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Engaging community and family in your mathematics program

Jennifer Bowden

-
- Why is it important to include families in our mathematics program?
 - What activities can enhance relationships and understandings?
 - Where are these resources?

Review to Achieve Educational Excellence in Australian Schools, Gonski 2.0



Laying the foundations for learning

- Promote high-quality early learning and seamless transitions into school
- Engage parents and carers as partners in their children's learning throughout school and develop tools and resources to support this
- Ensure all students have the opportunity within schools to be partners in their own learning

Review to Achieve Educational Excellence in Australian Schools, Gonski 2.0

Finding 2 Early childhood education makes a significant contribution to school outcomes. The **transition between preschool and school education should be seamless**. Ongoing reforms that lay the foundations in the early years for future learning, and close the learning differential between advantaged and disadvantaged students, are essential to ensure all children have the best start in life.

Finding 3 There is strong and developing evidence of the benefit of **parent engagement on children's learning**. This will be further enhanced through the work currently underway to develop an evidence-informed definition of parent engagement, which will allow for a core set of agreed measures aligned to the definition to be established and used to drive improvements in policies and practice.

Game of Nim



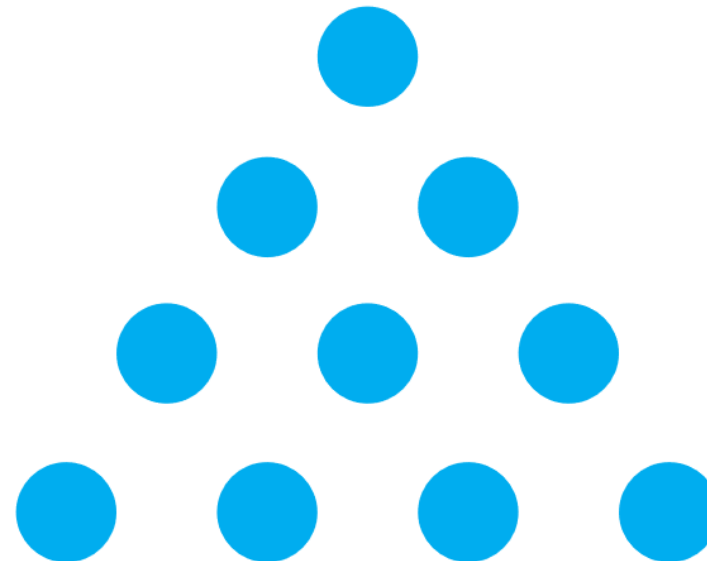
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Place counters in a pattern like the diagram below.

Players take it in turns to remove one or two counters.
The winner of the game is the player who removes the last counter.

Play 10 times.

- Did you notice a pattern?
- Could you describe the way to win?



Estimation 180

Days 1-20



Days 21-40



Days 41-60



Days 61-80



Days 81-100



Days 101-120



Days 121-140



Days 141-160



Days 161-180



Days 181-200



Days 201-220



Days 221-240



Days 241-260



Days 261-280



Days 281-300



Parental involvement in the form of “at-home” interest and support has a major influence on pupils’ educational outcomes and attitudes. Many parents, however, feel uninformed about current educational practices and how they can be more involved with their child’s learning

Muir
(2012)



You can build your child's numeracy by

- be positive about their numeracy experiences and praise effort and perseverance
- let your child know that everyone can be successful
- seize everyday opportunities to capitalise on numeracy development
- involve your child in numeracy-related activities
- describe what you are doing in situations that involve numeracy
- explain why you make certain numeracy choices
- explore numeracy with your child
- learn alongside your child and encourage a sharing of numeracy ideas and thoughts.

Birth – Level 10 Numeracy Guide
<http://numeracyguidedet.global2.vic.edu.au/>



Family maths and numeracy activities



- School transition
- Maths Talent Quest
- Family Maths Nights
- Parent information evenings or forum
- Homework
- Victorian Maths Challenge

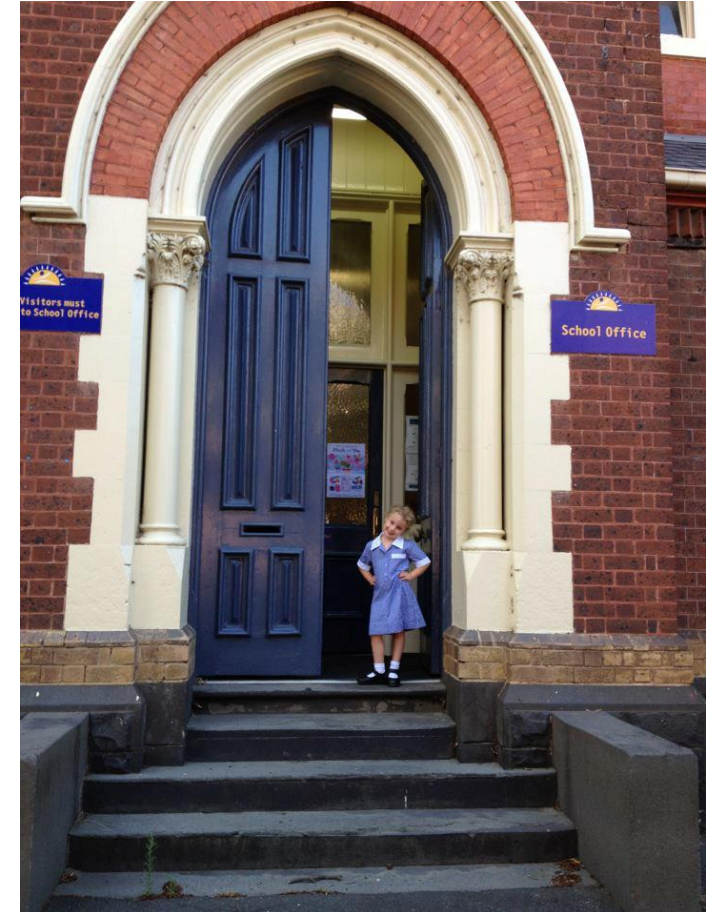
Purpose built school-based activities to build both teacher, student and families capacity and reationships.

School transition

Families know their children very well. Sharing some of the knowledge they have about their child with early childhood services and schools can help the transition to school.

Families who actively support their children during transition to school, and who build positive relationships with staff, are likely to continue their positive engagement with school. This, in turn, supports children's longer-term positive engagement with school.

Transition: A positive start to school kit (DET)



Transition: A positive start to school kit



Dockett and Perry have developed some useful guidelines to support the design and development of locally driven transition-to-school process and programs.

They suggest that successful programs:

1. establish positive relationships between children, families and educators
2. facilitate each child's development as a capable learner
3. differentiate between 'orientation to school' and 'transition-to-school' programs
4. draw upon dedicated funding and resources
5. involve a range of stakeholders
6. are well planned and effectively evaluated
7. are flexible and responsive
8. are based on mutual trust and respect
9. rely on reciprocal communication among participants
10. take into account contextual aspects of community, and of individual families and children within that community.

Maths Talent Quest



The Maths Talent Quest (MTQ) is an annual activity organised by the Student Activities Committee of The MAV, open to all primary and secondary school students

The MTQ allows students to look at real life situations through researching a topic of their choice. Students have the opportunity to demonstrate their knowledge and learning in various means

The focus of the MTQ is on the process of mathematical investigations and relating mathematics to everyday life

The MTQ aims to promote an interest in mathematics and foster positive attitudes amongst students, teachers and parents alike



Investigation Format

- An Abstract
- Mathematical Aims
- Observations and Results
- Discussion on Relevance of Results
- Conclusion
- References and Acknowledgements



Family Maths Nights



Family Maths Nights

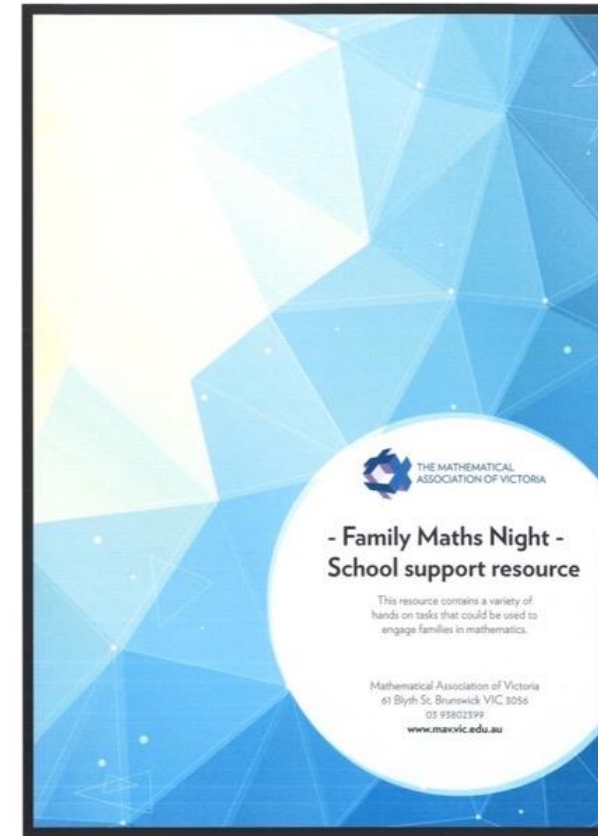
School
logo

Your school
Family Maths Night Passport



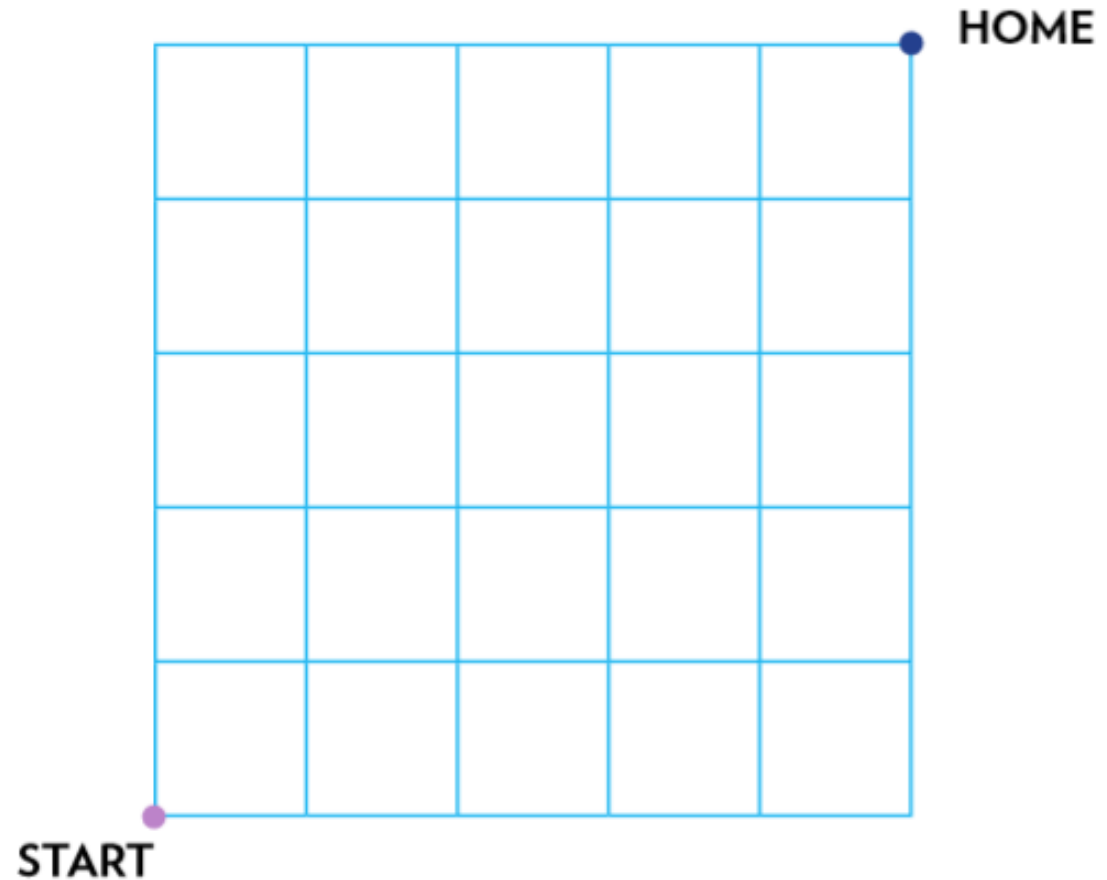
Family Name: _____

Card Games 	Dice Games 	Problem Solving 
Hands on 	ICT 	Read a book 



Which Way Home?

- How many different ways can get home by moving along the lines and always moving up or to the right?
- How can you record your moves?
- Is there a pattern?
- How could a pattern help answer this question?



Parent Forums



Heads and legs



How many legs could be in your bag?

If there are 38 legs
how many dogs are there?
how many bears are there?

How did you work it out?
Is there another way?



Dogs or chickens

In the farmyard I saw some chicken and some dogs.
I counted 25 heads and 78 legs.

- How many dogs were there?
- How many chickens were there?

Explore different ways of finding the answer. When you have found a different method use this new method to solve the question below.

In the next paddock I saw some sheep and some chicken. I counted 12 heads and 40 legs.

- How many sheep were there?
- How many chickens were there?

Introducing aspects of the curriculum

Problem Solving is one of the proficiency strands of the Australian Mathematics Curriculum, which recognises that effective problem solving is required across all areas of mathematics. Problem Solving is a way of thinking rather than a specific topic or series of activities.

Here are some different approaches that can be explored to assist you when looking for a solution:

- Draw a picture or diagram
- Ask a question
- Restate the problem
- Record, classify, order and represent data
- Use charts, graphs, lists or tables
- Organise systematically
- Successive trials (Trial and error)
- Construct a model
- Look for patterns
- Try some simple cases
- Break the problem up
- Add or subtract a condition
- Ask, 'Is it like any other problem?'
- Find a related but simpler problem
- Eliminate options
- Use symbols and simple equations
- Assume a solution and work backwards
- Guess or estimate the answer
- Could a more efficient method have been used?

Homework and numeracy in the home



The next town is 30 kilometres away – how long do you think it will take us to get there?

Everyday Maths Animations



Victorian Maths Challenge

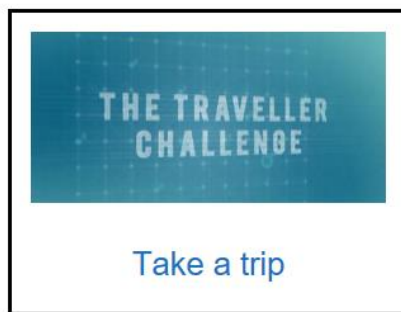
- Family participation in learning is one of the most accurate predictors of a child's success in school and beyond.
- The Victorian Maths Challenge recognises the important role families have in their childrens' learning and while you might feel that the maths your child is doing at school is different from how you were taught, you **can** make a difference by supporting what your child learns at school and helping them to learn at home.
- The challenge provides families with opportunities to explore maths together. It encourages families to ask questions of one another, to collaborate and to have fun exploring different approaches to open-ended problems.



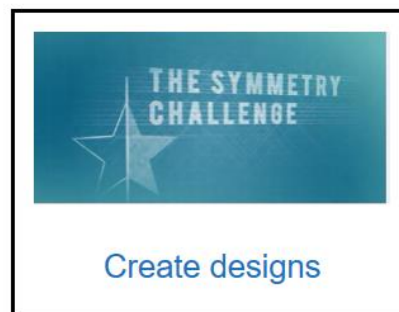
Choose a challenge



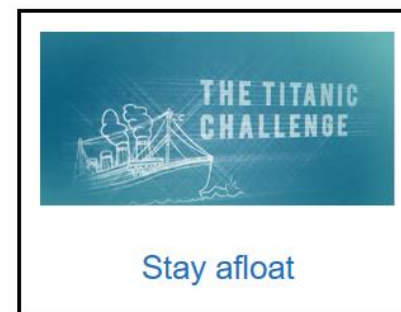
Aim high



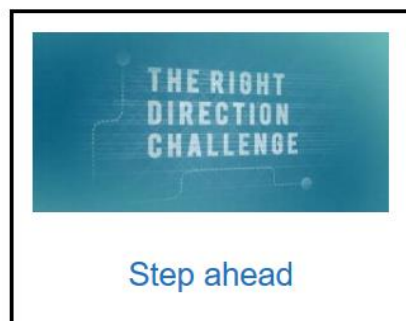
Take a trip



Create designs



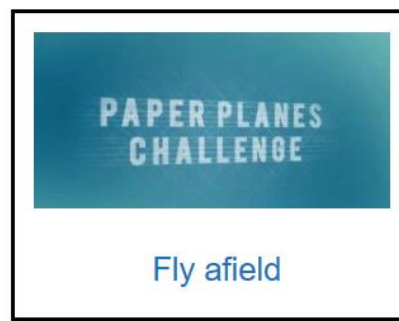
Stay afloat



Step ahead



Optimise



Fly afield



Strategise



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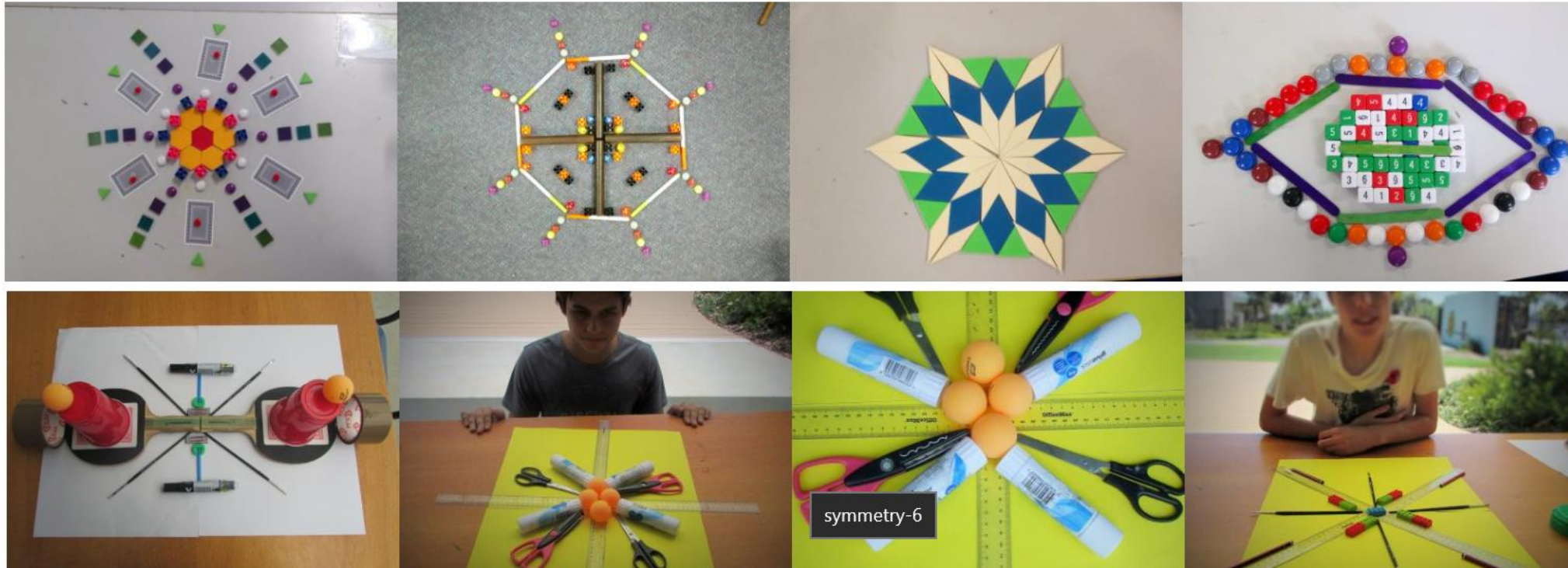
What's the challenge?

Symmetry is an aspect of the study of **geometry**.
By studying symmetry and its properties you can see how maths is very much connected to the real world.

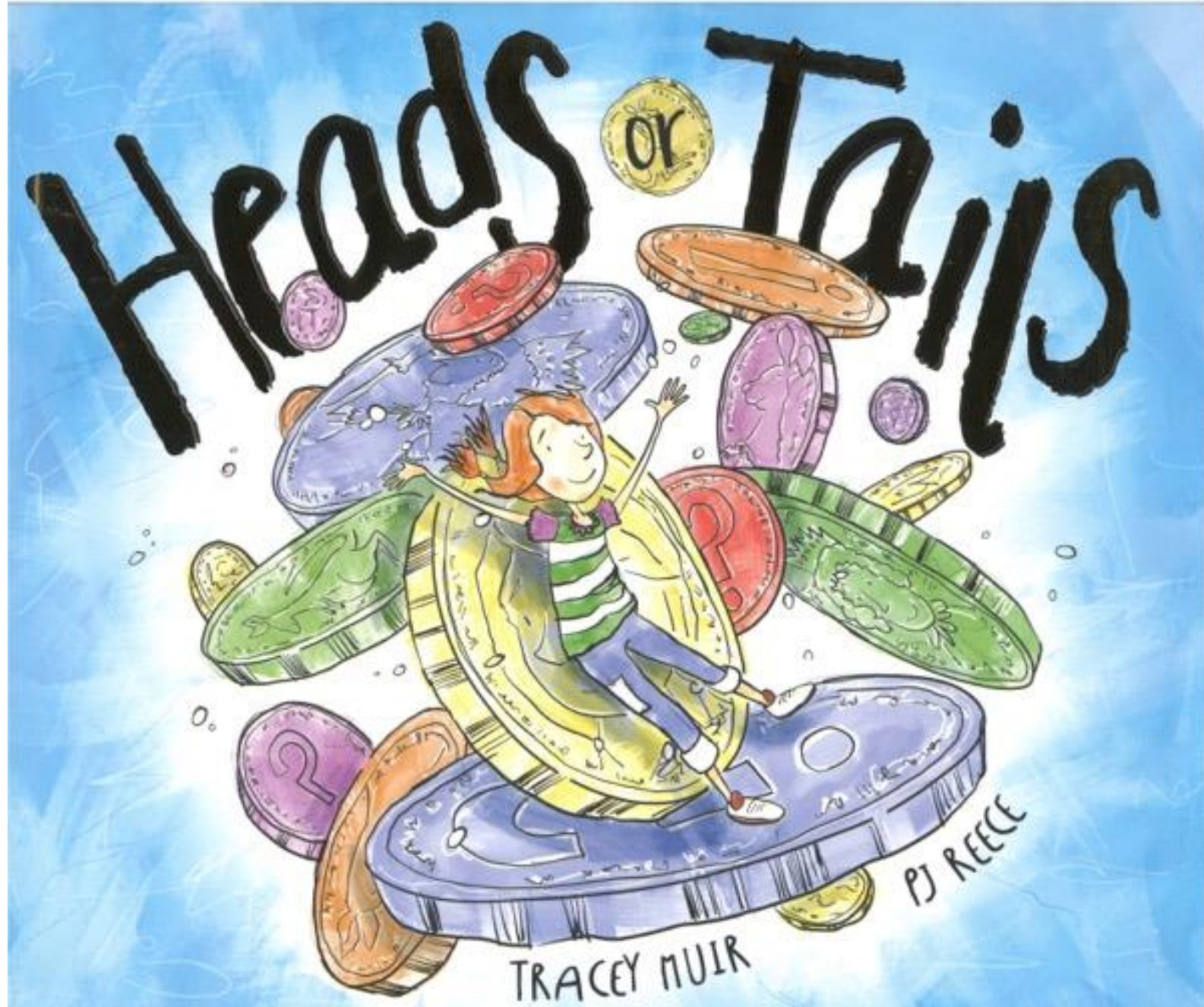
This challenge encourages you and your family to think about symmetry using everyday objects to make a unique design.

Using objects from around the room create an interesting, symmetrical pattern.

Record the mathematical language you have used.



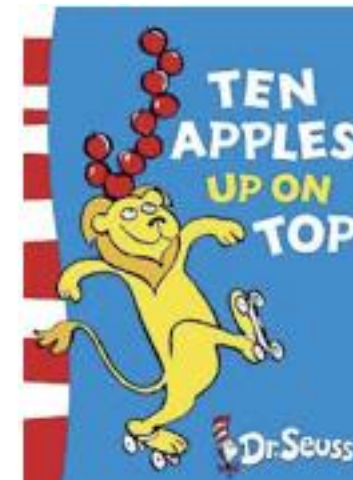
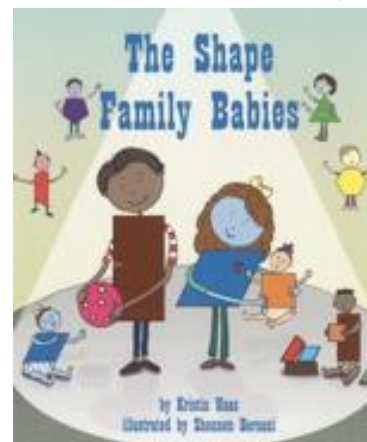
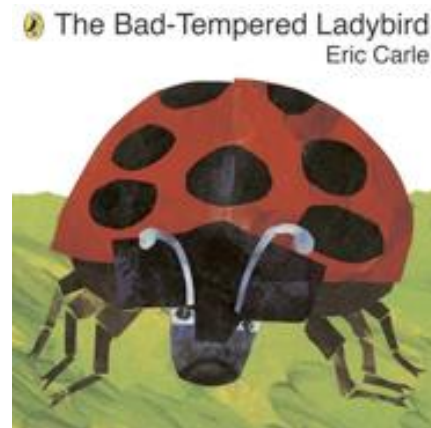
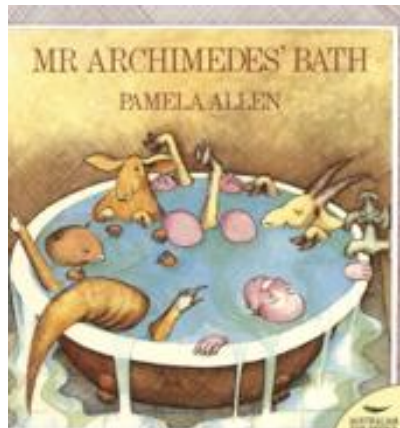
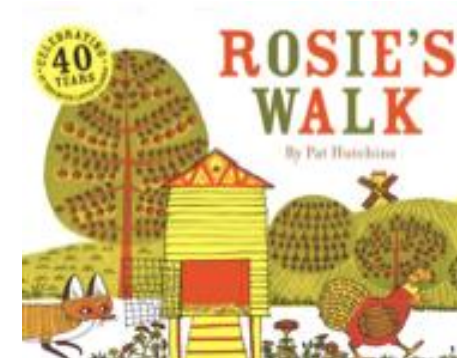
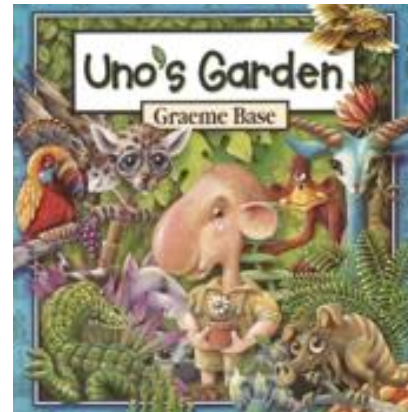
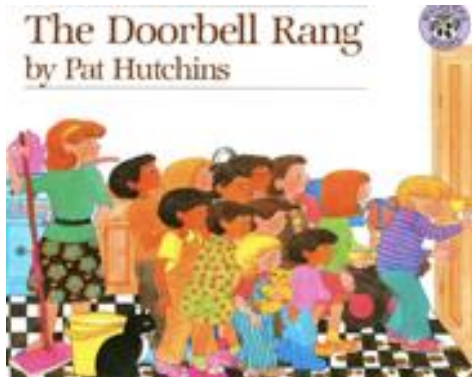
Picture Books

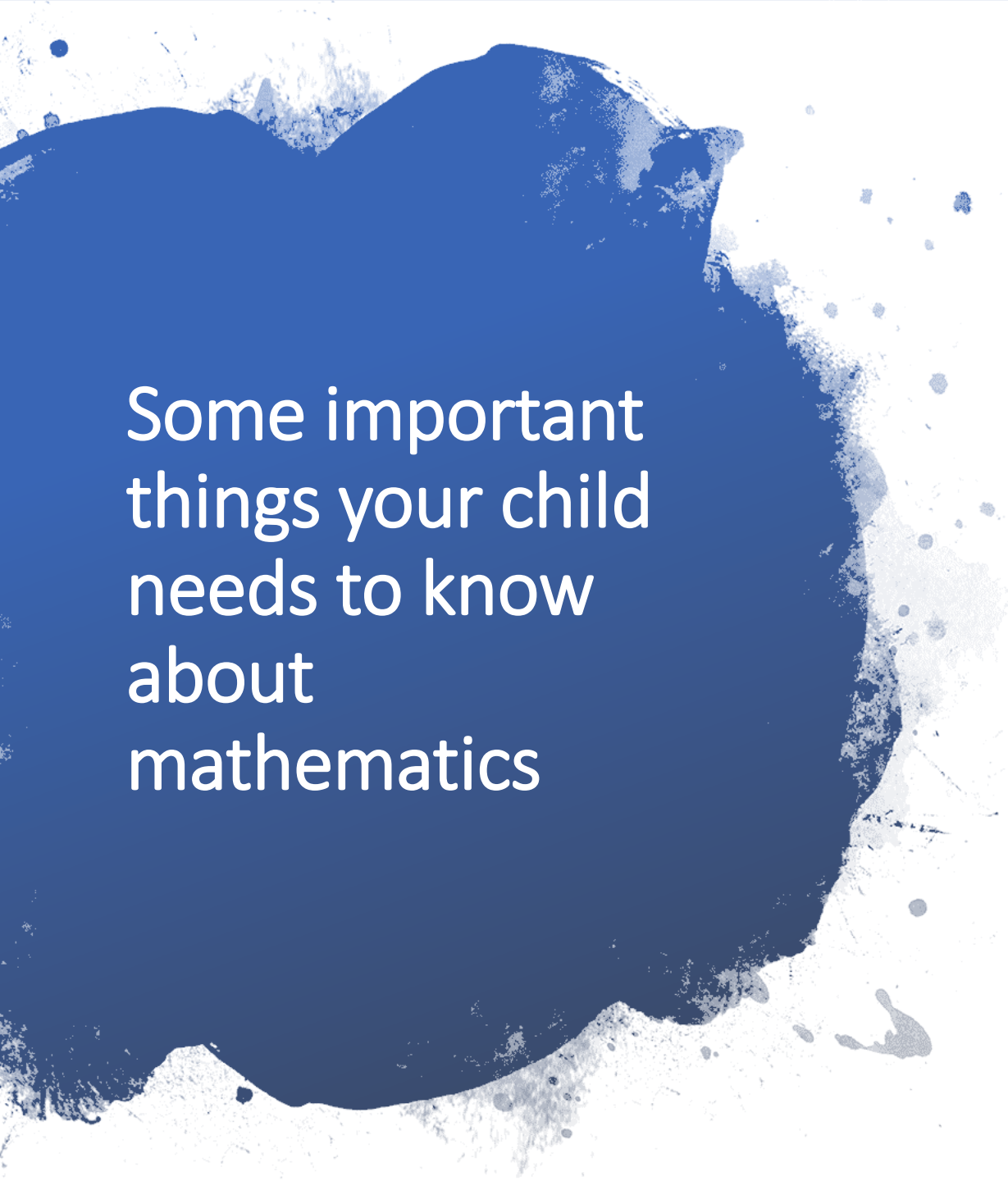


Other Picture Story Books



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Some important things your child needs to know about mathematics

1. Problems can be solved in different ways.
2. Wrong answers sometimes can be useful.
3. Take risks!
4. Being able to do maths in your head is important.
5. It is sometimes okay to use calculators to solve maths problems.

<https://www2.ed.gov/parents/academic/help/math/math.pdf>

Helping Your Child Learn Maths, US Department of Education
(1994)

Resources

Based on the Australian Curriculum

Maths @ Home

Activities to reinforce student learning

Pre-primary - Year 6



References



Mathematical Association of Victorian <https://www.mav.vic.edu.au/>

Victorian Maths Challenge <http://vmc.global2.vic.edu.au/>

Everyday Maths Animations <http://fuse.education.vic.gov.au/ResourcePackage/ByPin?pin=WSC2SM>

Numeracy Guide

<http://numeracyguidedet.global2.vic.edu.au/numeracy-at-home-how-can-i-help-build-my-childs-numeracy/>

Department of Education and Training Victoria

<https://www.education.vic.gov.au/parents/learning/Pages/numeracy-birth-year-2.aspx>

<https://www.education.vic.gov.au/parents/learning/Pages/numeracy-years-3-to-6.aspx>

https://www.education.vic.gov.au/Documents/school/teachers/teachingresources/discipline/english/literacy/LiteracyandNumeracyTipstoHelpYourChild_Final.pdf

http://www.transitiontoschool.net/uploads/2/9/6/5/29654941/tts.vic_govt.pdf

Numeracy At Home – Tracy Muir

[https://www.nationalnumeracy.org.uk/sites/default/files/numeracy at home involving parents in maths education.pdf](https://www.nationalnumeracy.org.uk/sites/default/files/numeracy%20at%20home%20involving%20parents%20in%20maths%20education.pdf)