Virginia SOL Grade 8 Math Quizzes

Quick Topic Assessments with Answer Key

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QUICK QUIZZES FOR EVERY TOPIC

Grade 8 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 Grade 8 math 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 math 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

CHAPTER

1

Irrational Numbers

What's Inside

CHAPTER 1

Quiz 1

Real Number Subsets

Name: _____ **Date:** _____ **Score:** _____ / 8

1 Which set of subsets does $\sqrt{49}$ belong to?

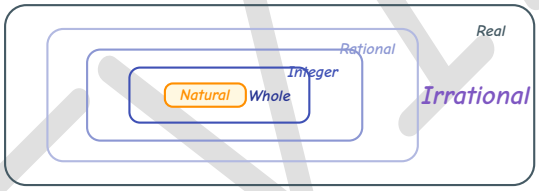
A. Irrational, Real

B. Natural, Whole, Integer, Rational, Real

C. Integer, Rational, Real

D. Whole, Integer, Rational, Real

2 The diagram shows the real number subsets nested inside each other. In which **innermost** (most specific) region does 0 belong?



◯ Natural

◯ Whole

◯ Integer

◯ Rational

3 True or False: Every integer is a rational number.

◯ **True** ◯ **False**

4 Classify each number. Write **Y** (yes) or **N** (no) in each blank.

Number	Natural	Whole	Integer	Rational
-8	____	____	____	____
$\frac{2}{3}$	____	____	____	____
7	____	____	____	____

5 *A student classified $-\frac{5}{2}$ as shown on the card below. Find and explain the **error**.*

> ***Student's work:*** *"$-\frac{5}{2}$ is negative, so it is an **integer**. It is also rational and real."*

Show your work

6 *A scientist measures a sample's weight as $0.\overline{3}$ grams. She classifies it as an **integer**. Is she correct?*

- ◯ *Yes, it is an integer*
- ◯ *No, it is rational but not an integer*
- ◯ *No, it is irrational*
- ◯ *No, it is a whole number*

Bonus Challenge

This is a bonus question for extra credit. Give it your best attempt.

7 *From the set $\{-8,\ 0,\ \sqrt{11},\ \pi,\ \sqrt{49},\ 0.\overline{3}\}$, find the **one** number that fits **all** three clues.*

- ***Clue 1:*** *I am a real number.*
- ***Clue 2:*** *I am **not** rational.*
- ***Clue 3:*** *I am the square root of a whole number.*

Show your work

Score Summary

I got _____ out of _____ correct.

CHAPTER

2

Lines and Linear Equations

What's Inside

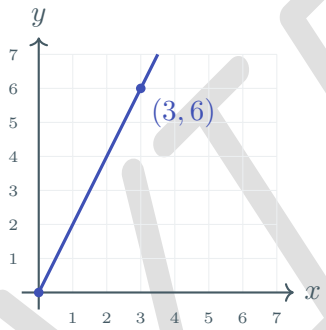
CHAPTER 3

Quiz 2

Graphing Proportional Relationships

Name: _____ **Date:** _____ **Score:** _____ / 8

1 *The graph shows a proportional relationship. What is the* ***constant of proportionality*** *(k)?*



A. 3

B. 2

C. 6

D. $\frac{1}{2}$

2 *Complete the table for a proportional relationship.*

Time (h)	1	3	5
Distance (mi)	8	_____	_____

3 *True or False: The equation $y = 5x + 2$ represents a* ***proportional relationship****.*

◯ ***True*** ◯ ***False***

4 *Compare the* ***unit rates*** *(gallons per minute). Circle $>$, $<$, or $=$.*

Pipe A: 36 **gal in** 4 **min** **Pipe B:** 50 **gal in** 5 **min**

5 *A proportional relationship passes through* $(5, 20)$*. Write the equation in the form* $y = kx$*.*

Equation: _____

6 *A car uses gas at a constant rate:* 2 *gallons for every* 50 *miles. How many gallons does it need for* 175 *miles?*

Gallons: _____

Bonus Challenge

This is a bonus question for extra credit. Give it your best attempt.

7 *Store A sells fruit for* $y = 3x$ *(dollars per pound). Store B's prices:* 2 *lb costs* $\$5$*,* 4 *lb costs* $\$10$*. Which store is cheaper, and how much would* 10 *pounds cost there? Show your work.*

Show your work

Score Summary

I got _____ *out of* _____ *correct.*

Answer Key & Explanations

Answer Key

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

Chapter 1

Quiz 1: Real Number Subsets

1. B (Natural, Whole, Integer, Rational, Real)
2. B (Whole)
3. True
4. See explanation
5. $-\frac{5}{2}$ is NOT an integer
6. B (No, it is rational but not an integer)
7. $\sqrt{11}$

Explanations

1. $\sqrt{49} = 7$ because $7 \times 7 = 49$. Since 7 is a counting number, it sits inside **every** subset: Natural $\subset$ Whole $\subset$ Integer $\subset$ Rational $\subset$ Real. Choice D forgets Natural; choice C also forgets Whole. Common mistake: assuming all square roots are irrational — perfect squares like 49 give whole-number roots. ✓

2. 0 belongs to Whole $= \{0, 1, 2, 3, \ldots\}$, but 0 is **not** a Natural number (naturals start at 1). Because Whole $\subset$ Integer $\subset$ Rational $\subset$ Real, the number 0 is also an integer, rational, and real — but its most specific subset is **Whole**. ✓

3 *Every integer n can be written as $\frac{n}{1}$, a fraction of two integers with a non-zero denominator. For example, $-3 = \frac{-3}{1}$ and $0 = \frac{0}{1}$. Therefore Integer $\subset$ Rational. Common mistake: thinking only "fractions" like $\frac{2}{3}$ are rational. All integers are rational too!* ✓

4 *-8: N, N, Y, Y — negative, so not natural or whole, but it **is** an integer and rational ($\frac{-8}{1}$). $\frac{2}{3}$: N, N, N, Y — a fraction that does not equal a whole number, so only rational (and real). 7: Y, Y, Y, Y — a counting number belongs to **every** listed subset because Natural $\subset$ Whole $\subset$ Integer $\subset$ Rational.* ✓

5 *$-\frac{5}{2} = -2.5$, which is **not** a whole-number value, so it is not an integer. Integers are $\{\ldots, -2, -1, 0, 1, 2, \ldots\}$ — no fractions or decimals between them. The student confused "negative" with "integer." Not all negative numbers are integers! $-\frac{5}{2}$ is rational and real, but not natural, whole, or integer.* ✓

6 *$0.\overline{3} = \frac{1}{3}$, a repeating decimal, so it is **rational**. But $\frac{1}{3}$ is not a whole-number value, so it is not an integer (and not whole or natural either). It is rational and real only. Common mistake: thinking repeating decimals are irrational because they "go on forever." Repeating = rational; only non-repeating, non-terminating decimals are irrational.* ✓

7 *Clue 1 keeps all six numbers (all are real). Clue 2 means irrational: only $\sqrt{11}$ and π remain. Clue 3: $\sqrt{11}$ is the square root of 11 (a whole number)* ✓*, but π is **not** the square root of any whole number, so π is eliminated. The answer is $\sqrt{11} \approx 3.317$. It is irrational (since 11 is not a perfect square), real, and the square root of a whole number.* ✓

Chapter 2

Quiz 2: Graphing Proportional Relationships

1 B (2)	2 24 and 40	3 False	4 $<$	5 $y = 4x$	6 7

7 *Store B; $25*

Explanations

1 *For a proportional relationship $y = kx$, pick any point on the line: $k = \frac{y}{x} = \frac{6}{3} = 2$. Common mistake: choosing $k = 3$ (the x-value) or $k = 6$ (the y-value) instead of dividing $y \div x$. ✓*

2 *The unit rate is $k = 8$ miles per hour. At 3 h: $8 \times 3 = 24$ mi. At 5 h: $8 \times 5 = 40$ mi. In a proportional table, multiply each x-value by k. ✓*

3 *A proportional relationship has the form $y = kx$ and passes through the origin $(0, 0)$. The equation $y = 5x + 2$ has a y-intercept of 2, so at $x = 0$ we get $y = 2$, not 0. That extra $+2$ means it is **not** proportional. ✓*

4 *Pipe A: $\frac{36}{4} = 9$ gal/min. Pipe B: $\frac{50}{5} = 10$ gal/min. Since $9 < 10$, Pipe A's rate is **less than** Pipe B's rate. Common mistake: comparing totals (36 vs 50) instead of unit rates. ✓*

5 *Find k: $k = \frac{y}{x} = \frac{20}{5} = 4$. So the equation is $y = 4x$. Check: $y = 4(5) = 20$. ✓*

6 *Unit rate: $\frac{2}{50} = 0.04$ gal/mi (or $\frac{50}{2} = 25$ mi/gal). For 175 mi: $175 \div 25 = 7$ gallons. Alternatively, set up a proportion: $\frac{2}{50} = \frac{x}{175}$, so $x = \frac{2 \times 175}{50} = 7$. ✓*

7 *Store A: $k = 3$ ($3/lb). Store B: $k = \frac{5}{2} = 2.50$ ($2.50/lb). Since $\$2.50 < \$3.00$, Store B is cheaper. At 10 lb: $10 \times 2.50 = \$25$. Check Store A: $10 \times 3 = \$30$ — that's $5 more. ✓*

Well done checking your answers!

Keep practicing to strengthen your skills.

Great Job! Keep Learning with ViewMath!

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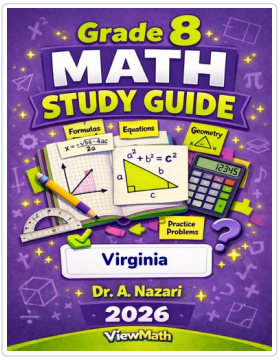

Study Guide

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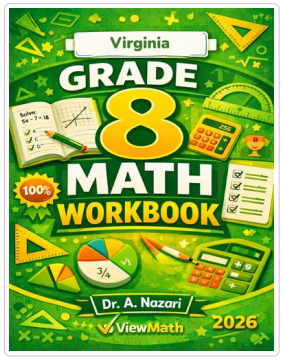

Workbook

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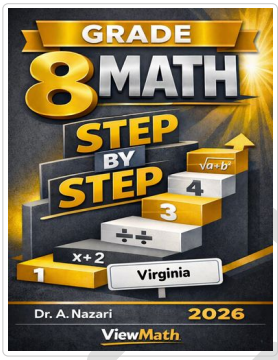

Step-by-Step

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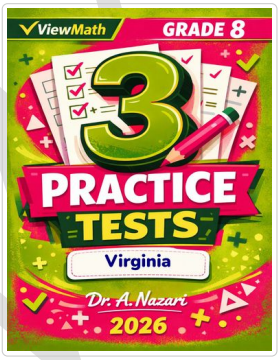

3 Practice Tests

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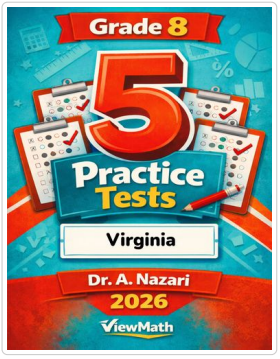

5 Practice Tests

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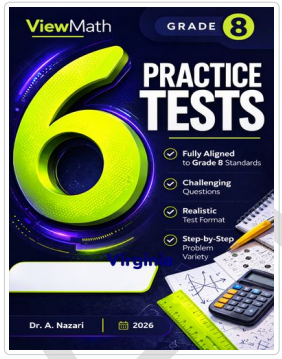

6 Practice Tests

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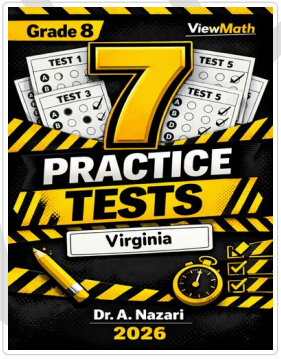

7 Practice Tests

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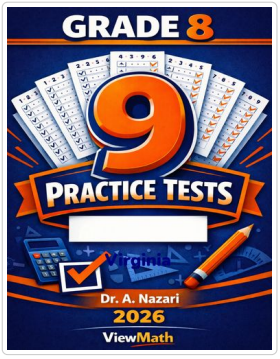

9 Practice Tests

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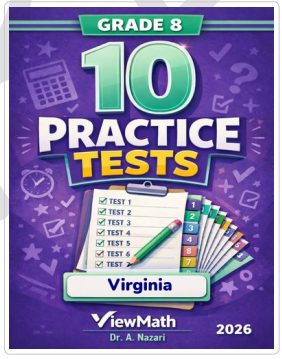

10 Practice Tests

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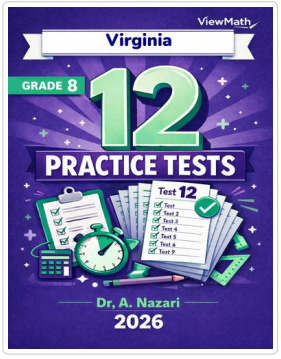

12 Practice Tests

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