Wyoming WY-TOPP Grade 7 Math Made Easy

Study Guide with Key Concepts, Review & Practice

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YOUR GRADE 7 STUDY GUIDE

Math Made Easy

Key Concepts • Worked Examples • Review & Practice

This study guide breaks down every Grade 7 math topic into clear explanations, worked examples, and practice problems. Read the concept, follow the examples step by step, then test yourself. The answer key in the back lets you check your work and learn from every mistake.

9 Chapters

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

Key Concepts First

Each topic starts with the core idea, so you always know what you're learning and why.

Worked Examples

Step-by-step solutions show you exactly how to solve each type of problem before you try on your own.

Practice with Answers

Every section ends with practice problems. Full answer key included in the back.

How to Use This Study Guide

Four steps to master every topic.

1

Read the Concept

Each topic opens with a clear explanation of the key idea or rule. Read it carefully — understanding why a method works is just as important as knowing how to use it.

2

Study the Examples

Worked examples walk through each problem type step by step. Follow along with pencil and paper. Try covering the solution and solving it yourself before you look.

3

Practice on Your Own

Every section ends with practice problems that mirror the examples. Write out all your steps — messy work is fine as long as your thinking is visible.

4

Check and Correct

Flip to the Answer Key and compare every answer. When you find a mistake, figure out where your reasoning went wrong. Then try a similar problem again. That's how real mastery happens.

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:** Use the Math Quick Reference on the next page for a fast refresher.

Pair It Up

This study guide covers the what *and* how. *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 explain concepts in their own words.*
- *Keep study sessions to 20–30 minutes for best focus.*
- *Celebrate effort and progress, not just correct answers.*

Math Quick Reference

Key formulas and facts for every chapter — bookmark this page!

Proportional Relationships

$y = kx$, where $k = \dfrac{y}{x}$

The constant of proportionality k is the unit rate.

The graph is a straight line through the origin.

Inequalities

Solve like equations, but **flip the sign** when multiplying or dividing by a negative.

$x > 3$ → open circle at 3

$x \geq 3$ → closed circle at 3

Percent Problems

$part = percent \times whole$

Percent change: $\dfrac{|new - original|}{|original|} \times 100\%$

Simple interest: $I = Prt$

Geometry & Scale

Scale factor: $\dfrac{drawing\ length}{actual\ length}$

Supplementary: sum $= 180°$

Complementary: sum $= 90°$

Vertical angles are equal.

Rational Number Rules

Same signs → add, keep the sign

Different signs → subtract, keep larger sign

Subtract = add the opposite

Multiply/Divide: same signs → $+$, different → $-$

Circles, Area & Volume

Circumference: $C = 2\pi r = \pi d$

Area of circle: $A = \pi r^2$

Area of triangle: $A = \frac{1}{2}\,b\,h$

Volume of prism: $V = B \times h$

Expressions & Equations

Distributive Property: $a(b + c) = ab + ac$

Two-step equation: $ax + b = c$

Solve: subtract b, then divide by a.

Probability & Statistics

$P(event) = \dfrac{favorable\ outcomes}{total\ outcomes}$

$0 \leq P \leq 1$

Compound events: use tree diagrams, tables, or organised lists to find the sample space.

Contents

CHAPTER

1

Ratios and Proportional Relationships

What's Inside

1.1 Unit Rates with Fractions

Learning Goals

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

Unit Rates with Fractions

A **unit rate** tells you how much of one quantity per **one unit** of another. When the quantities are fractions, divide just like before:

$$\text{unit rate} = \frac{\text{first quantity}}{\text{second quantity}}$$

To divide fractions, **multiply by the reciprocal** (Keep–Change–Flip):

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$$

Finding a Unit Rate

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

Solution:

$$\frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = \frac{3}{2}$$

Answer: $1\frac{1}{2}$ **cups per batch**

Comparing Two Rates

Who walks faster?

- *Ana:* $\frac{2}{3}$ *mi in* $\frac{1}{4}$ *hr*
- *Ben:* $\frac{3}{4}$ *mi in* $\frac{1}{3}$ *hr*

Ana: $\frac{2}{3} \div \frac{1}{4} = \frac{8}{3} = 2\frac{2}{3}$ *mph*

Ben: $\frac{3}{4} \div \frac{1}{3} = \frac{9}{4} = 2\frac{1}{4}$ *mph*

$2\frac{2}{3} > 2\frac{1}{4}$ ☒ ***Ana is faster.***

"Per" means "for every one." To find a unit rate, always divide!

Unit Rates with Fractions

1. *A painter covers* $\frac{2}{3}$ *of a wall in* $\frac{1}{3}$ *hour. How much wall per hour?*
2. *A faucet leaks* $\frac{1}{2}$ *cup in* $\frac{3}{4}$ *minute. How many cups per minute?*
3. *A car uses* $\frac{5}{6}$ *gallon to travel* $\frac{2}{3}$ *mile. How many gallons per mile?*
4. *Trail mix A:* $\frac{1}{2}$ *cup nuts for* $\frac{1}{4}$ *cup raisins. Trail mix B:* $\frac{2}{3}$ *cup nuts for* $\frac{1}{3}$ *cup raisins. Which has more nuts per cup of raisins?*
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?*

CHAPTER

2

Operations with Rational Numbers

What's Inside

2.1 Integers and Their Opposites

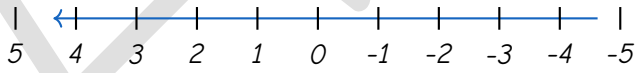
Learning Goals

- Identify integers and their opposites on a number line
- Find absolute values and understand what they measure

Integers and Opposites

Integers are whole numbers and their negatives: $\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots$ Every integer has an ***opposite*** — the number that is the same distance from 0 on the other side.

- The opposite of 5 is -5. The opposite of -3 is 3.
- A number plus its opposite always equals 0: $5 + (-5) = 0$.
- The ***absolute value*** $|n|$ is the distance from 0. It is always positive or zero.



Real-World Opposites

A diver descends 40 feet below sea level, then rises 40 feet.

Descent: -40 ft. Rise: $+40$ ft.

$-40 + 40 = 0$ ⇒ back at sea level.

Answer: 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

1. *What is the opposite of -8?*
2. *Find $|-12|$ and $|7|$.*
3. *A football team gains 6 yards, then loses 6 yards. Write this with integers and find the result.*
4. *The absolute value of a number can be negative.* **True** ○ **False** ○
5. *Order from least to greatest: $-4,\ 2,\ -7,\ 0,\ 5$.*

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*

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