Kansas KAP Grade 7 Math Step by Step

A Beginner Friendly Guide to Learning Math

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Math Step by Step

Clear Steps • Worked Examples • Guided Practice

This book breaks every Grade 7 math topic into clear, numbered steps. Read the steps, follow the worked examples, try the guided practice, then solve problems on your own. The answer key in the back lets you check your work and learn from every mistake.

Step-by-Step Method

Every topic is taught as a numbered procedure — follow the steps and you'll get the answer.

9 Chapters, 56 Topics

From ratios and percents to probability — every Grade 7 standard covered.

Guided Practice

Try-it-yourself problems with blanks that walk you through each step before you go solo.

Complete Answer Key

Every problem has an answer in the back. Check your work, learn from mistakes, and try again.

How to Use This Book

Four steps to master every topic.

1 **Read the Steps**

Each topic opens with a numbered list of steps that tells you exactly what to do. Read through the steps first so you have the full picture before diving into problems.

2 **Follow the Examples**

Worked examples show every step applied to a real problem. Follow along with pencil and paper — try covering the solution and solving it yourself before looking.

3 **Try the Guided Practice**

"Your Turn" problems give you blanks to fill in as you apply each step. This bridges the gap between watching and doing.

4 **Practise on Your Own**

Each section ends with independent practice problems. Write out all your steps, then check answers in the back. When you find a mistake, figure out where your reasoning went wrong and try again.

📅 *Suggested Study Routine*

» *Weekdays: Study one topic per day (about 20–30 minutes).*

» *End of week: Review your notes and redo any problems you missed.*

» *Before a test: Flip through the steps cards for a fast refresher on every method.*

🔗 Pair It Up

This book teaches the how *one step at a time. For extra drill, pair it with the* Grade 7 Math Workbook *— hundreds of additional practice problems organised by the same chapters and topics.*

👥 For Parents & Teachers

» *Encourage students to read the steps aloud before attempting problems.*

» *Keep study sessions to 20–30 minutes for best focus.*

» *Celebrate effort and progress, not just correct answers.*

Get Online

Find more at
ViewMath.com/Grade7

ViewMath.com

How Every Topic Works

Every topic in this book follows the same structure.

Title & Learning Goal

1 *Each topic opens with a clear title and a brief statement of what you will learn. This tells you the destination before you start walking.*

The Steps Card

2 *A numbered list of every step you need. Read these first — they are your roadmap. Each step is colour-coded so you can track it through the examples.*

Worked Examples

3 *One or more fully solved problems. Every step label appears in the solution so you can see exactly where each step is used. Follow along with pencil and paper.*

Your Turn (Guided Practice)

4 *A problem with blanks for you to fill in, step by step. This is your training-wheels round — you practise the method with support before going solo.*

Practice Problems

5 *Independent problems to solve on your own. Answers are in the Answer Key at the back of the book — always check your work!*

Tips & Watch-Out Boxes

6 *Look for the 💡 tip and ⚠️ warning boxes — they highlight common mistakes and shortcuts that save time.*

🛈 *Every topic follows this same pattern. Once you know the rhythm, you can focus on the math.*

⭐ Table of Contents ⭐

Here's what we'll explore together!

Let's learn and have fun!

1

Ratios and Proportional Relationships

⭐ What's Inside ⭐

1.1 Unit Rates with Fractions ⭐

What You'll Learn

- Compute unit rates when quantities are fractions
- Compare rates by finding each unit rate

📖 Words to Know

▸ **Unit Rate** — How much of one quantity for **one unit** of the other.

▸ **Reciprocal** — The "flipped" fraction — the reciprocal of $\frac{a}{b}$ is $\frac{b}{a}$.

🔢 How to Find a Unit Rate with Fractions

1 Write the rate as a **fraction**: $\dfrac{first\ quantity}{second\ quantity}$.

2 **Divide** by multiplying by the reciprocal (Keep–Change–Flip).

3 **Simplify** the result and label with units ("per one").

Example: A recipe uses $\frac{3}{4}$ cup of sugar for $\frac{1}{2}$ batch. How much sugar per batch?

Step 1 Write the rate: $\dfrac{\frac{3}{4}\ cup}{\frac{1}{2}\ batch}$

Step 2 Keep–Change–Flip: $\dfrac{3}{4} \times \dfrac{2}{1} = \dfrac{6}{4}$

Step 3 Simplify: $\dfrac{6}{4} = \dfrac{3}{2} = 1\dfrac{1}{2}$

> ✔ $1\dfrac{1}{2}$ **cups per batch**

Example: Who walks faster? Ana: $\frac{2}{3}$ mi in $\frac{1}{4}$ hr. Ben: $\frac{3}{4}$ mi in $\frac{1}{3}$ hr.

Step 1 Ana's rate: $\dfrac{\frac{2}{3}}{\frac{1}{4}}$　　　Ben's rate: $\dfrac{\frac{3}{4}}{\frac{1}{3}}$

Step 2 Ana: $\dfrac{2}{3} \times \dfrac{4}{1} = \dfrac{8}{3}$　　　Ben: $\dfrac{3}{4} \times \dfrac{3}{1} = \dfrac{9}{4}$

Step 3 Ana: $\dfrac{8}{3} = 2\dfrac{2}{3}$ mph　　　Ben: $\dfrac{9}{4} = 2\dfrac{1}{4}$ mph

> ✔ **Ana is faster** ($2\frac{2}{3}$ **mph** $>$ $2\frac{1}{4}$ **mph**).

💡 *"Per" means "for every one." Always divide to find a unit rate!*

Unit Rates with Fractions Practice

Write the Rate

1. A painter covers $\frac{2}{3}$ wall in $\frac{1}{3}$ hr. Write as a fraction. _____

2. A faucet leaks $\frac{1}{2}$ cup in $\frac{3}{4}$ min. Write as a fraction. _____

Divide and Simplify

3. A painter covers $\frac{2}{3}$ wall in $\frac{1}{3}$ hr. How much wall per hour? _____

4. A faucet leaks $\frac{1}{2}$ cup in $\frac{3}{4}$ min. How many cups per minute? _____

Compare Unit Rates

5. A snail crawls $\frac{5}{8}$ m in $\frac{3}{4}$ hr. A beetle crawls $\frac{7}{10}$ m in $\frac{4}{5}$ hr. Which is faster? _____

6. A car uses $\frac{5}{6}$ gallon to travel $\frac{2}{3}$ mile. How many gallons per mile?

Answer: _____ gallons per mile

2

Operations with Rational Numbers

⭐ What's Inside ⭐

⭐ 2.1 Integers and Their Opposites ⭐

What You'll Learn

- *Identify integers and their opposites on a number line*
- *Find the absolute value of an integer*

📖 Words to Know

▶ **Integer** — *A whole number or its negative:* $\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots$

▶ **Opposite** — *The number the same distance from 0 on the other side of the number line.*

▶ **Absolute Value** — *The distance from 0, written $|n|$. Always ≥ 0.*

🔢 How to Find Opposites and Absolute Values

1 *Locate the number on a **number line**.*

2 *The **opposite** is the same distance from 0 on the other side. A number plus its opposite equals 0.*

3 *The **absolute value** is the distance from 0 — drop the sign.*

Example: Find the opposite and absolute value of -7.

Step 1   *Locate -7 on the number line — it is 7 units to the left of 0.*

Step 2   *The opposite is 7 units to the **right** of 0, which is 7. Check: $-7 + 7 = 0$ ✓*

Step 3   *Distance from 0 is 7, so $|-7| = 7$.*

✔ **Opposite:** 7 **Absolute value:** 7

Example: A diver descends 40 ft below sea level, then rises 40 ft. What is the final position?

Step 1   *Descent is -40 (below sea level). Rise is $+40$ (above starting point).*

Step 2   *These are opposites: $-40 + 40 = 0$.*

Step 3   *$|-40| = 40$ and $|40| = 40$ — same distance, opposite directions.*

✔ **Back at sea level (0 ft). Opposite actions cancel to 0.**

💡 *Think of opposites as "undo" buttons. Earning \$20 and spending \$20 puts you right back where you started!*

Integers and Their Opposites Practice

Locate on the Number Line

1. Is -5 to the left or right of 0? _____

2. Is 3 to the left or right of -1? _____

Find the Opposite

3. What is the opposite of -8? _____

4. What is the opposite of 15? _____

Find the Absolute Value

5. $|-12| =$ _____

6. $|9| =$ _____

7. A football team gains 6 yards, then loses 6 yards. Write this with integers and find the result.

Answer: _____ yards

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

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