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*Maths the Write Way, Level 7*, was written by Brian E. Enright, Robert Gyles, Maxine Leonescu and Fred I. Remer.

**HAWKER BROWNLOW**  
E D U C A T I O N

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## ★ TO THE TEACHER ★

### Book 7, CSF Level 5

One of the most important aspects of teaching maths is communication. Writing, speaking, explaining or drawing can help your students internalise what they have learned and clarify their own thinking. Communication can also act as a powerful tool for you to assess the thinking of your students.

Your students should be encouraged to use strategies that foster the art of communication. We have incorporated a variety of strategies for your students to utilise in *Maths the Write Way*. These include asking the students to:

- Write their own word problems
- Communicate orally
- Identify key words and explain their importance
- Create their own games, puzzles, poems
- Summarise their work
- Investigate other ways to solve a problem
- Make predictions and draw conclusions
- Work with a group to share ideas and solve problems.

*Maths the Write Way* contains seven lessons. Each lesson includes four Investigations, two Extensions and four Assessments. Two Assessments are with open-ended responses whilst two utilise multiple choice format.

Vocabulary activities, following Lessons 3 and 7, emphasise the importance of mathematical language. Two mini-reviews and a Final Review will help you to assess the work of your students.

In *Maths the Write Way*, we have provided a forum for you to instruct as well as assess. We encourage students to look for a variety of ways to solve problems. The process – not just the solution – must be emphasised. Working and sharing ideas in co-operative groups will enhance understanding and communication.

The Teacher Guide includes:

- Listing of lesson objectives and necessary materials
- Key vocabulary and concepts for the lesson
- Suggestions for discussing key mathematical concepts
- Sample solutions to all Investigations and Assessments
- Suggested strategies for solving problems
- Reproducible pages for use with selected activities

The program will with a variety of instructional approaches. You may want to complete some activities with the whole class. Others may be more appropriate for individuals or small groups. Depending on your students' reading abilities, you may want to read aloud the directions for each activity before assigning it. Most investigations end with an oral explanation and/or writing activity. If students are not ready to write, you may want to record their answers on an experience chart. The oral explanations and writing activity are crucial to the Investigations, as they help students clarify thinking.

We are sure you will find *Maths the Write Way* a valuable resource for supplementing and enhancing your mathematics instructional program.

**★ INVESTIGATION 1 ★**

**Step 1:** Look at the number below expressed in expanded notation. Rewrite this number in exponential notation.

$$2,000,000 + 800,000 + 50,000 + 2,000 + 100 + 70 + 8$$

**Step 2:** Write the name of the form you think is more efficient (with or without exponents). Write an explanation of your thinking. Share your reasons with the rest of your group.

**Hint:** Use the chart below to help you rewrite the number using exponents.

$$10^6 = 1,000,000$$

$$10^5 = 100,000$$

$$10^4 = 10,000$$

$$10^3 = 1,000$$

$$10^2 = 100$$

$$10^1 = 10$$

$$10^0 = 1$$

**Solution:**

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**★ INVESTIGATION 2 ★**

In areas of study where large numbers are used, **scientific notation** is an efficient way of expressing such numbers.

**Step 1:** Look at the numbers in each column below. The numbers in column A are expressed correctly in scientific notation. The numbers in column B are expressed incorrectly in scientific notation.

<b>A</b>	<b>B</b>
$2.57 \times 10^4$	$25.7 \times 10^3$
$1.17 \times 10^6$	$11.7 \times 10^5$
$9.652 \times 10^7$	$96.52 \times 10^6$
$5.7 \times 10^1$	$.57 \times 10^2$

**Step 2:** Create a rule for expressing any number in scientific notation. Share your rule with the other members of your group. Discuss with your group some areas of study where very large numbers are used and in which scientific notation may be helpful.

**Hint:** Look carefully at the place value and the placement of the decimal point.

**Solution:**

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## ★ EXTENSION ★

Suppose you were to continue the chart in the Hint in Investigation 1. Write the next two higher powers of 10, along with their values. Write an explanation of how you found your answers and discuss your findings with your group members.

**Hint:** Look for patterns and relationships between the numbers in the chart.

**Solution:**

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### Assessment 1

Which is another way to write  $50,000,000 + 400,000 + 3$ ?

- A. 54,300,000
- B. 54,000,003
- C. 50,400,003
- D. 50,400,300

### Assessment 2

What number goes into the box to make the number sentence true?

$$2.8 \times \square = 2,800$$

Write an explanation of how you determined your answer.

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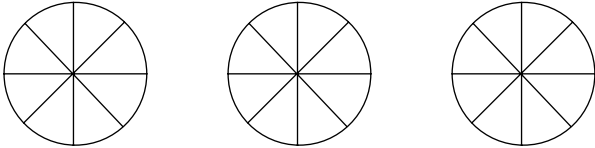
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**★ INVESTIGATION 3 ★**

Tom's class ate  $2\frac{3}{4}$  pizzas at their yearly holiday party. Safar's class ate 2.25 pizzas at their holiday party.



**Step 1:** On grid paper, draw pictures that will prove which class ate *more* pizzas.

**Step 2:** Include a written explanation of what your drawing shows. Share your strategies with other members of your group.

**Hint:** Look carefully at your drawings to be sure they make sense.

**Solution:**

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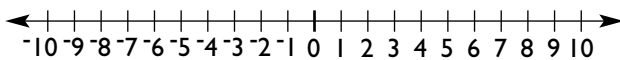
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**★ INVESTIGATION 4 ★**

Rafael and Tanya have been studying positive and negative numbers and their relationship to zero. Rafael feels that the value of  $-5$  is greater than the value of  $-4$ . Tanya disagrees.



**Step 1:** Decide whom you agree with, Tanya or Rafael.

**Step 2:** Explain in writing why you chose the answer you did. Share your answer with the rest of your group.

**Hint:** Use the number line to help with your answer.

**Solution:**

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## ★ EXTENSION ★

Discuss with your group where negative numbers are used in everyday life. Then create a newspaper headline that might use the concept of a negative number.

**Hint:** Check various newspapers and magazines.

**Solution:**

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### Assessment 1

Which of these decimals is less than 2.35 and greater than 2.319?

- A. 2.348
- B. 2.352
- C. 2.4
- D. 2.309

### Assessment 2

Arrange the integers below in order from least to greatest. Write an explanation of why your answer makes sense.

5, -6, 0, -9

**Solution:**

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