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# INTRODUCTION

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Eighth grade is an extremely important year in math for students. It is often the final year for students to solidify their basic math skills before moving on to the abstract world of algebra and geometry. The focus of *Eighth-Grade Math Minutes* is math fluency—teaching students to solve problems effortlessly and rapidly. The problems in this book provide students with practice in every key area of eighth-grade math instruction, including:

- computation
- number sense
- graphing
- problem solving
- measurement
- data analysis and probability
- spatial connections
- critical reasoning
- algebra and functions
- geometry

Use this comprehensive resource to improve your students' overall math fluency, which will promote greater self-confidence in their math skills as well as provide the everyday practice necessary to succeed in testing situations.

*Eighth-Grade Math Minutes* features 100 “Minutes.” Each Minute consists of 10 classroom-tested problems of varying degrees of difficulty for students to complete within a one- to two-minute period. This unique format offers students an ongoing opportunity to improve their own fluency in a manageable, nonthreatening format. The quick, timed format, combined with instant feedback, makes this a challenging and motivational assignment students will look forward to using each day. Students become active learners as they discover mathematical relationships and apply acquired understanding to complex situations and to the solution of realistic problems in each Minute.



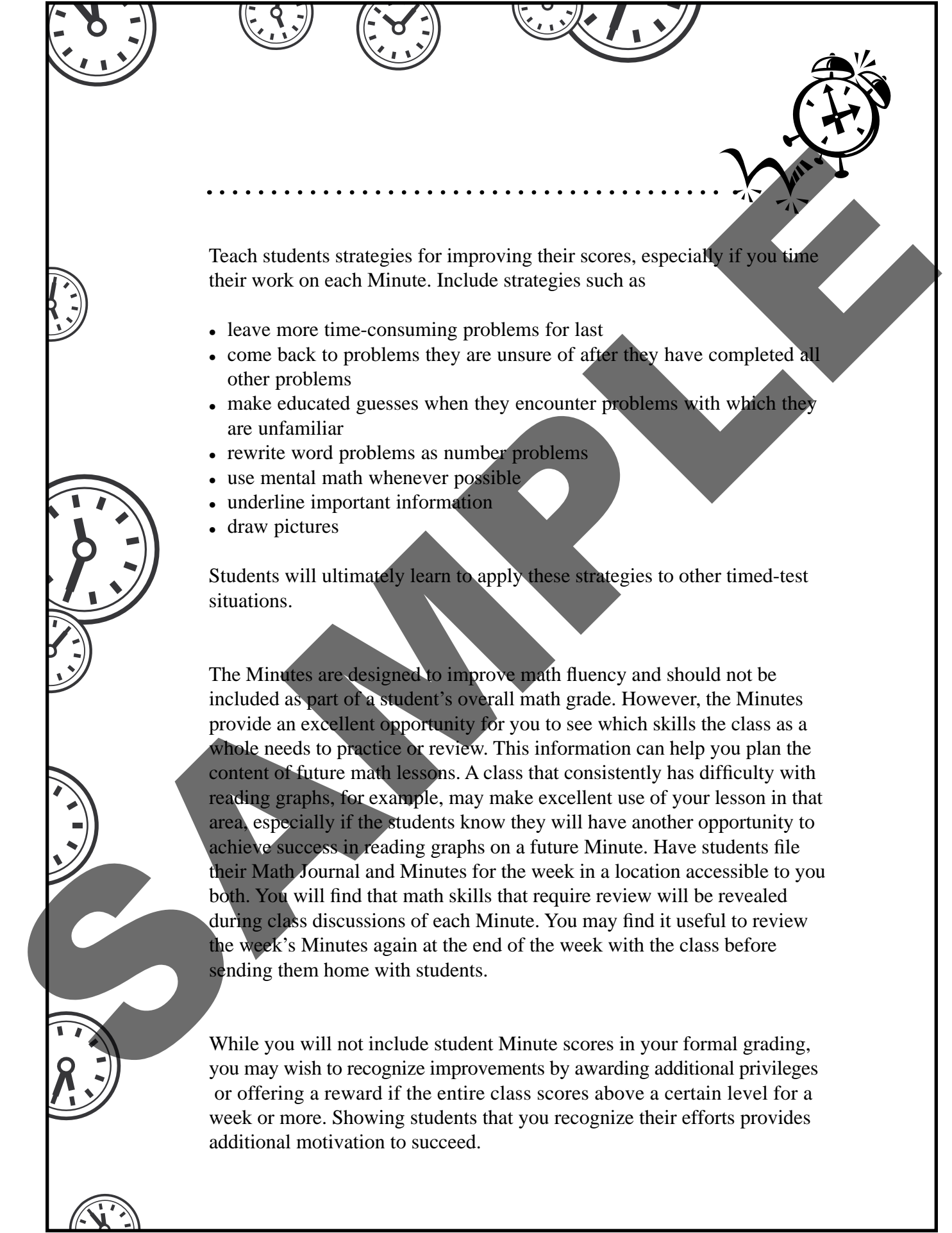
# HOW TO USE THIS BOOK

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*Eighth-Grade Math Minutes* is designed to be implemented in numerical order, starting with Minute One. Students who need the most support will find the order in which skills are introduced helpful in building and retaining confidence and success. For example, the first time that students are asked to provide the value of pi to the hundredths place, the digits in the ones and tenths places are provided. The second time, the digit in the ones place is provided. It is not until the third time that students are asked the value of pi that they must recall the number without additional support.

*Eighth-Grade Math Minutes* can be used in a variety of ways. Use one Minute a day as a warm-up activity, review, assessment, or homework assignment. Other uses include incentive projects and extra credit. Keep in mind that students will get the most benefit from their daily Minute if they receive immediate feedback. If you assign the Minute as homework, correct it in class as soon as students are settled at the beginning of the day.

If you use the Minutes as a timed activity, place the paper facedown on the students' desks or display it as a transparency. Use a clock or kitchen timer to measure one minute—or more if needed. As the Minutes become more advanced, use your discretion on extending the time frame to several minutes if needed. Encourage students to concentrate on completing each problem successfully and not to dwell on problems they cannot complete. At the end of the allotted time, have the students stop working. Then, read the answers from the answer key (pages 108–112) or display them on a transparency. Have students correct their own work and record their scores on the Minute Journal reproducible (page 6). Then, have the class go over each problem together to discuss the solution(s). Spend more time on problems that were clearly challenging for most of the class. Tell students that problems that seemed difficult for them will appear again on future Minutes, and that they will have another opportunity for success.



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Teach students strategies for improving their scores, especially if you time their work on each Minute. Include strategies such as

- leave more time-consuming problems for last
- come back to problems they are unsure of after they have completed all other problems
- make educated guesses when they encounter problems with which they are unfamiliar
- rewrite word problems as number problems
- use mental math whenever possible
- underline important information
- draw pictures

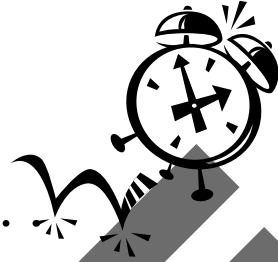
Students will ultimately learn to apply these strategies to other timed-test situations.

The Minutes are designed to improve math fluency and should not be included as part of a student's overall math grade. However, the Minutes provide an excellent opportunity for you to see which skills the class as a whole needs to practice or review. This information can help you plan the content of future math lessons. A class that consistently has difficulty with reading graphs, for example, may make excellent use of your lesson in that area, especially if the students know they will have another opportunity to achieve success in reading graphs on a future Minute. Have students file their Math Journal and Minutes for the week in a location accessible to you both. You will find that math skills that require review will be revealed during class discussions of each Minute. You may find it useful to review the week's Minutes again at the end of the week with the class before sending them home with students.

While you will not include student Minute scores in your formal grading, you may wish to recognize improvements by awarding additional privileges or offering a reward if the entire class scores above a certain level for a week or more. Showing students that you recognize their efforts provides additional motivation to succeed.



# MINUTE JOURNAL



NAME \_\_\_\_\_

MINUTE	DATE	SCORE	MINUTE	DATE	SCORE	MINUTE	DATE	SCORE	MINUTE	DATE	SCORE
1			26			51			76		
2			27			52			77		
3			28			53			78		
4			29			54			79		
5			30			55			80		
6			31			56			81		
7			32			57			82		
8			33			58			83		
9			34			59			84		
10			35			60			85		
11			36			61			86		
12			37			62			87		
13			38			63			88		
14			39			64			89		
15			40			65			90		
16			41			66			91		
17			42			67			92		
18			43			68			93		
19			44			69			94		
20			45			70			95		
21			46			71			96		
22			47			72			97		
23			48			73			98		
24			49			74			99		
25			50			75			100		

# SCOPE AND SEQUENCE

<b>SKILL</b>	<b>MINUTE IN WHICH SKILL FIRST APPEARS</b>	<b>SKILL</b>	<b>MINUTE IN WHICH SKILL FIRST APPEARS</b>
Number Sense	1	Two-Step Equations	13
Exponents	1	Absolute Value	14
Order of Operations	1	Patterns	15
One-step Algebra	1	Fractions (multiply)	18
Problem Solving	1	Perimeter	20
Whole Numbers (add, subtract, multiply, divide)	1	Mental Math	22
Fractions (numerator, denominator)	1	Fractions (subtract)	23
Reasoning/Decision Making	2	Ratio/Proportions	23
Estimating	2	Algebraic Translations	23
Scientific Notation	3	Fractions (reciprocals, reducing)	26
Vocabulary	4	Mean	26
Squares/Square Roots	4	Fractions (divide)	28
Graphs	5	Median/Mode	33
Rounding	7	Identifying Errors	38
Percents	7	Simple Probability	43
Decimals (add, subtract, multiply)	7	Matrices	47
Multiplying by 10/Powers of 10	8	Distributive Property	52
Fractions (add)	9	Geometry (degrees, shapes, coordinate graphs, angles)	53
Algebra (expressions, solving equations)	10	Functions (rules, domain, range)	53
Ordering	11	Greatest Common Factors/ Least Common Multiples	55
Comparing Rational Numbers/Inequalities	11	Lines (parallel, perpendicular, intersecting, intercepts)	62
Area/Surface Area	11	Venn Diagrams	63
Sequences/Patterns	12	Symmetry	67
Volume	12	Mathematical Sets	75
Substitution	13	Congruent Shapes	91

NAME: \_\_\_\_\_



## MINUTE 1

1.  $2^3 =$

2.  $27 \div 9 + 3 =$

3. If  $m + 40 = 75$ , then  $m =$  \_\_\_\_\_.

4. Number of letters in the alphabet minus the number of months in a year? \_\_\_\_\_

5.  $(4 + 2)^2 =$

6. Write  $3 \cdot 3 \cdot 3 \cdot 3$  in exponential form. \_\_\_\_\_

7.  $8 \cdot 9 =$

8.  $\frac{48}{6} =$

9.  $1^{10} =$

10.  $5 + (4)(3) =$

**BONUS!**

Farmer Doug has some pigs and chickens.

One day he counted 24 legs and 7 heads in the barnyard.

How many of each animal did Farmer Doug count? \_\_\_\_\_

NAME: \_\_\_\_\_



## MINUTE 2

1.  $(2)(3)(4) =$  \_\_\_\_\_

2. Write  $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$  in exponential form. \_\_\_\_\_

3.  $\frac{4+6}{5} =$  \_\_\_\_\_

4. Bobby thinks that  $5^2 = 10$ .  
What is wrong with this answer? \_\_\_\_\_

5.  $4 + 6 \cdot 2 = 4 + 12$  Circle: True or False

6. If  $a = 5$  and  $b = 6$ , then what does  $ab$  equal? \_\_\_\_\_

7. Miss White wants to buy 5 value meals at Mel's Diner.  
What is a reasonable total for her purchase?  
a. \$25      b. \$1,000      c. \$100      d. \$10

8. 12 snakes have how many eyes altogether? \_\_\_\_\_

9.  $5 + (9)(6) =$  \_\_\_\_\_

10. Which of these operations should be completed first  
when solving an equation?  
a.  $\times$       b.  $+$       c.  $()$       d.  $\div$