Alaska AK STAR Grade 7 Math in 30 Days

Day by Day Study Plan for Test Prep

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YOUR 30-DAY MATH PLAN

Grade 6 Math in 30 Days

One Topic a Day • Clear Explanations • Daily Practice

Thirty days. That's all you need to build a solid foundation in Grade 6 math — or review everything before a big test.

Each day covers one focused topic with a clear explanation and practice problems. The schedule is designed so you learn ideas in the right order, with each day building on the one before.

Stick to the plan. One topic a day, 20–30 minutes of focused work. By day 30, you'll have covered every major concept.

Follow the Plan

One topic each day, in order

Do the Practice

Solve every problem and check answers

Track Your Days

Check off each day on the tracker

How to Use This Book

Same routine every day — simple and effective.

1

Read today's topic

Each day starts with a clear explanation of one concept. Read it carefully — don't just skim.

2

Study the example

A worked example shows you how it's done. Cover the solution and try it yourself before looking.

3

Solve the practice problems

Do every problem. Write out your steps. Then check the answers at the back of the book.

4

Mark your progress

Check off the day on the 30-Day Plan. Tomorrow, move to the next topic.

*Daily time: About **20–30 minutes**. That's it. Short, focused sessions work better than long, scattered ones.*

Missed a day? No problem. Just pick up where you left off. The order matters more than the calendar.

Your 30-Day Plan

Check off each day as you go. Stay on track!

Day	Topic	✔
1	What Is a Ratio?	☐
2	Using Ratio Language	☐
3	What Is a Rate?	☐
4	Finding the Unit Rate	☐
5	Tables of Equivalent Ratios	☐
6	Graphing Ratios	☐
7	What Is a Percent?	☐
8	Solving Percent Problems	☐
9	Rate & Ratio Word Problems	☐
10	Converting Measurement Units	☐
11	Dividing Fractions by Fractions	☐
12	Multi-Digit Division	☐
13	Decimal Operations	☐
14	GCF and LCM	☐
15	The Distributive Property	☐

Day	Topic	✔
16	Positive & Negative Numbers	☐
17	Absolute Value & Ordering	☐
18	The Coordinate Plane	☐
19	Exponents & Powers	☐
20	Order of Operations	☐
21	Algebraic Expressions	☐
22	One-Step Equations	☐
23	Inequalities	☐
24	Area of Triangles	☐
25	Area of Parallelograms	☐
26	Volume of Rectangular Prisms	☐
27	Nets & Surface Area	☐
28	Mean, Median, and Range	☐
29	Dot Plots, Histograms, Box Plots	☐
30	Review & Final Practice	☐

My start date: _____ **Target finish date:** _____

You don't have to be perfect every day. Just show up and do the work.

WEEK

1

Ratios and Proportional Relationships

This Week's Days

★ 1.1 Unit Rates and Proportional Relationships ★

DAY

1

Unit Rates and Proportional Relationships

Today You Will Learn

- Compute unit rates involving fractions (complex fractions)
- Determine whether a relationship is proportional

Your Progress: Day 1 of 30

Ready to begin? →

About 20 minutes

Unit Rates with Fractions

Key Concept

Complex Fraction Unit Rates A ***unit rate*** *compares a quantity to one unit of another quantity. In Grade 7, the tricky part is that the quantities can be fractions!*

To find a unit rate from a ***complex fraction*** *like* $\frac{\frac{1}{2}\text{ mile}}{\frac{1}{4}\text{ hour}}$*, divide the numerator by the denominator:* $\frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times \frac{4}{1} = 2$ *miles per hour.*

Rule: $\frac{a/b}{c/d} = \frac{a}{b} \times \frac{d}{c}$ *— multiply by the reciprocal of the denominator.*

Finding a Unit Rate

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

Solution: $\frac{\frac{3}{4}}{\frac{1}{2}} = \frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = \frac{3}{2} = 1\frac{1}{2}$ *cups per batch.*

Recognizing Proportional Relationships

Key Concept

Is It Proportional? A relationship between x *and* y *is* ***proportional*** *if:*

- *The ratio* $\frac{y}{x}$ *is the same for every pair in a table, OR*
- *The graph is a straight line through the origin* $(0, 0)$*.*

A straight line that does NOT pass through $(0, 0)$ *is* ***not*** *proportional — don't forget to check!*

Testing a Table

x	y	$y \div x$
2	6	3
5	15	3
8	24	3

Every ratio equals 3, so the relationship ***is proportional****.*

"A proportional relationship always starts at zero — if the line misses the origin, it's a no-go!"

Practice

Unit Rates with Fractions

1. *Find the unit rate:* $\dfrac{\frac{2}{3}\ \text{mile}}{\frac{1}{6}\ \text{hour}}$.
2. *A painter uses* $\frac{3}{5}$ *gallon of paint for* $\frac{1}{3}$ *of a wall. How many gallons per wall?*
3. *Find the unit rate:* $\dfrac{\frac{7}{8}\ \text{pound}}{\frac{1}{4}\ \text{bag}}$.
4. *Maria jogs* $\frac{3}{4}$ *mile in* $\frac{3}{8}$ *hour. What is her speed in miles per hour?*

Recognizing Proportional Relationships

5. *Does the table show a proportional relationship?*

x	1	3	5	7
y	4	12	20	28

6. *Does the table show a proportional relationship?*

x	2	4	6	8
y	5	9	13	17

7. *A graph shows a straight line passing through $(0, 0)$ and $(3, 9)$. Is the relationship proportional?*

8. *A graph shows a straight line passing through $(1, 3)$ and $(2, 6)$, but it crosses the y-axis at $(0, 1)$. Is it proportional?*

Daily Challenge

9. *A car travels $\frac{7}{8}$ mile in $\frac{1}{3}$ minute. A bike travels $\frac{2}{5}$ mile in $\frac{1}{6}$ minute. Which is faster, and by how many miles per minute?*

Key Takeaway: *To find a unit rate with fractions, multiply by the reciprocal; a relationship is proportional only if every $\frac{y}{x}$ ratio is the same and the graph passes through $(0, 0)$.*

Day Complete

☐ I understand today's lesson ☐ I finished the practice

WEEK

2

Operations with Rational Numbers

This Week's Days

2.1 Subtracting Integers and Rational Numbers

DAY

9

Subtracting Integers and Rational Numbers

Today You Will Learn

- Subtract integers by adding the opposite
- Add and subtract rational numbers (fractions and decimals)

Your Progress: Day 9 of 30

0%

Ready to begin? →

About 20 minutes

Subtracting Integers

Key Concept

Subtract = Add the Opposite The key rule for subtracting integers:

$$p - q = p + (-q)$$

Change the subtraction sign to addition and flip the sign of the second number. Then use the addition rules from Day 8.

Distance between two numbers: *$|a-b|$ gives the distance between a and b on the number line — always positive.*

Common error: *Forgetting to change* both *the operation and the sign. For example, $5-(-3)$ becomes $5+3=8$, not $5-3=2$.*

Subtracting a Negative Integer

Find $4-(-7)$.

Step 1: *Rewrite as addition: $4-(-7)=4+7$.*

Step 2: *Add: $4+7=11$.*

Adding and Subtracting Rational Numbers

Key Concept

*Extending to Fractions and Decimals The same sign rules apply to all **rational numbers** — fractions and decimals, not just integers.*

Fractions: *Find a common denominator, then add or subtract the numerators.*

$$-\frac{3}{4}+\frac{1}{2}=-\frac{3}{4}+\frac{2}{4}=-\frac{1}{4}$$

Decimals: *Line up the decimal points, then apply the sign rules.*

$$-2.7+1.3=-(2.7-1.3)=-1.4$$

Subtracting Mixed Numbers

Find $-1\frac{1}{3}-2\frac{2}{3}$.

Step 1: *Rewrite subtraction as addition of the opposite:*

$$-1\frac{1}{3}+\left(-2\frac{2}{3}\right)$$

Step 2: *Both are negative, so add and keep the negative sign:*

$$1\frac{1}{3}+2\frac{2}{3}=\frac{4}{3}+\frac{8}{3}=\frac{12}{3}=4$$

Answer: -4

"Subtract" is just a disguise — underneath, it's always adding the opposite!

Practice

Subtracting Integers

1. $10 - 15 =$
2. $-6 - (-9) =$
3. $-11 - 4 =$
4. *Find the distance between -8 and 5 on the number line.*

Adding and Subtracting Rational Numbers

5. $-\frac{2}{5} + \frac{4}{5} =$
6. $3.2 - (-1.8) =$
7. $-\frac{3}{4} - \frac{1}{2} =$
8. *A diver is at -12.5 meters. She descends another 8.3 meters. What is her new depth?*

Daily Challenge

9. *The overnight low temperature on Monday was $-6\frac{1}{2}$F. By Tuesday morning, it had dropped another $3\frac{3}{4}$F. Then by noon on Tuesday, it rose $12\frac{1}{4}$F. What was the temperature at noon on Tuesday?*

Key Takeaway: *To subtract any number, add its opposite — this one rule works for integers, fractions, and decimals alike.*

Day Complete

☐ I understand today's lesson ☐ I finished the practice

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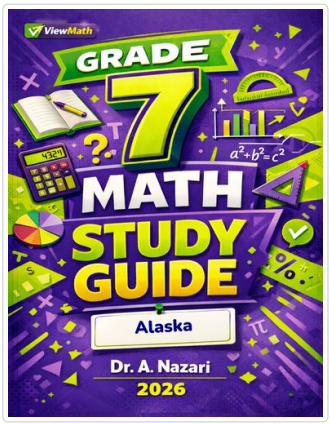
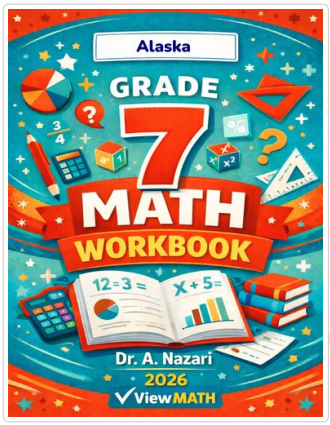


Study Guide

Scan Me



Workbook

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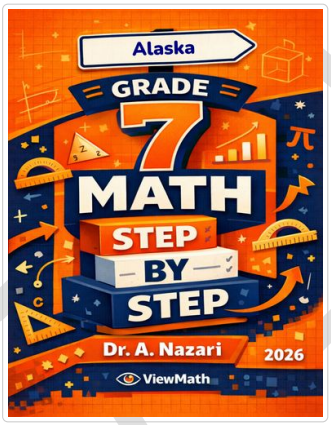

Step-by-Step

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3 Practice Tests

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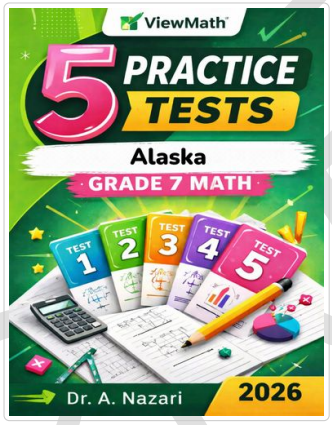

5 Practice Tests

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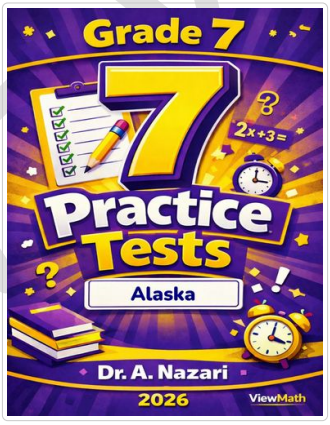

7 Practice Tests

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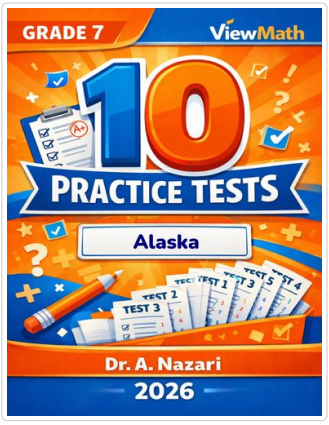

10 Practice Tests

Scan Me

THANK YOU

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- *Reference sheets and progress trackers*

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