

Maryland MCAP Grade 8 Math Quizzes

Quick Topic Assessments with Answer Key

Dr. A. Nazari

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Grade 8 Math Quizzes

Topic Quizzes • Chapter Reviews • Answer Key

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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 ★

Quiz 1: Rational and Irrational Numbers 3



PREVIEW



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 CHAPTER 1

Quiz 1

Rational and Irrational Numbers

Name: _____

Date: _____

★ Score: _____ / 8

1 Which of the following numbers is **irrational**?

A. 0.75

B. $\sqrt{5}$

C. -3

D. $0.\overline{3}$

2 Circle **all** the irrational numbers from the cards below.

$\sqrt{16}$

π

$0.\overline{45}$

$\sqrt{11}$

-7

3 True or False: Every number with a **non-terminating** decimal is irrational.

True

False

4 Three points are plotted on the number line below. Their exact values are $\frac{3}{2}$, $\sqrt{3}$, and $\frac{5}{2}$. Which point represents the **irrational** number?



P

Q

R

All are rational

5 Simplify: $\sqrt{81} =$ _____. Is $\sqrt{81}$ rational or irrational? _____

6 Compare $\sqrt{2}$ and 1.5. Circle $>$, $<$, or $=$.

$\sqrt{2}$



1.5



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Bonus Challenge

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

7 A student claims: " \sqrt{n} is **always** irrational." Find **three** values of n (where $1 \leq n \leq 20$) that prove the student wrong. Explain why each one is rational.

 Show your work

Score Summary

I got _____ out of _____ correct.



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CHAPTER

2

Lines and Linear Equations

★ What's Inside ★

Quiz 2: Graphing Proportional Relationships	7
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 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 $=$.



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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.



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Answer Key & Explanations



Answer Key

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

Chapter 1

Quiz 1: Rational and Irrational Numbers

1 B ($\sqrt{5}$)

2 π and $\sqrt{11}$

3 False

4 Q

5 9; Rational

6 <

7 $n = 1, 4, 9,$ or 16 (any three)

Explanations

1 $0.75 = \frac{3}{4}$ (terminates — rational). $\sqrt{5} \approx 2.2360\dots$ (non-repeating, non-terminating — irrational). $-3 = \frac{-3}{1}$ (integer — rational). $0.\bar{3} = \frac{1}{3}$ (repeats — rational). Common mistake: thinking -3 is irrational because it is negative. Negative numbers can absolutely be rational! ✓

2 $\sqrt{16} = 4$ (perfect square — rational). $\pi \approx 3.14159\dots$ (never terminates or repeats — irrational). $0.\bar{45}$ repeats, so it equals $\frac{5}{11}$ (rational). $\sqrt{11} \approx 3.316\dots$ (11 is not a perfect square — irrational). $-7 = \frac{-7}{1}$ (integer — rational). Common mistake: forgetting that $\sqrt{16}$ simplifies to a whole number. ✓

3 A non-terminating decimal can still **repeat**, which makes it rational. For example, $0.333\dots = 0.\bar{3} = \frac{1}{3}$ never terminates, but it repeats, so it is rational. Only decimals that are non-terminating **and** non-repeating are irrational. ✓



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4 P is at $\frac{3}{2} = 1.5$ (rational — it is a fraction of integers). Q is at $\sqrt{3} \approx 1.732$ (irrational — 3 is not a perfect square). R is at $\frac{5}{2} = 2.5$ (rational). Only Q is irrational. On the number line, Q sits between 1 and 2, slightly past 1.7. ✓

5 $\sqrt{81} = 9$ because $9 \times 9 = 81$. Since 9 is an integer, it can be written as $\frac{9}{1}$, making it rational. Common mistake: assuming **all** square roots are irrational. Only square roots of non-perfect squares (like $\sqrt{2}$, $\sqrt{11}$) are irrational. ✓

6 $\sqrt{2} \approx 1.414$. Since $1.414 < 1.5$, we have $\sqrt{2} < 1.5$. Verify: $1.5^2 = 2.25 > 2$, so $1.5 > \sqrt{2}$. $1.4^2 = 1.96 < 2$, so $1.4 < \sqrt{2}$. This confirms $\sqrt{2}$ is between 1.4 and 1.5, and therefore less than 1.5. ✓

7 The perfect squares between 1 and 20 are 1, 4, 9, and 16. $\sqrt{1} = 1$, $\sqrt{4} = 2$, $\sqrt{9} = 3$, $\sqrt{16} = 4$. Each is an integer, so each is rational ($\frac{1}{1}$, $\frac{2}{1}$, etc.). Any three of these disprove the claim. ✓

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 $y \div x$. ✓



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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.

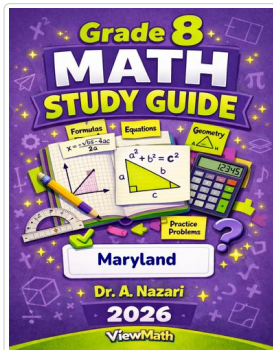


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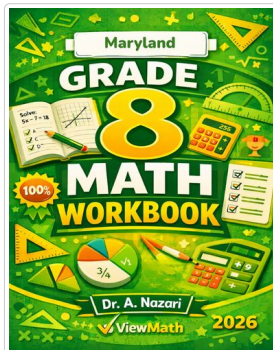
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Study Guide



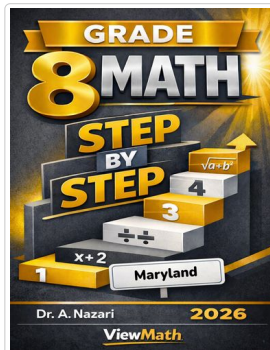
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Workbook



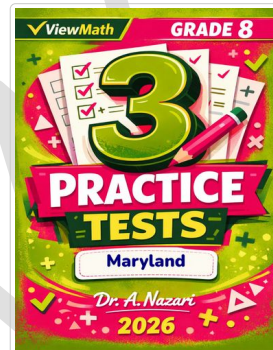
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Step-by-Step



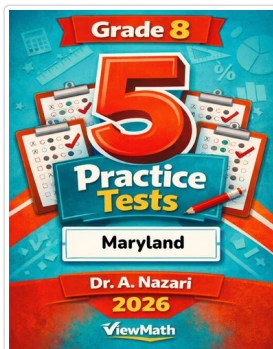
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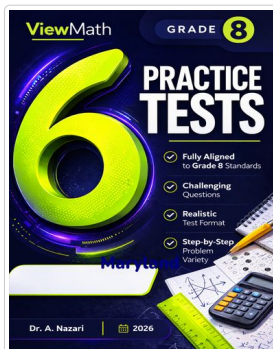
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5 Practice Tests



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6 Practice Tests



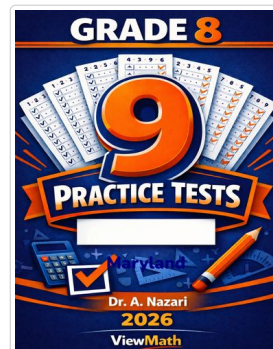
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7 Practice Tests



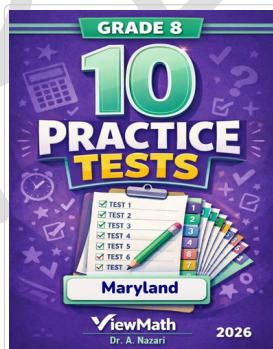
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9 Practice Tests



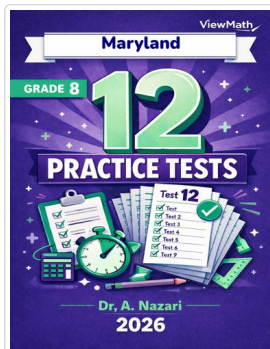
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10 Practice Tests



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12 Practice Tests



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