applicable subsets.*
4. *List all subsets for* $\sqrt{25}$.
5. *Every whole number is also a rational number.* **True** ○ **False** ○

CHAPTER

2

Introduction to Functions

What's Inside

2.1 What Is a Function?

Learning Goals

- Decide whether a relation is a function
- Use the vertical line test on graphs

What Is a Function?

A **relation** is any set of ordered pairs (x, y).

A **function** is a special relation where every input (x) gives exactly one output (y). No x-value may repeat with a different y-value.

Think of a vending machine. Press button **A3**, you always get the same snack. If one button gave a random item each time, that machine would not be a function!

Ways to show a relation: ordered pairs, table, graph, mapping diagram, or equation.

Checking a Table

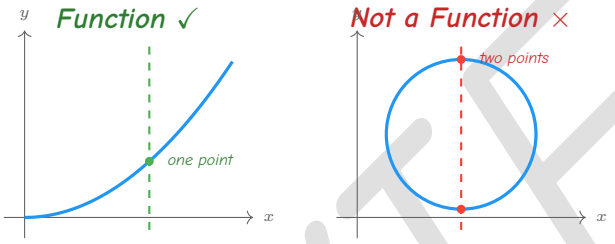
Is this relation a function?

x	1	2	3	1
y	5	8	10	7

The input $x = 1$ maps to both 5 and 7. One input gives two outputs, so this is **not a function**.

The Vertical Line Test

1. Draw or look at the graph of the relation.
2. Imagine sliding a vertical line across the graph from left to right.
3. If the vertical line ever hits the graph in **two or more points** at the same time, it is **not** a function.
4. If every vertical line hits at most one point, it **is** a function.



> A function is like a rule: one question, one answer. If one input gives two answers, it breaks the rule!

TIP

In a mapping diagram, each input arrow must point to exactly one output. An input with two arrows means it is not a function.

What Is a Function?

1. A relation has the pairs $(2, 4)$, $(3, 6)$, $(4, 8)$, $(5, 10)$. Is it a function?
2. A relation has the pairs $(1, 3)$, $(2, 5)$, $(1, 7)$. Is it a function?
3. A circle is drawn on a coordinate plane. Does it pass the vertical line test?
4. Every function is a relation. True ○ False ○
5. A mapping diagram shows $3 \to 9$, $4 \to 16$, $5 \to 25$. Is it a function?

Answer Key & Explanations

Answer Key

First try each quiz on your own, then check your work here.

- 0 Integer, Rational, Real
- 0 Irrational, Real
- 0 Rational, Real
- 0 Nat, Whole, Int, Rat, Real
- 0 True
- 0 Yes
- 0 No
- 0 No
- 0 True
- 0 Yes

Explanations

- 0 -7 is negative, so not natural or whole. It is an integer. Since $-7 = \frac{-7}{1}$, it is also rational.
- 0 3 is not a perfect square. $\sqrt{3}$ is a non-repeating, non-terminating decimal—irrational and real.
- 0 $0.75 = \frac{3}{4}$, a terminating decimal. Rational and real, but not an integer.
- 0 $\sqrt{25} = 5$. Since 5 is a counting number, it belongs to every subset except irrational.
- 0 Each input appears only once. Every x-value maps to exactly one y-value, so it is a function.
- 0 The input $x = 1$ maps to both 3 and 7. One input gives two outputs, so it is not a function.
- 0 A vertical line through the middle of a circle hits it at two points. So a circle is not a function.
- 0 Each input maps to exactly one output. No input is repeated, so it is a function.

Well done checking your answers!

Keep practicing to strengthen your skills.

Great Job! Keep Learning with ViewMath!

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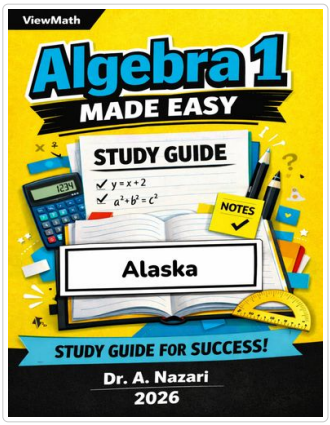

Study Guide

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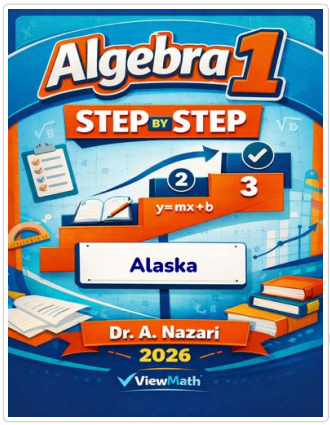

Step-by-Step

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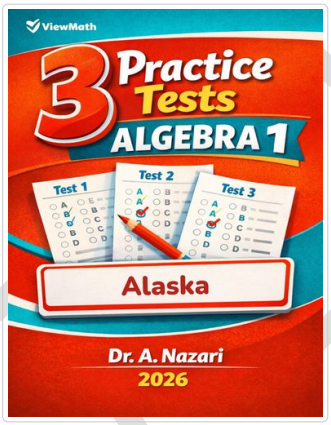

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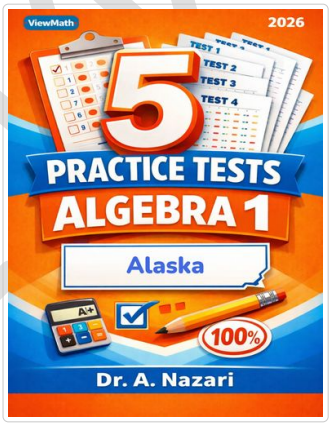

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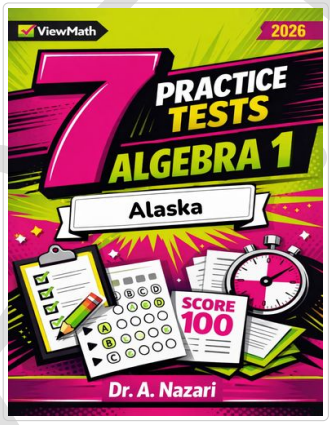

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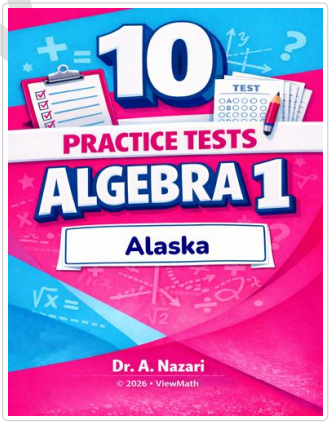

10 Practice Tests

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