

Oklahoma OSTP Grade 8 Math Step by Step

A Beginner Friendly Guide to Learning Math

Dr. A. Nazari

Copyright © 2026 Dr. A. Nazari

Published by View Math Education

ViewMath.com

All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission of the author, except in the case of brief quotations embodied in critical reviews and certain other noncommercial uses permitted by copyright law, including Section 107 or 108 of the 1976 United States Copyright Act.

The information in this book is distributed on an “as is” basis, without warranty. While every precaution has been taken in the preparation of this work, neither the author nor the publisher shall have any liability to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly by the information contained in this book.

Copyright © 2026



★ Table of Contents ★

Here's what we'll explore together!

★ 1	<i>Irrational Numbers</i>	2
★ 2	<i>Lines and Linear Equations</i>	7



Let's learn and have fun!

PREVIEW



CHAPTER

1

Irrational Numbers

★ *What's Inside* ★

1.1 <i>Rational and Irrational Numbers</i>	3
---	----------

★ 1.1 Rational and Irrational Numbers ★

What You'll Learn

- Classify a real number as rational or irrational
- List all real number subsets a number belongs to

Words to Know

- ▶ **Real Number** — Any number on the number line.
- ▶ **Integer** — A whole number or its opposite, such as -3 , 0 , or 8 .
- ▶ **Whole Number** — 0 or any positive counting number.
- ▶ **Natural Number** — A positive counting number such as 1 , 2 , or 3 .

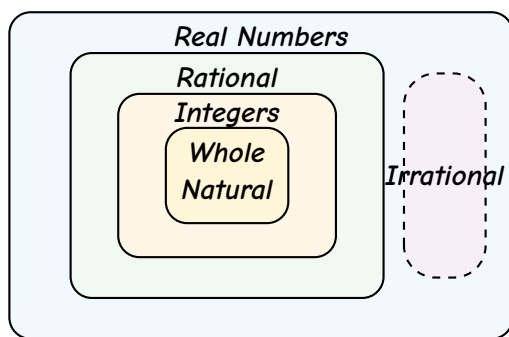
How to Classify a Real Number into Subsets

- 1 Decide first whether the number is rational or irrational.
- 2 If it is rational, check whether it is also an integer, a whole number, or a natural number.
- 3 Remember that every rational number and every irrational number is also a real number.
- 4 List every set that fits the number, not just one of them.



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)





Example: Classify 7, 0, -3 , $\frac{2}{3}$, and $\sqrt{5}$ into all real number subsets.

Step 1 Decide whether each number is rational or irrational. The numbers 7, 0, -3 , and $\frac{2}{3}$ are rational. The number $\sqrt{5}$ is irrational.

Step 2 Check the rational numbers more closely. The number 7 is an integer, whole number, and natural number. The number 0 is an integer and whole number. The number -3 is an integer. The number $\frac{2}{3}$ is not an integer.

Step 3 Every one of these numbers is real because all rational and irrational numbers are real.

Step 4 List every set that fits each number.

✓ 7: natural, whole, integer, rational, real; 0: whole, integer, rational, real; -3 : integer, rational, real; $\frac{2}{3}$: rational, real; $\sqrt{5}$: irrational, real.

Example: Classify $\sqrt{49}$ and $0.\overline{3}$ into all real number subsets.

Step 1 Rewrite the numbers in a helpful form: $\sqrt{49} = 7$ and $0.\overline{3} = \frac{1}{3}$.

Step 2 Since 7 is a counting number, it fits the natural, whole, integer, rational, and real sets.

Step 3 Since $\frac{1}{3}$ is a repeating decimal, it is rational, and all rational numbers are real.



Get Online



Find more at
ViewMath.com/Grade8



ViewMath.com



Step 4 The decimal $0.\overline{3}$ is not an integer, whole number, or natural number.

✓ $\sqrt{49}$ is natural, whole, integer, rational, and real. The number $0.\overline{3}$ is rational and real.

⚠ Watch Out! The number 0 is whole, integer, rational, and real, but it is usually not counted as a natural number in this book.



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



Real Number Subsets Practice

Rational or Irrational

1. Is $\sqrt{49}$ rational or irrational? _____
2. Is $\sqrt{11}$ rational or irrational? _____

List All Subsets

3. Classify -8 into all real number subsets.

4. Classify $0.\overline{3}$ into all real number subsets.

Check Perfect Squares

5. Classify $\sqrt{64}$ into all real number subsets. _____

Use the Diagram Idea

6. A student says every whole number is also rational. Is the student correct? _____



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



ViewMath.com



CHAPTER

2

Lines and Linear Equations

★ *What's Inside* ★

2.1 <i>Graphing Proportional Relationships</i>	8
---	----------

★ 2.1 Graphing Proportional Relationships ★

What You'll Learn

- Graph proportional relationships and interpret the unit rate as slope
- Compare proportional relationships shown in different ways

Words to Know

- ▶ **Proportional Relationship** — A relationship where $y = kx$ and the line passes through the origin.
- ▶ **Unit Rate** — The constant k in $y = kx$; also called the constant of proportionality.

How to Find and Compare Unit Rates

- 1 Pick any point (x, y) on the line or from the table and divide: $k = \frac{y}{x}$.
- 2 Write the equation $y = kx$.
- 3 To compare two relationships, find k for each and see which is larger or smaller.



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



Example: A car travels 150 miles in 3 hours at constant speed. Find the unit rate and write the equation.

Step 1 $k = \frac{150}{3} = 50$ miles per hour.

Step 2 The equation is $y = 50x$.

Step 3 Not comparing here — just one relationship.

✓ Unit rate = 50 mph; equation: $y = 50x$

Example: Runner A: $y = 8x$. Runner B covers 35 miles in 5 hours. Who is faster?

Step 1 Runner A: $k = 8$. Runner B: $k = \frac{35}{5} = 7$.

Step 2 Runner A: $y = 8x$. Runner B: $y = 7x$.

Step 3 Compare: $8 > 7$, so Runner A is faster.

✓ Runner A is faster (8 mph vs. 7 mph).



A proportional relationship always passes through the origin $(0, 0)$. If it doesn't, it's not proportional!



Get Online



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



Graphing Proportional Relationships Practice

Find the Unit Rate

1. A graph passes through $(4, 12)$. What is k ? _____
2. A table shows $(5, 20)$. What is k ? _____

Write the Equation

3. Store A charges \$3 per pound. Write the equation. _____

Compare

4. Store A: $y = 3x$. Store B charges \$2.50 per pound. Which is cheaper? _____
5. A recipe uses 2 cups of flour for every 3 cookies. How many cups are needed for 12 cookies?

Answer: _____ cups



Find more at
[ViewMath.com/Grade8](https://www.viewmath.com/Grade8)



THANK YOU

Enjoyed This Preview?

Get the Full Book!

This preview shows just a small sample of what's inside.

The complete book includes:

- ✓ *All chapters and topics*
- ✓ *Hundreds of practice problems*
- ✓ *Complete answer key with explanations*
- ✓ *Colorful visuals and step-by-step examples*
- ✓ *Reference sheets and progress trackers*

 Visit us at [ViewMath.com](https://www.viewmath.com) for free resources and more books!