Maths in Schools
Professional Learning

Picture books in Mathematics Years Foundation to Year 2

Introduction

Picture books in Mathematics examine big ideas through imaginative storytelling. They can transform the way maths is taught through the power of pictures. Throughout the Maths in Schools courses, there are a range of ideas on how to use picture books when teaching mathematical concepts. Below you will find which books are used in our courses along with many teaching ideas and activities.

Picture books help to teach maths

Teachers can create rich maths learning experiences based on picture books to help reinforce the ‘big ideas’ through imaginative storytelling. They can be the launchpad to engaging maths lessons. Picture books offer so many opportunities to explore and develop a student’s mathematical thinking.

- They build excitement and wonder.
- They can create opportunities for rich learning experiences.
- They can provide mathematical thinking in real life scenarios.

Books with math concepts woven into the pictures and storylines can promote children’s mathematical thinking and introduce foundational math concepts such as numbers, shapes, patterns, and measurement. Asking questions and making observations about the mathematical concepts found in a picture book can support children’s curiosity and enjoyment of maths

Foundation to Year 2 | Maths in Schools online course

We have listed the books and the location in our F-2 course below. Please note accessing the links will require registration into the course.

GETTING STARTED

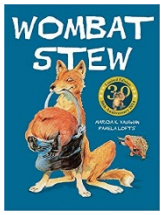
Getting started | Maths in the home | Family activities

Open family activities to find links to lists of picture books for unpacking math concepts.

PRACTICE AND PEDAGOGIES

Practice and pedagogies | Maths investigation

Using the picture book ***Wombat Stew*** by Marcia Vaughan we explore various mathematical concepts around counting, number, measurement and quantities of informal units such as handfuls. Follow the maths investigation cycle to enable students to verbalise their mathematical thinking and suggest methods for solving a problem that can be debated, tested and refined until a solution is found.

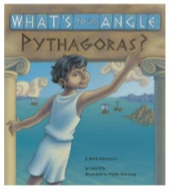


CONNECTIONS WITH COMMUNITY

Connections with community | People in maths careers | Mathematicians across the world

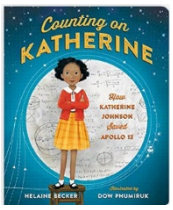
Read stories that highlight people who have chosen maths careers and made significant contributions to the field throughout history. Investigate the classroom activity example 1 ‘Role models in maths’.

Read the story ***What’s your angle Pythagoras*** to go on a maths adventure with Pythagoras as he discovers that the square of the hypotenuse of a right-angled triangle equals the sum of the squares of the lengths of the other two sides.

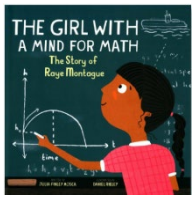


Through this little people big dreams book meet ***Ada Lovelace*** and learn about her life as a mathematician from her early love of logic to her plans for the world’s first computer program.

Counting on Katherine is the story of Katherine Johnson, an African-American mathematician who worked for NASA during the space race. As a child, she loved to count the steps on the road, the number of dishes and spoons she washed in the kitchen sink. Boundless, curious, and excited by calculations, young Katherine longed to know as much as she could about maths and the universe.



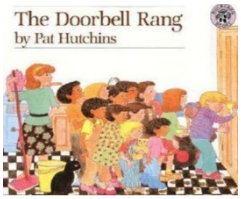
The girl with a mind for math is the story of Raye Montague who set her sights on being an engineer despite life's adversity. Through her mathematical understandings she was a pioneer who was able to change the course of ship design forever.



NUMBER IN ACTION

Number in Action | Number Guide | Proportional reasoning

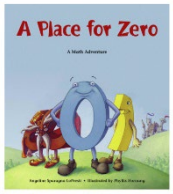
The Doorbell Rang by Pat Hutchins a great way of introducing mathematical concepts such as division, multiplication and place value. In this story a dozen biscuits are shared between two children but have to be divided further as more and more visitors arrive at their door. Students could use counters to demonstrate sharing quantities and collections equally.



NUMBER IN ACTION

Scaffolding knowledge | Representational | Counting collections

A Place For Zero by Angeline Lopresti is designed to make maths fun. Follow Zero's journey as he discovers his unique place and the importance of his value in mathematics.

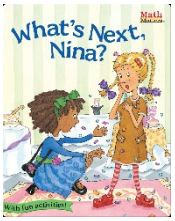


Sir Cumference and All The King's Tens by Cindy Neuschwander is a clever maths adventure on problem solving how to count large crowds of people using place value and counting by tens.

Both these stories can be used at the pictorial phase investigate numbers, place value, counting strategies and the correlation between the written symbol and concrete materials.

Algebra in Action | Scaffolding knowledge | Constructing and continuing patterns

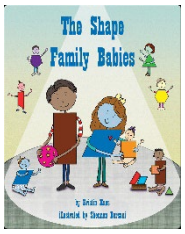
In ***What's Next, Nina?*** by Sue Kassirer, Nina needs to restring her sister's necklace exactly like it was because something terrible happened.



Stories that involve patterns could be used to facilitate discussion or to assist in connecting the concept of patterns with real-world examples.

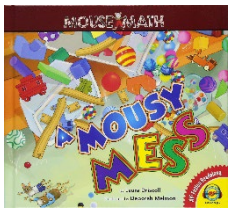
Space in Action module | Scaffolding knowledge | Comparing and classifying two-dimensional shapes

Comparing and classifying two-dimensional shapes and objects in the environment can be introduced through a story such as ***The Shape Family Babies*** by Kristin Haas. Based on shapes of all the family members, students can explore the properties of a square and many other two-dimensional shapes.



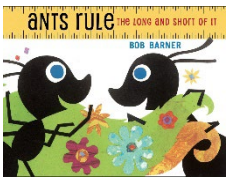
Statistics in Action | Scaffolding knowledge | Collecting, sorting and representing data

Sorting, grouping objects, and organising data can be introduced through the story ***A Mousy Mess*** by Laura Driscoll. This story encourages students to think of the various ways the mess of toys can be sorted, including size, colour, shape, rolls or does not roll, or the game to which they belong.



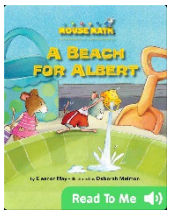
Measurement in Action | Scaffolding knowledge | Uniform informal units for length

A story that involves measuring, such as ***Ants Rule: The Long and Short of It*** by Bob Barner, can be used to introduce length using informal units. A group of ants are planning to build a thrilling carnival ride for a festival. They don't know how many bugs will come, how big those bugs will be and whether they will fit on the carnival rides, so the ants use their body length to measure each bug from end to end.



Measurement in Action | Scaffolding knowledge | Uniform informal units for capacity

The concept of capacity can be introduced with the reading of ***A beach for Albert*** by Eleanor May. This story looks at varying-sized containers of equal and differing capacities and the use of a chain of people to transport large quantities of water.

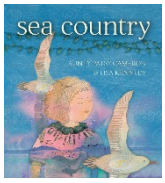


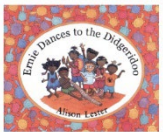
Measurement in Action | Scaffolding knowledge | Reading the time

Reading the time on an analogue clock can be introduced using Debi Gliori's book ***What's the time, Mr Wolf?*** It involves the use of time-related terms such as o'clock, lunchtime, afternoon and bedtime, and reading the analogue time as Mr Wolf goes about his daily routine from breakfast to bedtime.

Measurement in Action | Investigations | Weather knowledge systems of First Nations Australians

First Nations Australians have developed complex systems for measuring and understanding time through knowledge of local weather, plant and animal patterns over many thousands of years. Stories such as ***Sea Country*** by Aunty Patsy Cameron and Lisa Kennedy, and ***Ernie Dances to the Didgeridoo*** by Alison Lester, explore Aboriginal seasons and weather patterns.





For more information on our online courses go to the Mathematics Hub

THE UNIVERSITY of ADELAIDE

Maths in Schools Professional Learning