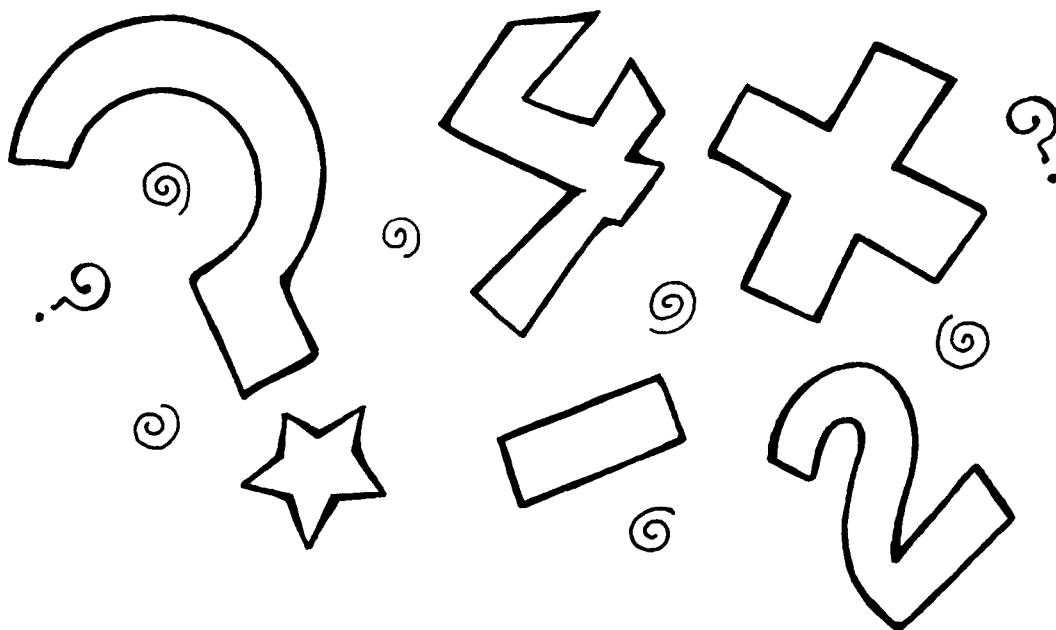


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# Introduction

## What are problem-solving maths mysteries?

Children love a good adventure story. In these seven maths adventure stories, students will become 'maths detectives', solving problems to finish the adventures. Each story problem is created from maths skills taught in the primary years – addition, subtraction, simple multiplication, division, money, time, fractions, comparing numbers, measurement, symmetry, number patterns, perimeter and shapes. The 'Detective's Kit', found at the end of this book, will help the students solve the problems. It can also be used by adults to teach maths skills.

Each maths problem must be solved before moving on to the next stage of the adventure. Five answers with five page numbers are given with every problem. If the student chooses the correct answer, the page number given with it will enable the student to continue the adventure. If an incorrect answer is selected, the student will be directed to a less than desirable turn of events – such as being chased by angry dinosaurs – and the student will not be able to continue the adventure. She or he will have to return to the previous page and rework the maths problem.

Each student must always display how he or she worked through the problem. (If necessary, working-out space is available on the back of each sheet.) When each adventure is completed, the student will receive a special badge and be promoted to the next detective level. *Problem-Solving Maths Mysteries* connects maths and reading while reinforcing critical thinking and problem-solving skills. This book also shows students that maths is not only useful but fun too!

## Who should use problem-solving maths mysteries?

These stories are written for the primary years and can be used in a whole-class setting, as a supplementary activity for individual students, or at home.

If the books are being used in whole-class instruction, they should be introduced later in the year, after the students have been taught all of the maths skills addressed. It is also recommended that the teacher have the students work in teacher-selected groups of four that each contain a strong reader and a strong maths student or a child with good problem-solving skills. The students should each have their own storybook (detective's notebook) and should each be responsible for showing how they worked out the problems. Remind them that they will have other group members to help them. For each group, you could assign the following titles:

1. **Reader** This student reads the story parts to the group.
2. **Recorder** This student can record notes and ideas for the group until the final answer is found. Then all members record the work in their individual books.
3. **Task Master** This student makes sure that everyone is participating.
4. **Questioner** This student is the only one allowed to raise his or her hand for adult help.

# How to Use this Book

## Assembling the stories

Seven adventure mysteries are included in this book. When the parts are photocopied, cut, collated and stapled, they will be 24 pages each. The parts are numbered (1–7) to indicate which should be used first, since the latter stories have more story and word problems.



It is recommended that three staples be used on the left-hand margin for durability. The Detective's Kit must also be photocopied. Some of the pages include objects that need to be cut out, such as a clock, coins and a ruler, while others are reference pages. It is most convenient for each student to have his or her own 'kit'; however, the kits can also be used in pairs or small groups if necessary.

The Detective's Kit pages can be stored in folders, which the students can decorate. While preparing the folders, keep the pages in a large envelope or sealed plastic bag to ensure none of the pages gets lost.

## Reading the stories and solving the maths mysteries

First, show students how to use the books. The steps are outlined below.

### 1. *Set the scene for the stories.*

Explain that each student will be a junior maths detective working on his or her first case. This will be a special adventure. Students will have a detective's notebook (the assembled storybook) that tells the story and is used to show all of the working out. (This is best done on the blank back of the pages.) Students will also be given a secret detective's kit of hints and tools that will help them to succeed on their mission. If they can solve each problem in the story successfully, they solve the case, get promoted and get assigned a new mission. If they cannot solve a problem, something unfortunate will happen to them and they will have to try the problem again!

# How to Use this Book *(cont.)*

## Reading the stories and solving the maths mysteries *(cont.)*

2. *Introduce the Detective's Kit (see pages 91–96).*

Reproduce these pages and demonstrate how to use them. The number line will be useful for number pattern problems, the multiplication table for multiplication and division problems.

3. *Show students how to display work the detective's notebook (the storybook).*

An answer alone is not sufficient. To demonstrate understanding of the problem and its solution, the student must draw a picture, write an equation or write a simple sentence such as, 'I got the answer by using the clock model in my detective's kit'. Remind students that they must show proof that they know how to solve the problems, just like real detectives do when they file a report.

4. *Work through the first two or three problems with the students.*

This is especially important if students have not been exposed to many story or word problems before. For a whole-class lesson, make an overhead transparency of the problems.

Here are several clues to share with the class. You may wish to post them up in the classroom as reminders for students.

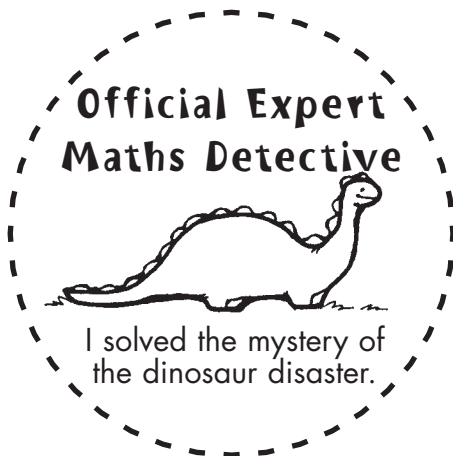
### Detective's clues

- Every problem should be carefully read twice.
- Look for words that give you hints such as 'all together' or 'in all', which may mean you add, and 'got away' or 'loses' which may imply subtraction.
- Use the Detective's Kit whenever possible.
- Read all of the answers before choosing one. At least one or two should obviously be wrong. There will also be a few problems with more than one correct answer or an 'all of the above' option.
- If you are really stuck, try working backwards. Choose an answer that looks reasonable and try to prove it correct. (Remind the student, however, that a picture, an equation, or a sentence showing how the correct answer was arrived at must accompany all answers.)
- Use a bookmark or self-sticking note to mark the page you are on so that you do not lose your place if you turn to a page that is not the correct answer and you have to go back and work the problem again. Remove the bookmark only when your work is shown and you have definitely found the correct answer and the next part of the adventure. Then place the bookmark on this new page and continue as above.
- When you have found all the correct answers, highlight them on each correct page. Then read the story from beginning to end using only the correct pages.**

**Good luck on your adventure!**

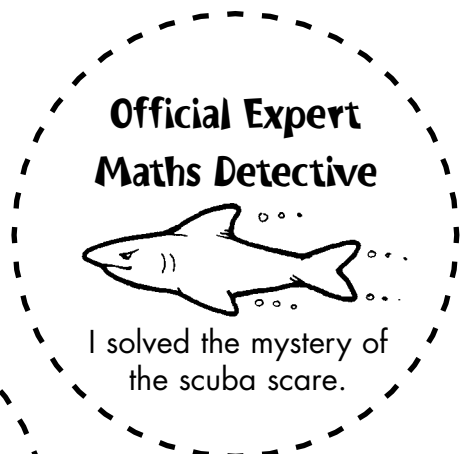
# Expert Maths Detectives Badges

Reproduce these badges on thick paper. Copy one for each student.



*Note:* Upon  
successful completion  
of a book, students  
receive a badge.

Badges can be worn  
or displayed on a  
chart, a wall or a  
bulletin board.



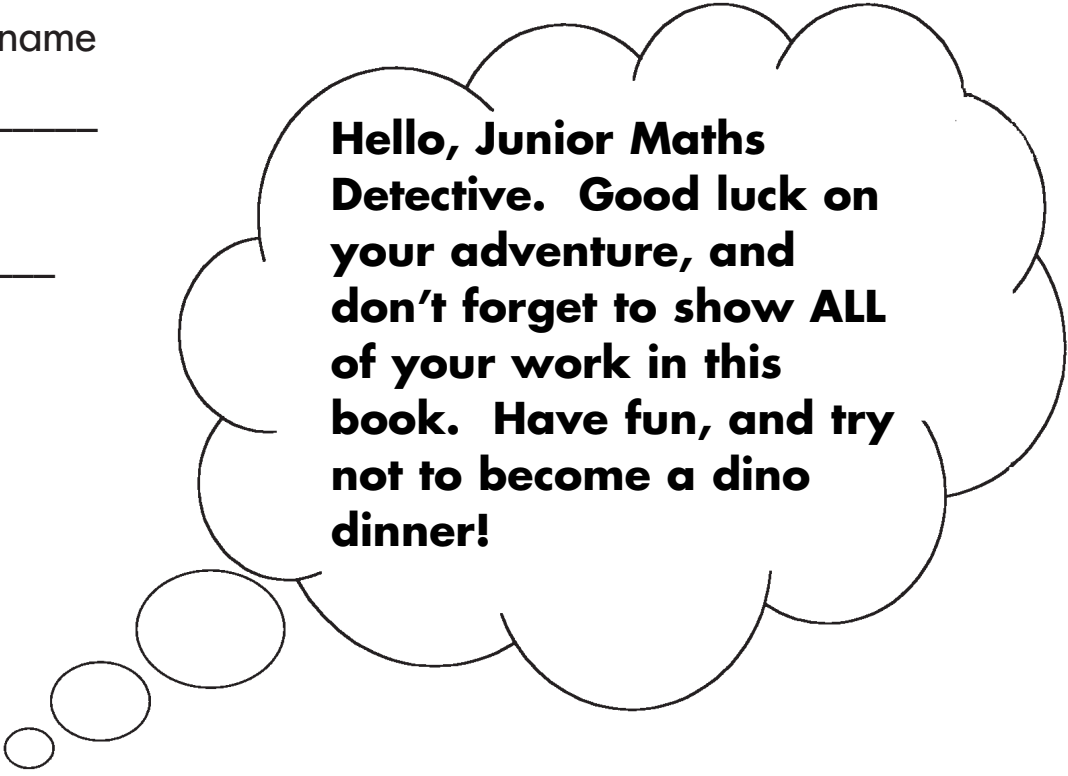
# The Dino Disaster

Detective's name

\_\_\_\_\_

Date

\_\_\_\_\_



**Hello, Junior Maths Detective. Good luck on your adventure, and don't forget to show ALL of your work in this book. Have fun, and try not to become a dino dinner!**

**You and your friend are helping to clean out your uncle's shed when you find a strange chair. It is made of metal and has a clock and coloured buttons on it. Your friend sits on it and starts pushing buttons. There is a bright light. The chair vanishes and returns **EMPTY!** You know you have to try to find your friend. You sit on the chair. The last button that was pushed was a three-dimensional round shape. You must push it to find your friend.**

**If you choose**

- a pyramid, go to page 2.**
- a cube, go to page 4.**
- a cone, go to page 6.**
- a circle, go to page 3.**
- a sphere, go to page 5.**