

Texas STAAR Grade 8 Math Quizzes

Quick Topic Assessments with Answer Key

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Published by View Math Education

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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* ★

Quiz 1: Real Number Subsets 3



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 CHAPTER 1

Quiz 1

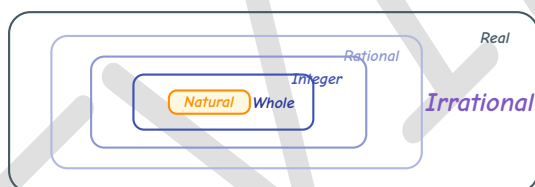
Real Number Subsets

 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	___	___	___	___



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- 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.



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CHAPTER

2

Lines and Linear Equations

★ What's Inside ★

Quiz 2: Direct Variation 7



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CHAPTER 3

Quiz 2

Direct Variation

Name: _____

Date: _____

★ Score: _____ / 8

1 If y varies directly with x and $y = 24$ when $x = 6$, what is the constant of proportionality k ?

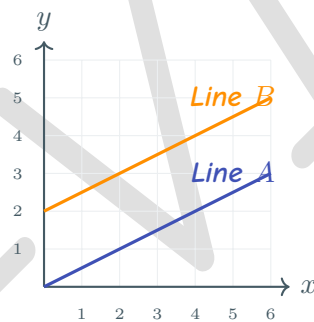
A. $k = 3$

B. $k = 4$

C. $k = 6$

D. $k = 18$

2 Two lines are graphed below. Which line represents a **direct variation**? Circle your answer.



Line A

Line B

Both

Neither

3 True or False: If $y = 5x + 1$, then y varies directly with x .

True

False

4 Does the table show a **direct variation**? If yes, find k .

x	2	4	5	10
y	6	12	15	30



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Direct variation? (Yes/No) $k =$: _____

- 5 Cyclist A rides at a rate described by $y = 12x$ (miles per hour). Cyclist B's distance is shown in the table. Who is faster?

Hours (x)	2	3	5
Miles (y)	30	45	75

Cyclist A ($k = 12$)



Cyclist B

- 6 A faucet fills a tank at a constant rate. After 4 minutes there are 10 gallons. Write the direct-variation equation and find how many gallons are in the tank after 14 minutes.

 Show your work



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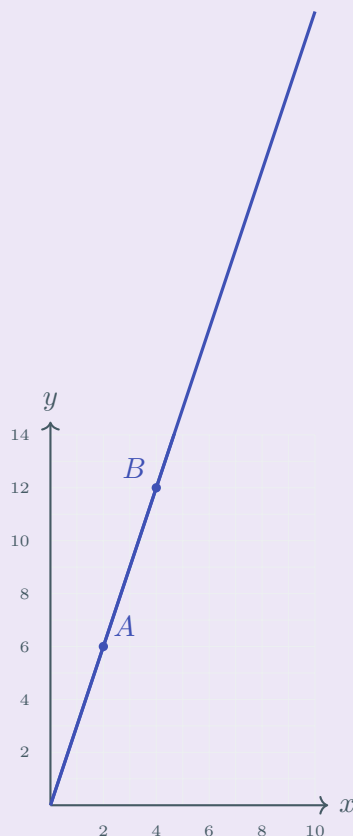
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Bonus Challenge

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

- 7 The graph below shows a direct-variation line passing through points $A(2, 6)$ and $B(4, 12)$. Find k , write the equation $y = kx$, and predict y when $x = 9$.



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



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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 $\text{Integer} \subset \text{Rational}$. 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 $\text{Natural} \subset \text{Whole} \subset \text{Integer} \subset \text{Rational}$. ✓

5 $-\frac{5}{2} = -2.5$, which is **not** a whole-number value, so it is not an integer. Integers are $\{\dots, -2, -1, 0, 1, 2, \dots\}$ — 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: Direct Variation

1 B ($k = 4$)

2 A (Line A)

3 False

4 Yes; $k = 3$

5 < (Cyclist B is faster)



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6 $y = 2.5x$; 35 gallons

7 $k = 3$; $y = 3x$; $y = 27$

 Explanations

1 In direct variation, $y = kx$, so $k = \frac{y}{x} = \frac{24}{6} = 4$. Check: $y = 4(6) = 24$. ✓ Common mistake: computing $y - x = 18$ (choice D) instead of dividing. Direct variation uses multiplication, not addition.

2 A direct variation has the equation $y = kx$, which means its graph is a straight line that passes through the **origin** $(0, 0)$. Line A starts at $(0, 0)$, so it is a direct variation. Line B crosses the y -axis at $(0, 2)$, not the origin, so it is **not** a direct variation — it has a non-zero y -intercept. Common mistake: thinking any straight line is a direct variation. ✓

3 Direct variation requires $y = kx$ with **no added or subtracted constant**. The equation $y = 5x + 1$ has $+1$, so a graph of this line would cross the y -axis at $(0, 1)$, not $(0, 0)$. For direct variation the y -intercept must be 0. Common mistake: seeing the “ $5x$ ” part and ignoring the $+1$. ✓

4 Compute $\frac{y}{x}$ for each pair: $\frac{6}{2} = 3$, $\frac{12}{4} = 3$, $\frac{15}{5} = 3$, $\frac{30}{10} = 3$. Every ratio equals 3, so the relationship is a direct variation with $k = 3$ and equation $y = 3x$. If even one ratio differed, it would **not** be direct variation. ✓

5 Cyclist A: $k = 12$ mph (given by $y = 12x$). Cyclist B: $k = \frac{30}{2} = 15$ mph. Verify: $\frac{45}{3} = 15$, $\frac{75}{5} = 15$. ✓. Since $12 < 15$, Cyclist B travels faster. Compare rates by finding k for each — the larger k means a faster rate.

6 Find k : $k = \frac{10}{4} = 2.5$. Equation: $y = 2.5x$. At $x = 14$: $y = 2.5 \times 14 = 35$ gallons. Check: $\frac{35}{14} = 2.5 = k$. ✓. Common mistake: using $10 \times 14 = 140$ (multiplying by y instead of the rate). Always find k first, then use the equation.

7 Using point A: $k = \frac{y}{x} = \frac{6}{2} = 3$. Verify with B: $\frac{12}{4} = 3$. ✓. Equation: $y = 3x$. When $x = 9$: $y = 3 \times 9 = 27$. Check: $\frac{27}{9} = 3 = k$. ✓. The line passes through the origin, confirming direct variation.



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Well done checking your answers!

Keep practicing to strengthen your skills.

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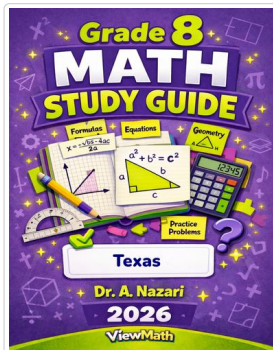


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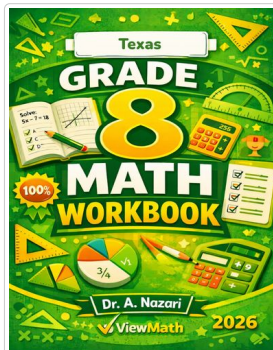
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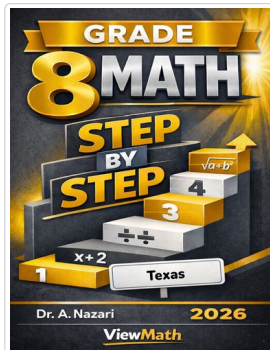
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Workbook



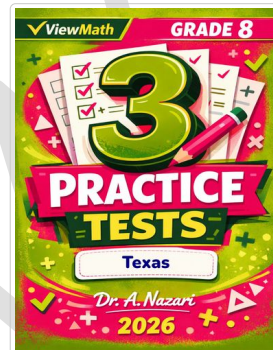
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Step-by-Step



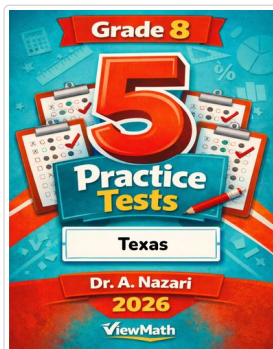
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3 Practice Tests



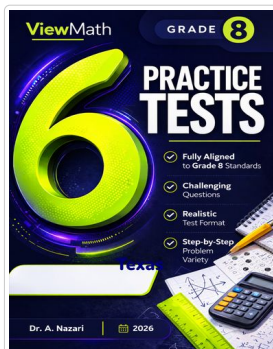
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5 Practice Tests



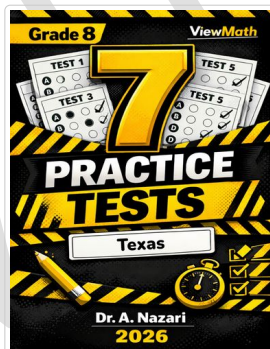
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6 Practice Tests



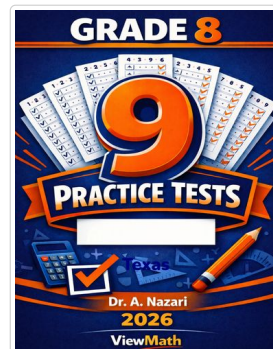
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7 Practice Tests



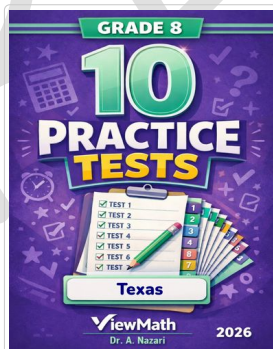
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9 Practice Tests



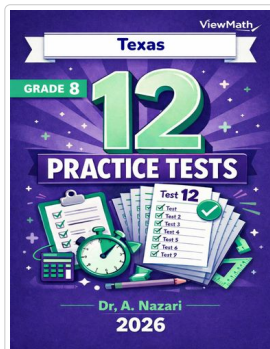
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10 Practice Tests



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12 Practice Tests



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