BLACKWELL PUBLIC SCHOOL

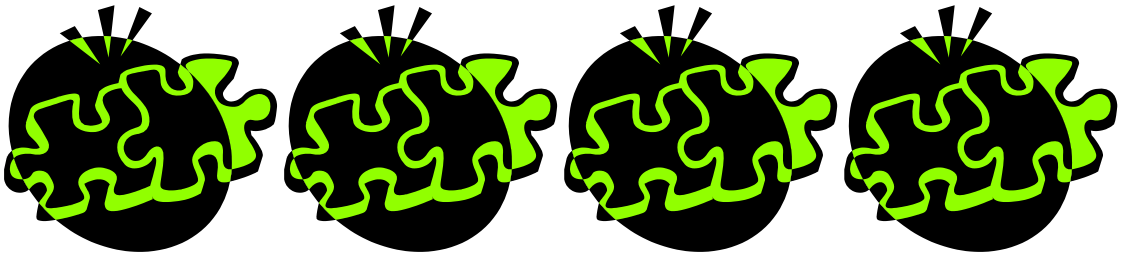
MATHEMATICS K - 6

PARENT HANDOUT

How can I support the school program at home?

The following are examples of activities that you may choose to do with your child at home. These ideas support learning in Mathematics at school. The activities are organised under the six strands in the *Mathematics K–6 Syllabus*.

Parents/caregivers need to make a judgement about the appropriateness of particular activities for their child. Parents who are seeking additional guidance on the developmental appropriateness of particular activities may refer to the syllabus Stage Statements.



<u>Working Mathematically</u>

Working Mathematically includes:

- asking questions; using a range of strategies to solve problems;
- using appropriate language and symbols to describe and represent mathematical ideas;
- exploring relationships as well as checking and justifying solutions;
- and reflecting on learning and making connections between mathematical ideas.

The following activities will help to encourage development of these important processes.

- Encourage your child's curiosity about the use of numbers and measurements in the world around them.
- Listen to their many questions and ask your own questions. Discuss with them how you might find answers to these questions.
- Play games together (e.g. cards, board games, computer games) and discuss how mathematical ideas can be used to play, as well as to develop successful strategies.

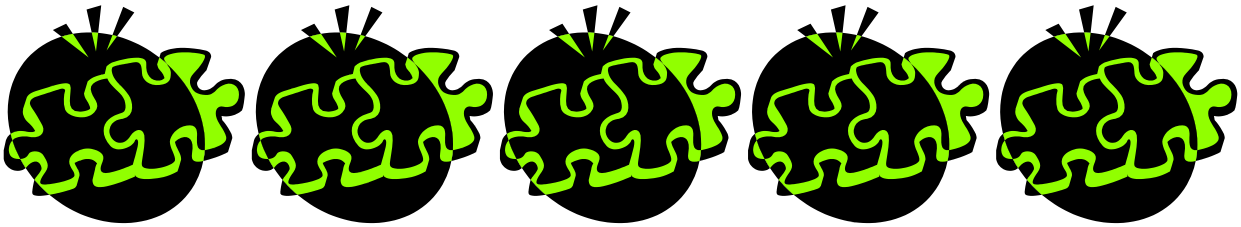
Discuss how mathematics is used every day.
The applications of mathematics and technology are numerous.

- In the kitchen, for example, ingredients are measured and digital timers and clocks are used on microwave ovens.
- Solve problems together and discuss strategies and solutions. Encourage your child to find all possible solutions, as many problems have more than one answer. They should also be encouraged to justify their solutions.

- Many internet sites have suitable problems and investigations for primary school students. Another source of mathematical problems is children's magazines and puzzle books.
- Encourage your child to try different strategies when solving everyday problems.
- Provide opportunities for your child to use technology to investigate mathematical ideas.
- Connect to the internet at home or at a local library and help your child (or let your child help you) locate websites that provide information and ideas about mathematics and technology.

Discuss the mathematics your child is learning at school.
Ask them to explain what they have learnt in mathematics lessons this week and how they can use these ideas.
If they express concern about what they are doing, this gives you an opportunity to look at their work and help them if appropriate, or to encourage them to seek extra guidance from their teacher.
Watch television programs about mathematics with your child. Discuss the contents of the programs and how it relates to the mathematics taught at school.

Students who feel confident about Working Mathematically feel confident about themselves as learners of mathematics



Number

Number includes:

- counting forward and backwards and understanding place value;
- using the four operations (addition, subtraction, multiplication and division);
- interpreting and doing simple calculations with functions, decimals and percentages; and understanding the language used in chance.

The following activities will help to encourage the development of Number concepts.

- Count with your child whenever possible.
- Play counting games while travelling to the car and sing counting rhymes. Remember to count forward and backwards starting from different numbers.
- Look for numbers in your local area (e.g. house numbers, prices, speed signs, Roman numerals) and discuss how the numbers are used.
- Play board games as a family and discuss the chance of throwing a particular number on a dice in order to win the game.
- Encourage your child to use money. Support your child's efforts to calculate change.
- Discuss with your child how to use the telephone book. Write a list of people from the family, school and community, together with their telephone numbers and addresses. Put the list in an accessible place, e.g. near the telephone or in a notebook, for your child to use.
- Play oral games such as Race to 10. Starting at 0 take turns and add either 1 or 2 to the last number said. The player who gets to 10 first wins.

e.g.

A says	B says
1	3
4	6
7	8
10	

A wins this game. Note the game has a winning strategy. Discuss mental strategies for working these out quickly. You can play to any number, depending on your child's ability.

- When your car pulls up behind the car in front, you might have a competition to see how many different answers children can make using the numbers from the car number plate. For example, if the number plate is ABC 152 the children might say:

1 x 5 + 2 + 7, or 1 + 5 + 2 = 8, or (1 + 5) x 2 = 12

- A pack of playing cards can be used to play mathematical games that involve the recall of number facts. For example, Addition, Subtraction or Multiplication Snap involves turning over two cards from the top of the pack with the first person to say the sum/difference/product of the cards scoring one point. The game continues until all of the cards in the pack have been used. The winner is the player who has scored the most points.
- The game can be made easier by including only some numbers from the pack (e.g. 2, 3, 4. 5 and a picture card to represent 10), or it can be made more challenging by turning over more than two cards.
- Develop mental computation strategies with your child by doing calculations in your head. Share your strategies and think of different ways of calculating the answer.

For example, to calculate 75 - 32, you can do 75 - 30 = 45 and then 45 - 2 = 43.

- Another possibility is to do 70 - 30 = 40 and then 5 - 2 = 3, so the answer is 40 + 3 = 43.
- Now consider 75 - 38. This can be done as 75 - 40 = 34 and then 35 + 2 = 37.

Another possibility is 75 - 30 = 45, 45 - 5 = 40 and then 41 - 3 =37.

- There are often many different ways to do calculations mentally. Children need to experience different ways so that they can develop a range of mental strategies.
- Discuss fractions as part of a whole when cutting up fruit or a cake. For example, "How many pieces will we need? ... Therefore each piece should be one quarter. If your child plays sport, discuss fractions of the playing surface, e.g. two halves of a soccer field, three thirds of a netball court.
- Discuss fractions as part of a collection of objects. For example, share a packet of sweets between 4 children. If there are 20 sweets, then they will each receive one quarter, which is the same as five twentieths of the packet of sweets.
- Let your child help plan a family holiday. They can plan the route, determine the overall distance, and propose the number of kilometres to drive each day and work out the amount of time it will take. They could help calculate an appropriate budget for the holiday to include expenses like souvenirs, accommodation, meals and petrol. If you have a computer, they could record the expenses on a spreadsheet.
- Ask your child to work out how much longer you will be travelling if you are driving at 80 kilometres per hour with 130 kilometres to go. Ask your child to explain how they solved the problem. Share with your child the methods you used to solve this problem.
- Visit local shops and discuss prices for similar products. Determine the best value. Estimate weekly shopping costs.
- Discuss the use of percentages in the media.
- Discuss the use of the language associated with chance in everyday situations, e.g. 'no chance', 'fifty fifty', 'pigs might fly', 'it's a possibility'.

Patterns and Algebra

Patterns and Algebra includes the investigation of repeating patterns, number patterns and relationships between numbers.

Repeating patterns are explored in Early Stage 1 and can be created using numbers, letters, shapes, sounds and actions.

For example:

A, B, C, A, B, C, ...

1, 2, 1, 2, ...

□, □, •, □, □, •, ...

clap hands, touch shoulders clap hands, touch shoulders, and so on.

Number patterns can increase or decrease (e.g. 2, 4, 6, ..; 25, 20, 15; ...) and they can include fractions and decimals e.g. ¼ , 2/4 , ¾ , ...; 1.0, 1.2, 1.4, ...

Students are encouraged to continue patterns, to find a missing element in a pattern, to describe how a pattern has been created and to create their own patterns.

Number relationships can be created for multiplication and division facts.

For example, if a student knows that 2 + 4 = 6, then they should also know that 4 + 2 = 6 and also that 6 - 4 = 2 and 6 - 2 = 4.

The same relationships can be created for multiplication and division facts.

Students also learn to find missing values in number sentences, e.g. find the missing number in 50 - ◻ = 31.

The following activities will help develop concepts in Patterns and Algebra.

- Use a calculator to count by ones, twos, threes and so on.
  Press the keys '0' + '1' '=' and the display will show 1. If you continue to press '=', the calculator will count by ones. This can be repeated, replacing '1' by '2' for counting by twos.
  After counting for a while, ask your child to predict the number that will come up next and then press the '=' key to verify the prediction. Try other numbers.
  Encourage your child to write down the numbers that are displayed on the calculator and to describe the pattern to you.
- From a collection of buttons, ask your child to create a repeating pattern and to describe the pattern to you. You could create a repeating pattern with the buttons that includes one button that is misplaced. Ask your child to find the error in the pattern and to correct it.
- Make up mathematical games with your child and join in as they experiment with different rules, e.g. create number sentences from the digits on car number plates.
  For example, if the number plate on a car was ABC 123, this could lead to the sentences
  1 + 2 = 3, 2 + 1 = 3, 3 - 1 = 2, 3 - 2 = 1.
- Play 'guess my rule' games. This involves listing a set of numbers that form a pattern and asking your child to describe the 'rule' used to make

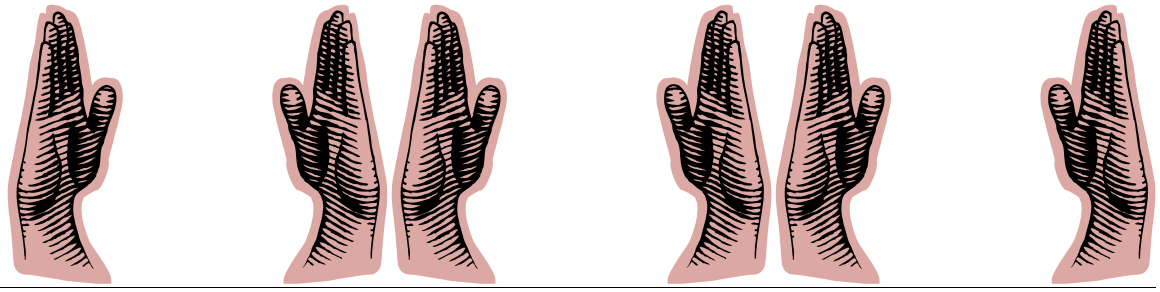
the pattern. Encourage your child to create a number pattern for you to find the 'rule' e.g. 2, 4, 7, 11, ...

- Create number sentences with a missing number and encourage your child to find the missing number, e.g. 17 + ◘ = 30.
  Ask questions like 'What is the missing number?', 'How did you find it?', 'How do you know you are correct?', 'I think the answer is 23. Am I correct? How can we check this?'
  Similar questions like this can be created in words, e.g. 'I am thinking of a number so that when I double it the answer is 5. What is the number?'

Data

This strand includes collecting, organising and analysing data as well as interpreting data when it is presented in a variety of forms including picture, column, line and pie graphs. Students also learn to create graphs. The following activities will help to develop concepts in Data.

- Create a graph of your child's growth over time.
- Use tally marks to score in a game, or count days to a special event.
- Discuss and interpret graphs and tables used in the media.
- Explain information presented in the media that uses the term 'average' e.g. 'the average temperature in December was 24 degrees.'
- Identify misleading representations of data in the media.



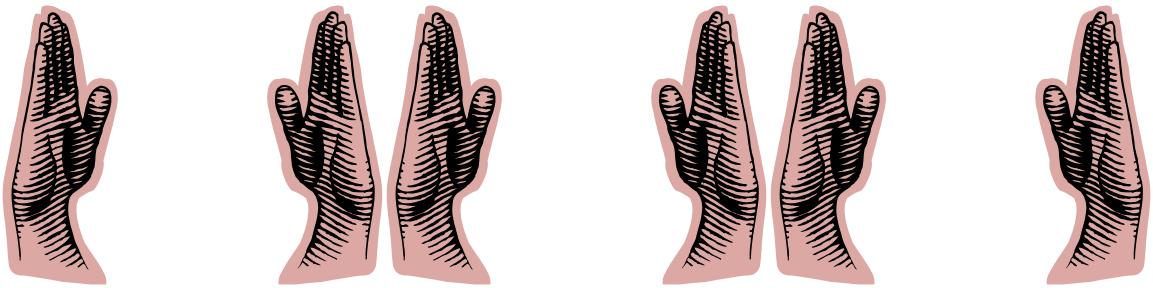
Measurement

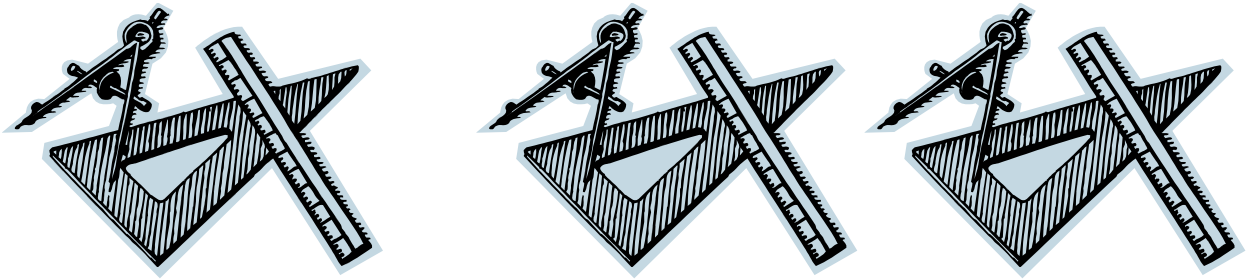
Measurement includes length, area, volume and capacity, mass and time. The following activities will help to develop concepts in Measurement.

- Collect small jars and containers of different sizes and shapes. Ask your child to sort them from smallest to largest capacity. Check by filling the 'smallest' with uncooked rice. If it really is the smallest, the rice should fit into the next container. If so, add more rice and pour it into the next container. Continue this process to check the ordering of the containers. Discuss why the tallest container may not hold the most.
- Join your child in working out measurements for cooking, building, craft or sewing.
- Encourage your child to estimate how long it will take to perform a common task (e.g. tying their shoe laces, saying the alphabet, making a tower from 30 coins). Time the task and review estimates.
- Estimate how many times your child can complete an action in 10 seconds, 30 seconds, or 1 minute, e.g. bouncing a ball, skipping with a rope, running around the backyard.
- Read and interpret timetables with your child, e.g. train, bus, TV guides.

Pose questions like 'Which bus would we need to take to the station to catch the 9:15 train?' 'What time is your favourite TV show on? How long does it go for?'

- Discuss the sporting achievements of athletes in competitions like the Olympic and Commonwealth Games, e.g. long jump distances, high jump and pole vault heights, running and swimming race times. Measure long jump distances on the ground and high jump heights on a wall.
- When painting the house let your child help to work out how much paint will be needed to cover the area, how much paint will cost and how long the painting will take.
- Visit local leisure areas regularly and discuss the angles and heights of slippery dips and swings, mass and balance on a see saw, area and length of a football field or netball court and how many laps of the pool equals 1 kilometre.





Space and Geometry

In Space and Geometry, students learn about two-dimensional shapes (e.g. squares, rectangles, circles, and triangles), three-dimensional objects (e.g. cubes prisms, pyramids) and position. The following activities will help to develop concepts in Space and Geometry.

- Encourage your child to find shapes and objects used in their environment e.g. in buildings, parks, schools, shops, as well as in your home. Discuss why some shapes and objects are used more than others.
- Discuss three-dimensional objects with your child using their geometric names, e.g. cone, cylinder (drink can, cube, sphere (ball), rectangular prism (tissue box). Let your child go on a hunt for these shapes and point them out by name. Ask questions like 'Which ones do you see most often?' "Why?'
- Solve Tangram Puzzles - a tangram consists of seven pieces cut from a square. See if you and your child can use all, or some of the pieces to make a square, triangle, parallelogram and pentagon.
- Identify symmetry in the environment. Sort leaves and flowers on the basis of symmetry.
- Find examples of tessellating shapes in the community, e.g. pavements, buildings.