

# Massachusetts MCAS Grade 6 to Grade 7 Math Summer Bridge Workbook

*8-Week Review and Readiness Workbook with Answer Key*

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# Summer Math Bridge

## Grade 6 to Grade 7 Workbook

**This book is a bridge: it keeps Grade 6 math strong while making the first month of Grade 7 feel familiar.**

Students revisit the Grade 6 ideas that matter most—ratios, rates, percents, rational numbers, expressions, equations, geometry, measurement, statistics, and data—then preview the Grade 7 language connected to proportional relationships, rational-number operations, scale drawings, circles, probability, and inference. Families and teachers get a clear summer plan without needing to build one from scratch.



### **For families and teachers**

Use one page per day, about 20 minutes. Let students try first, then use the answer explanations as quick reteaching after mistakes. Friday mixed reviews show which skills are ready and which need another short review.

### **For students**

Show your thinking, label units, and fix missed problems. The goal is not to rush through the workbook; the goal is to start Grade 7 ready to build on what you already know.

# How to Use This Bridge Workbook

One focused page at a time. One bridge toward Grade 7.



## The page order is the plan.

Move through the workbook one day at a time. Each week has four focused lesson days and one Friday mixed review, with longer practice sets so students can build fluency before Grade 7.



**Lesson days** Read the short review, study the Quick Review, and complete the workbook practice set.

**Friday review** Complete the mixed review without rushing. Use it to see which weekly skills are solid and which need another look.

**Review answers** Check the answer key, then read the explanation for every missed problem. Correct the work in pencil before moving on.

**Extra support** If a skill is shaky, do one similar problem the next day before starting the new page.



### Keep a steady pace

Aim for about 20 minutes, then stop.



### Show thinking

Use equations, graphs, labels, and units.



### Fix mistakes

Read the explanation and correct missed work.

PREVIEW



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# ✓ My 8-Week Bridge Tracker

Check off each lesson and write a note or score for each Friday mixed review.

This bridge workbook belongs to: \_\_\_\_\_

Week	Focus	Mon	Tue	Wed	Thu	Friday Review
1	Ratios and proportional relationships	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
2	Percents and real-world rates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
3	Rational numbers and the coordinate plane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
4	Expressions, equations, and inequalities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
5	Relationships, rules, and scale drawings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
6	Geometry and measurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
7	Statistics and comparing data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
8	Probability and Grade 7 readiness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

## Reflection Notes

After any Friday mixed review, write the question number, what you noticed, and one comment that will help you next time. Use this space for problems you missed, guessed on, or want to remember.

One Grade 6 skill I kept strong: \_\_\_\_\_

One Grade 7 skill I am ready to learn: \_\_\_\_\_

# Formula Reference Sheet

## Area Formulas

**Rectangle**  $A = l \times w$

**Parallelogram**  $A = b \times h$

**Triangle**  $A = \frac{1}{2} \times b \times h$

**Trapezoid**  $A = \frac{1}{2}(b_1 + b_2) \times h$

## Volume

**Rectangular Prism**  $V = l \times w \times h$

**Prism**

## Surface Area

Find the area of each face, then add them all up.

**Rectangular Prism:**

$$SA = 2lw + 2lh + 2wh$$

## Order of Operations

**P** Parentheses first

**E** Exponents

**M/D** Multiply & Divide (left to right)

**A/S** Add & Subtract (left to right)

## Ratios & Percents

**Ratio:**  $a : b$  or  $\frac{a}{b}$

**Unit rate:** amount per 1 unit

**Percent:** a ratio out of 100

$$\text{Part} = \text{Percent} \times \text{Whole}$$

## Integers & Absolute Value

**Integers:**

$\dots, -3, -2, -1, 0, 1, 2, 3, \dots$

$$|-5| = 5 \quad |5| = 5$$

**Absolute value** = distance from 0

## Expressions & Equations

**Exponent:**  $3^4 = 3 \times 3 \times 3 \times 3 = 81$

**Variable:** a letter that stands for a number

**Equation:** two expressions joined by =

**Inequality:** uses  $<$ ,  $>$ ,  $\leq$ ,  $\geq$

## Coordinate Plane

**Ordered pair:**  $(x, y)$

**x-axis:** horizontal    **y-axis:** vertical

**Origin:**  $(0, 0)$

**Four quadrants** (I, II, III, IV)

## Statistics

**Mean:** sum of values  $\div$  count

**Median:** middle value (sorted)

**Range:** max – min

# WEEK

# 1

## *Ratios and Proportional Relationships*

### *This Week's Days*

*Week 1 Day 1: Ratio Language*

*Week 1 Day 2: Rates and Unit Rates*

*Week 1 Day 5: Week 1 Ratios and Proportional Relationships Mixed Review*



Day 1

## Ratio Language


WORKBOOK LAB

 Read it  Model it  Use it

A ratio compares two quantities. The order matters because the first number must match the first quantity named.

Words	Colon	Fraction
5 apples to 3 oranges	5:3	$\frac{5}{3}$

-  A part-to-part ratio compares one part of a group to another part.
-  A part-to-whole ratio compares one part to the total group.
-  The words “for every” and “for each” describe equal ratio relationships.
-  For a part-to-whole ratio, add all parts first to find the whole.
-  Reversing the order changes the comparison.

 **Coach Tip:** Before writing a ratio, underline the two quantities in the order the problem names them.

### Write ratio forms.

- 1 A basket has 9 red apples and 6 green apples. Write the ratio of red apples to green apples in three forms. \_\_\_\_\_
- 2 Use the table to write the ratio of green apples to total apples. \_\_\_\_\_

Apple color	Number
Red	9
Green	6

- 3 A recipe uses 4 cups of oats for every 3 cups of dried fruit. Write the ratio of dried fruit to oats.  
\_\_\_\_\_
- 4 The tape diagram shows adults and students at a meeting. Write the ratio of adults to students.  
\_\_\_\_\_

Adults   
Students



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**☰ Part-to-part and part-to-whole.**

- 5 A class has 14 students wearing sneakers and 10 students wearing boots. Is sneakers to boots part-to-part or part-to-whole? \_\_\_\_\_
- 6 Use the table to write the ratio of boots to total students. \_\_\_\_\_

Footwear	Students
Sneakers	14
Boots	10

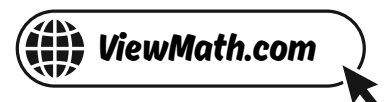
- 7 A shelf has 8 fiction books, 5 nonfiction books, and 7 graphic novels. Write fiction books to total books. \_\_\_\_\_
- 8 Which ratio is part-to-whole?
  - A. dogs to cats
  - B. blue marbles to total marbles
  - C. boys to girls
  - D. pencils to pens

**☰ Use ratio language.**

- 9 True or False: The ratio 7:2 means the same comparison as 2:7.  True  False
- 10 Write a "for every" sentence for 5 adults to 12 students. \_\_\_\_\_
- 11 The diagram shows circles and squares. Write the ratio of squares to circles. \_\_\_\_\_  
 □ □ □ □  
 ○ ○ ○ ○ ○ ○
- 12 At a club meeting, there are 5 adults for every 12 students. If there are 24 students, how many adults are there? \_\_\_\_\_
- 13 Which statement matches the ratio 3:8?
  - A. For every 8 cups of rice, there are 3 cups of beans.
  - B. For every 3 cups of rice, there are 8 cups of beans.
  - C. There are 11 cups of rice for every 3 cups of beans.
  - D. There are 8 total cups and 3 cups of beans.



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Day 2






## Rates and Unit Rates


WORKBOOK LAB

 Read it  Model it  Use it

A rate compares quantities with different units. A unit rate tells the amount for 1 unit.

$$\frac{180 \text{ miles}}{3 \text{ hours}} = \frac{60 \text{ miles}}{1 \text{ hour}} = 60 \text{ miles per hour}$$

-  The word per means “for each one.”
-  Divide total amount by number of units to find a unit rate.
-  Keep the units in the answer so the rate has meaning.
-  Unit rates compare speeds, prices, wages, and production.
-  For better buys, compare the price for one item.

 **Coach Tip:** A unit rate should usually include the word per, such as dollars per pound or miles per hour.

### Identify and write rates.

- 1 A cyclist rides 36 miles in 3 hours. Write this as a rate using the word “per.”  
\_\_\_\_\_
- 2 Which comparison is a rate?
 

<b>A.</b> 8 red tiles to 5 blue tiles	<b>B.</b> 12 dollars for 4 pounds
<b>C.</b> 6 girls to 7 boys	<b>D.</b> 9 forks to 9 plates
- 3 Use the table to write a rate for pages read per minutes. \_\_\_\_\_

Pages	45
Minutes	30

- 4 The double number line shows miles and hours. What rate is shown? \_\_\_\_\_



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**Find unit rates.**

- 5 Find the cyclist's unit rate for 36 miles in 3 hours. \_\_\_\_\_
- 6 A 6-pack of notebooks costs \$9.30. What is the cost per notebook? \_\_\_\_\_
- 7 Use the ratio table to find boxes packed per minute. \_\_\_\_\_

Minutes	7	1
Boxes	420	_____

- 8 A printer makes 96 flyers in 8 minutes. How many flyers does it make per minute?  
\_\_\_\_\_

**Compare and apply unit rates.**

- 9 Store A sells 8 granola bars for \$5.60. Store B sells 12 granola bars for \$7.80. Which store has the lower unit price? \_\_\_\_\_
- 10 Use the table. Which worker earns more per hour?

Worker	Pay	Hours
Maya	\$72	9
Leo	\$65	5

- 11 Maya earns \$72 for 9 hours of tutoring. At that same rate, how much will she earn for 14 hours?  
\_\_\_\_\_
- 12 Which deal has the greatest number of ounces per dollar?
- A.** 24 ounces for \$3      **B.** 30 ounces for \$5  
**C.** 36 ounces for \$6      **D.** 20 ounces for \$4
- 13 A car travels 255 miles on 10 gallons of gas. What is the unit rate in miles per gallon?  
\_\_\_\_\_



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Day 5

## Week 1 Ratios and Proportional Relationships Mixed Review

 **WORKBOOK LAB**
 **Read it**  **Model it**  **Use it**

This mixed review brings together ratio language, rates, unit rates, ratio tables, and proportional graphs.

-  Keep ratio order tied to the words in the problem.
-  Divide to find unit rates such as miles per hour or dollars per item.
-  Ratio tables show equivalent pairs made by the same multiplier.
-  Proportional graphs are straight lines through  $(0, 0)$ .
-  The quotient  $\frac{y}{x}$  gives the unit rate for a proportional relationship.

 **Coach Tip:** On mixed review, label the quantities first; then decide whether the problem is a ratio, rate, table, or graph problem.

### Ratios and ratio language.

- 1 A basket has 12 peaches and 8 plums. Write the ratio of peaches to plums in simplest form.  
\_\_\_\_\_
- 2 Use the table to write plums to total fruit. \_\_\_\_\_

Fruit	Number
Peaches	12
Plums	8

- 3 True or False: A ratio of 9:5 is the same comparison as 5:9.

 **True**
 **False**

### Rates and unit rates.

- 4 A train travels 210 miles in 3 hours. What is the unit rate? \_\_\_\_\_
- 5 Which comparison is a rate?
  - A. 5 red blocks to 8 blue blocks
  - B. 12 dollars for 4 pounds
  - C. 7 girls to 6 boys
  - D. 3 pens to 9 pencils
- 6 Which is the better buy: 5 folders for \$3.75 or 8 folders for \$5.20? \_\_\_\_\_



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**Tables and graphs.**

7 Complete the table for the ratio 3:8. \_\_\_\_\_

$x$	3	9	_____
$y$	8	_____	40

8 A graph of equivalent ratios includes (2, 18) and (5, 45). What is the unit rate? \_\_\_\_\_

9 Use the graph. Does (4, 28) fit the line? \_\_\_\_\_



**Proportional applications.**

10 A proportional line contains the point (7, 28). What point on the line has  $x = 1$ ? \_\_\_\_\_

11 Four pounds of peaches cost \$11. Write the proportional equation for total cost  $y$  and pounds  $x$ .  
\_\_\_\_\_

12 True or False: A straight line that crosses the  $y$ -axis at (0, 2) can represent a proportional relationship.  True  False

13 A punch recipe uses pineapple juice and water in a ratio of 2:5. If the recipe uses 20 cups of water, how many cups of pineapple juice are needed? \_\_\_\_\_

- 14 Which statement has the greatest unit rate?
- A. 48 words in 4 minutes
  - B. 63 words in 7 minutes
  - C. 70 words in 7 minutes
  - D. 90 words in 10 minutes



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## ANSWER KEY

# Answer Key & Explanations

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*Use the answers to check your work, then read the explanations to learn the method.*

### ✔ **How to review**

*First compare your final answer. If it does not match, read the explanation slowly and redo the problem beside it. The goal is to understand the move that gets you from the question to the final answer.*

 **Week 1 Day 1: Ratio Language**
 **Answers**

**1** 9 to 6, 9:6,  $\frac{9}{6}$

**2** 6:15, or 2:5

**3** 3:4

**4** 5:12

**5** Part-to-part

**6** 10:24, or 5:12

**7** 8:20, or 2:5

**8** B

**9** False

**10** For every 5 adults, there are 12 students.

**11** 4:6, or 2:3

**12** 10 adults

**13** B

 **Explanations**

**1** Red apples are named first, so 9 comes first. The same comparison can be written with words, a colon, or a fraction bar.

**2** This compares green apples to all apples, so add  $9 + 6 = 15$ . The ratio 6:15 simplifies by dividing both terms by 3.

**3** The problem asks for dried fruit first. Dried fruit is 3 cups and oats are 4 cups, so the ratio is 3:4.

**4** Count the boxes in the adult row and the student row. There are 5 adult parts and 12 student parts, so the ratio is 5:12.

**5** Sneakers and boots are two parts of the same class group. A part-to-whole ratio would compare one shoe group to the total number of students.

**6** Boots are compared to all students, so the whole is  $14 + 10 = 24$ . Divide 10:24 by 2 to simplify to 5:12.

**7** Add all books to get the whole:  $8 + 5 + 7 = 20$ . Fiction books are 8 of the 20 books, and 8:20 simplifies to 2:5.

**8** A part-to-whole ratio compares one category with the entire group. Blue marbles to total marbles matches that idea.

**9** Ratio order matters. The ratio 7:2 names 7 of the first quantity for every 2 of the second, while 2:7 reverses the quantities.

**10** The sentence should keep the same order as the ratio. Adults are first and students are second.

**11** The question asks for squares first, then circles. There are 4 squares and 6 circles, so the ratio is 4:6, which simplifies to 2:3.



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- 12 The students doubled from 12 to 24. Multiply the adults by the same factor:  $5 \times 2 = 10$ .
- 13 The first number in 3:8 matches the first quantity named. Choice B keeps 3 rice cups first and 8 bean cups second.

### 📅 Week 1 Day 2: Rates and Unit Rates

#### ✔ Answers

- 1 36 miles per 3 hours      2 B      3 45 pages per 30 minutes      4 48 miles per 4 hours
- 5 12 miles per hour      6 \$1.55 per notebook      7 60 boxes per minute
- 8 12 flyers per minute      9 Store B      10 Leo      11 \$112      12 A
- 13 25.5 miles per gallon

#### 💡 Explanations

- 1 A rate compares two different units, here miles and hours. This rate is not yet a unit rate because it is for 3 hours.
- 2 A rate compares quantities with different units. Dollars and pounds are different units, so choice B is a rate.
- 3 The table gives pages and minutes, which are different units. Writing pages per minutes keeps the labels in the same order.
- 4 The line pairs 48 miles with 4 hours at the last tick. This is the full rate shown by the diagram.
- 5 Unit rate means distance for 1 hour. Divide 36 by 3 to get 12 miles per hour.
- 6 Divide the total cost by the number of notebooks.  $\$9.30 \div 6 = \$1.55$ , so each notebook costs \$1.55.
- 7 The table changes from 7 minutes to 1 minute by dividing by 7. Divide 420 boxes by 7 to get 60 boxes per minute.



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- 8 Divide total flyers by total minutes.  $96 \div 8 = 12$ , so the unit rate is 12 flyers per minute.
- 9 Store A costs  $\$5.60 \div 8 = \$0.70$  per bar. Store B costs  $\$7.80 \div 12 = \$0.65$  per bar, so Store B is cheaper.
- 10 Maya earns  $\$72 \div 9 = \$8$  per hour. Leo earns  $\$65 \div 5 = \$13$  per hour, so Leo earns more per hour.
- 11 First find the unit rate:  $\$72 \div 9 = \$8$  per hour. Then multiply by 14 hours:  $8 \times 14 = 112$ .
- 12 Compute ounces per dollar:  $24 \div 3 = 8$ ,  $30 \div 5 = 6$ ,  $36 \div 6 = 6$ , and  $20 \div 4 = 5$ . Choice A has the greatest unit rate.
- 13 Miles per gallon means miles for 1 gallon. Divide 255 by 10 to get 25.5 miles per gallon.

### 📅 Week 1 Day 5: Week 1 Ratios and Proportional Relationships Mixed Review

#### ✓ Answers

- 1 3:2    2 8:20, or 2:5    3 False    4 70 miles per hour    5 B    6 8 folders for \$5.20  
 7 24; 15    8 9    9 No    10 (1, 4)    11  $y = 2.75x$     12 False    13 8 cups    14 A

#### 💡 Explanations

- 1 The ratio starts as 12:8 because peaches are named first. Divide both terms by 4 to simplify to 3:2.
- 2 This is part-to-whole because plums are compared with all fruit. The total is  $12 + 8 = 20$ , and 8:20 simplifies to 2:5.
- 3 Order matters in a ratio. Reversing the order changes which quantity is first and which is second.
- 4 Unit rate means the distance for 1 hour. Divide 210 by 3 to get 70 miles per hour.
- 5 A rate compares quantities with different units. Dollars and pounds are different units, so choice B is a rate.



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- 6 Find each unit price.  $\$3.75 \div 5 = \$0.75$  per folder, and  $\$5.20 \div 8 = \$0.65$  per folder, so the 8-folder option is cheaper.
- 7 From 3 to 9, multiply by 3, so  $8 \times 3 = 24$ . From 8 to 40, multiply by 5, so  $3 \times 5 = 15$ .
- 8 Divide  $y$  by  $x$  for either point.  $18 \div 2 = 9$  and  $45 \div 5 = 9$ , so the unit rate is 9.
- 9 The line shows a unit rate of 8, so when  $x = 4$ ,  $y$  should be 32. The point  $(4, 28)$  is below the line.
- 10 The constant of proportionality is  $28 \div 7 = 4$ . The point where  $x = 1$  is  $(1, 4)$ .
- 11 The unit price is  $\$11 \div 4 = \$2.75$  per pound. Total cost equals 2.75 times the pounds.
- 12 A proportional graph must pass through  $(0, 0)$ . Crossing at  $(0, 2)$  means there is an output when the input is 0.
- 13 Water changes from 5 parts to 20 cups, which is multiplying by 4. Multiply pineapple juice by the same factor:  $2 \times 4 = 8$ .
- 14 Compute each words-per-minute rate. The rates are 12, 9, 10, and 9, so choice A is greatest.

PREVIEW

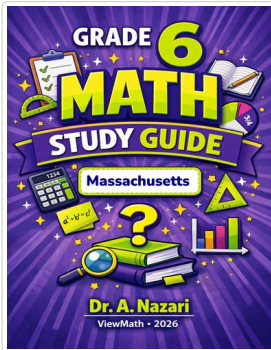


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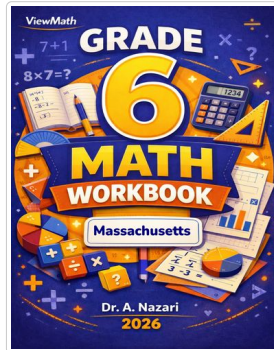
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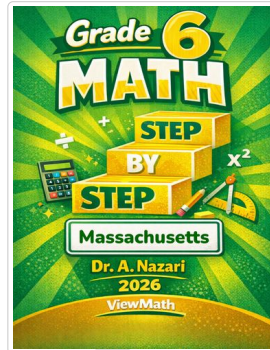
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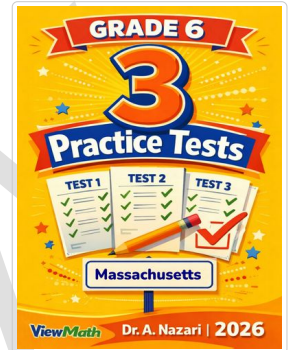
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Step-by-Step



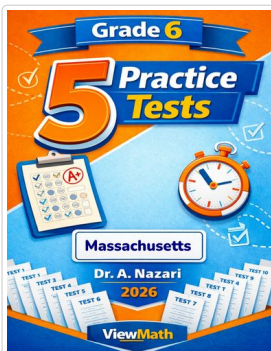
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3 Practice Tests



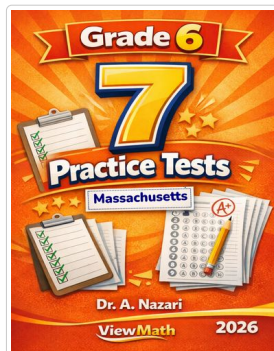
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5 Practice Tests



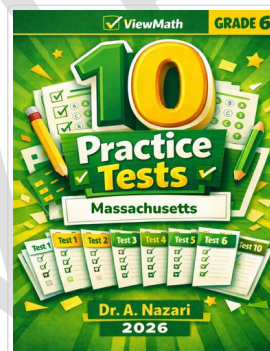
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7 Practice Tests



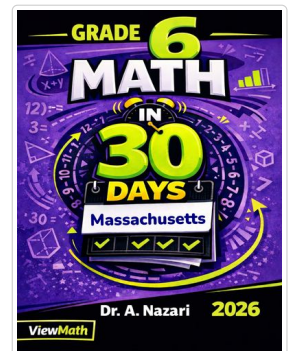
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10 Practice Tests



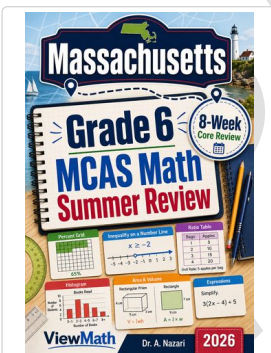
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Math in 30 Days



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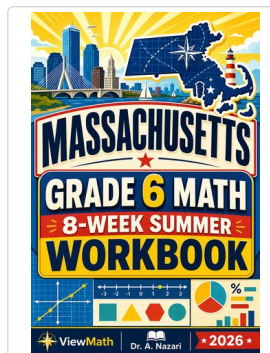
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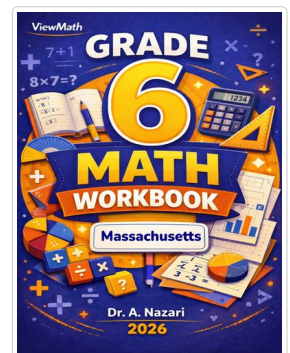
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