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Book 5, CSF Level 4

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Maths the Write Way, Level 5, 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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ISBN 1 74025 207 1 Code #6055

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★ TO THE TEACHER ★

Book 5, CSF Level 4

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 ★

The Federal Government conducted a survey to find out how much money different states in Australia spent on each of its students for his or her education.

Step 1: Look at the chart below.

| Nearest State | Dollars Spent | To |
|---------------|---------------|----------|
| | per Child | Thousand |
| WA | \$9,248 | \$9,000 |
| SA | \$4,537 | \$5,000 |
| VIC | \$5,453 | \$5,000 |
| TAS | \$5,500 | \$6,000 |
| NSW | \$8,658 | \$9,000 |
| QLD | \$3,578 | \$4,000 |
| ACT | \$10,987 | \$11,000 |
| NT | \$6,358 | \$6,000 |

Step 2: Using the chart above, write a general rule that will show how to round any number to the nearest thousand.

Hint: Is each number in the chart rounded up or down? After answering this question, think about how place value is used in rounding.

Solution:

★ INVESTIGATION 2 ★

There are 26 countries that make up the region known as Central Africa, which is part of the African plateau. This region stretches from Cape Verde to the Seychelle Islands.

Step 1: Look at the chart below.

Area of Selected Countries in Central Africa

| Country | Area (Square Kilometres) | To Nearest Ten Thousand |
|---------|--------------------------|-------------------------|
| Senegal | 196,720 | 200,000 |
| Rwanda | 26,337 | 30,000 |
| Liberia | 111,370 | 110,000 |
| Ghana | 238,539 | 240,000 |
| Uganda | 236,878 | 240,000 |

Step 2: Using the chart, write a general rule that will show how to round all numbers to the nearest ten thousand. Then share your rule with group members to see if they agree.

Hint: It might be helpful to write your own set of numbers in order to explain your rule. Round these numbers to the nearest ten thousand to test your rule.

Solution:

★ EXTENSION ★

Find the set of all whole numbers that equal 66,000 when rounded to the nearest thousand. Write an explanation of how you determined your answer.

Hint: Making a list will help you to find the range of numbers you are looking for. Remember to look at the rules you created.

Solution:

Assessment 1

50,499 50,500 49,501 50,501 49,500 49,499

How many of the numbers in the box above will equal 50,000 when rounded to the nearest thousand?

- A. 3
- B. 4
- C. 5
- D. 6

Assessment 2

Find the set of all whole numbers that equal 150,000 when rounded to the nearest ten thousand. Write a statement to explain how you determined your answer.

Solution:

Part B

★ INVESTIGATION 3 ★

Step 1: Place the appropriate symbols in the circles below to make each number fact true.

+ - × ÷ =

- A. 12 ○ 8 ○ 20
B. 8 ○ 12 ○ 20
C. 20 ○ 8 ○ 12
D. 20 ○ 12 ○ 8

Step 2: Write an explanation of how you determined the answers for items A and D.

Hint: Think about how the number sentences in this fact family relate to one another.

Solution:

★ INVESTIGATION 4 ★

Step 1: Place the appropriate symbols in the circles below to make each number fact true.

+ - × ÷ =

- A. 8 ○ 3 ○ 24
B. 3 ○ 8 ○ 24
C. 24 ○ 3 ○ 8
D. 24 ○ 8 ○ 3

Step 2: Write an explanation of how you determined the answers to items B and C.

Hint: Check the facts carefully to see if your answers are correct in Step 1. Then study the number sentences in the fact family to help you write your explanation.

Solution:

★ EXTENSION ★

Step 1: Look at the number sentences below. None of the sentences are correct using the symbols in the circles. Change the symbols to make each number sentence correct.

- A. $4 \oplus 4 = 32 \otimes 2$
- B. $30 \oplus 8 = 11 \oplus 2$
- C. $9 \ominus 4 = 12 \oplus 3$
- D. $12 \otimes 6 = 9 \oplus 2$
- E. $15 \ominus 5 = 30 \oplus 10$

Step 2: Write an explanation of how you determined your answer to item E. Share your explanation with your group.

Hint: Are the numbers on one side of the equal sign less or greater than the numbers on the other side? Think about this question.

Solution:

Assessment 1

Which pair of symbols can be used to make this number sentence true?

$$15 \quad \bigcirc \quad 2 \quad \bigcirc \quad 12 \quad = \quad 18$$

- A. first +, then -
- B. first \times , then +
- C. first \times , then -
- D. first -, then - again

Assessment 2

Use the set of symbols below to make three different true number sentences. Write an explanation of how you determined your answers.

+ - \times \div =

$$12 \quad \bigcirc \quad 4 \quad \bigcirc \quad 6 \quad \bigcirc \quad 2$$

Solution:
