Seabrook Primary School

Celebrating Mathematics

1 + 4
2 3
Partners in the Education of Children

Introduction

The aim of this booklet is to help you understanding more about your child’s learning of the mathematics process and how this learning can be supported at home. When parents and teachers work together to support learning, the partnership is productive and rewarding.

A strong home school partnership
The home-school partnership promotes:

- Positive attitudes towards mathematics
- Continued mathematics learning in the home
- A shared understanding of how children learn mathematics
- Opportunities for parent participation in mathematics education

As children’s first teachers parents have successfully supported and encouraged learning development. The knowledge and experience that parents bring to the learning process is valued. If parents and teachers work together to support learning in both home and school settings, learning is nurtured, shared and celebrated. Home – school partnerships create opportunities for the development of shared understandings of learning.

With this shared view, the student’s home and school experiences can be brought together to be built upon for further success in learning.

Positive attitude
Mathematics is a subject which can make some people feel quite anxious. It is important to support children in learning mathematics regardless of your own level of confidence or expertise. Statements such as “Don’t worry, I could never do maths either” or “I hated maths when I was at school” can hinder children’s learning.

How We Learn

We learn when……

- We are expected to learn and our efforts are recognised
- We are actively involved
- We are supported by someone with more knowledge and skills
- We have the materials we need
- We have various opportunities for practice
- We can talk about our learning with others

(from Early Numeracy Developing Partnerships, 2001)
WAYS TO SUPPORT MATHEMATICS LEARNING AT HOME

EXPECTATIONS
Children learn when they-
- see what others do
- are surrounded by examples that arouse their interest
- see other people counting, calculating, measuring and using spatial skills and see a reason to learn these things, point out the ways in which different family members use math in their jobs
- find other people expect they will learn to count, calculate, measure and develop spatial skills
- Be positive about math!
- Let your child know that everyone can learn math.
- Let your child know that you think math is important and fun.
- Make math part of your child’s day
- Include your child in everyday activities that involve math – making purchases, measuring ingredients, counting out plates and utensils for dinner

ACTIVE INVOLVEMENT
Children learn when they -
- count, measure and use the shape of objects to build and make things
- count, calculate and problem solve to share and distribute food or toys
- demonstrate their desire to be independent
- explore
- think about what they are exploring
- solve problems using information they have gathered themselves
- suggest that your child act out a problem to solve it, show how she reached a conclusion by drawing pictures and moving objects as well as by using words
- connect math concepts and procedures to their own experience By using common household objects (such as measuring cups and spoons in the kitchen) and observing everyday events (such as weather patterns over the course of a week), they can "see" the ideas that are being taught
- play games and do puzzles that involve math, they may focus on direction or time, logic and reasoning, sorting, or estimating

SUPPORT
Children learn when –
- they are encouraged to attempt new tasks involving mathematics e.g. learning to play a card/board game, buy items at a shop, measure ingredients
- support is offered when problems occur
- efforts and achievements are encouraged, praised and shared with others
- praise your child when she makes an effort, and share in the excitement when she solves a problem or understands something for the first time
- encourage your child to be persistent if a problem seems difficult
MATERIALS
Children learn when at home -
- there are pencils, scissors, crayons, a ruler, paper to write on, tape measures, buckets, games to play, measuring cups and containers of various shapes and sizes,
- a calculator or a computer
- a place to store materials
- people to assist them when they need help

PRACTICE
Children learn when they –
- practise counting and calculating when they explore various problems
- enjoy doing the same task repeatedly, such as playing a card game or making a jigsaw
- have time to complete activities or do things again if unsuccessful
- have parents or brothers and sisters available to notice their efforts and give help when required

TALK
Children learn when they -
- see and hear parents and family members talking about using mathematics to solve everyday problems e.g. measure while cooking, calculate costs while shopping, play games such as Snakes and Ladders, Monopoly
- hear people explain what they are doing and why
- can ask a parent, brother or sister for help when calculating, counting or measuring
- explain how they reached their solutions
- When your child is trying to solve a problem, ask what he or she is thinking. If your child seems puzzled, ask him or her to tell you what doesn't make sense. (Talking about their ideas and how they reach solutions helps children learn to reason mathematically.)
- An important part of learning math is learning how to solve problems. Children are encouraged to use trial and error to develop their ability to reason and to learn how to go about problem solving. They learn that there may be more than one way to solve a problem and more than one answer. They also learn to express themselves clearly as they explain their solutions
Early Years

Overall expectations
Data handling: Children will sort real objects.
Measurement
Children will identify and compare real objects. They will use comparative language e.g. bigger, smaller, same, and different
Shape and space
Children will sort, describe and compare 3-D shapes. Children will begin to use positional language e.g. in front, behind, under,
Patterns
Children will find, describe and create simple patterns in their world.
Number
Children will be aware of number and attempt to count groups of objects.

Helping Children Learn at Home: Tips for Young Children

- **Choose toys that help your child learn.** Young children learn about the world primarily by playing. As a result, they need toys that encourage them to imagine and explore. Toys do not have to be expensive, but they should be simple, safe, and long-lasting. Some ideas for toys include:
  - **Balls.** They can be bounced, rolled, thrown in the air, the grass, or the sidewalk. Which bounces the highest? Lowest? Which ones sink in water? Which ones float?
  - **Blocks.** Building blocks can be a great math and science toy because they help children learn about engineering and geometry. You can either buy a set of wooden, plastic, or cardboard blocks, or you can make your own out of egg cartons, cereal boxes, or wood scraps. For young children, make sure the blocks are big enough to handle easily and keep out of mouths. Have enough blocks in different shapes and sizes to build unusual structures. Have children paint the blocks in bright colours.
  - **Puzzles.** Puzzles help children learn to solve problems as well as learning about shapes, sizes, and colours. For toddlers, make sure the puzzle has some large pieces. You can make your own puzzle by pasting a magazine picture onto a piece of cardboard, then cutting it into large pieces. Or make a puzzle from one of your child's drawings. As children get older, they can do more difficult puzzles.
  - **Plant a garden with your child** is a great family activity. It has a season of math and science lessons in it. Measure the space or container, determine where the plants will get sunlight, find out how much seeds will cost, count the seeds, measure the rows, watch the plants grow and chart their growth, pick vegetables, look for insects, and learn what plants need to be healthy.
  - **Read to your child.** Read books aloud every day. Look at picture books and talk about what you see. Alphabet and counting books are always popular, and you'll experience a sense of pride as you watch your children learn. Plan a regular time to go to the school library, public library or bookmobile. Enlist brothers, sisters, aunts, uncles, and grandparents to help read stories. Have your child read to you if he wants to or tell you a story based on the pictures in the book. Remember that it does not matter if you read in English, Spanish, or Chinese as long as you help your child develop a reading habit.
Monitor TV watching. Turn off the TV and limit viewing. Too much TV viewing takes time away from other activities. Many experts have shown that children who do things other than watch TV usually do better in maths and science in school. When you do let your child watch TV, look for high-quality educational programs, and watch and discuss programs with your child to help build a habit of critical reflection.

- **Understanding Numbers**: Count everything! Count toys, kitchen utensils, and items of clothing as they come out of the dryer. Help your child count by pointing to and moving the objects as you say each number out loud.
- Sing counting songs and read counting books. Every culture has counting songs, such as "One, Two, Buckle My Shoe" and "Ten Little Monkeys", which make learning to count – both forwards and backwards – fun for children. Counting books also capture children’s imagination, by using pictures of interesting things to count and to add.
- Discover the many ways in which numbers are used inside and outside your home. Take your child on a "number hunt" in your home or neighbourhood. Point out how numbers are used on the television set, the microwave, and the telephone. Spot numbers in books and newspapers. Look for numbers on signs in your neighbourhood. Encourage your child to tell you whenever he or she discovers a new way in which numbers are used.
- Ask your child to help you solve everyday number problems. "We need six tomatoes to make our sauce for dinner, and we have only two. How many more do we need to buy?"
  "You have two pillows in your room and your sister has two pillows in her room. How many pillowcases do I need to wash?"
  "Two guests are coming to eat dinner with us. How many plates will we need?"
- **Measure** items found around the house. Have your child find objects that are longer or shorter than a shoe or a string or a ruler. Together, use a shoe to measure the length of a floor mat. Fill different containers with sand in a sandbox or with water in the bath, and see which containers hold more and which hold less.
- Estimate everything! Estimate the number of steps from your front door to the edge of your yard, then walk with your child to find out how many there really are, counting steps as you go. Estimate how many cartons of milk your family will need for the week. At the end of the week, count up the number of cartons you actually used. Estimate the time needed for a trip. If the trip is expected to take 25 minutes, when do you have to leave? Have your child count the number of stars he or she can draw in a minute. Ask if the total is more or less than your child thought it would be.
- Compare and organize household items. Take cereal boxes or cans of vegetables from the cupboard and have your child line them up from tallest to shortest.
- Talk about time. Ask your child to check the time on the clock when he or she goes to school, eats meals, and goes to bed. Together, look up the time of a television program your child wants to watch. Record on a calendar the time of your child’s favourite away-from home activity.
- Keep a record of the daily temperature outside and of your child’s outdoor activities. After a few weeks, ask your child to look at the record and see how the temperature affected his or her activities.
- **Identify shapes and sizes.** When playing with your child, identify things by their shape and size: "Pass me a sugar cube." "Take the largest cereal box out of the cupboard."
• Hide a toy and use directional language to help your child find it. Give clues using words and phrases such as up, down, over, under, between, through, and on top of.
• Play "I Spy", looking for different shapes. "I spy something that is round." "I spy something that is rectangular." "I spy something that looks like a cone."
• Ask your child to draw a picture of your street, neighbourhood, or town. Talk about where your home is in relation to a neighbour’s home or the corner store. Use directional words and phrases like beside and to the right of.
• Go on a "shape hunt". Have your child look for as many circles, squares, triangles, and rectangles as he or she can find in the home or outside. Do the same with three dimensional objects like cubes, cones, spheres, and cylinders. Point out that street signs come in different shapes and that a pop can is like a cylinder.
• Look for patterns in storybooks and songs. Many children’s books and songs repeat lines or passages in predictable ways, allowing children to recognize and predict the patterns.
• Create patterns using your body. Clap and stomp your foot in a particular sequence (clap, clap, stomp), have your child repeat the same sequence, and then create variations of the pattern together. Teach your child simple dances that include repeated steps and movements.
• Hunt for patterns around your house and your neighbourhood. Your child will find patterns in clothing, in wallpaper, in tiles, on toys, and among trees and flowers in the park. Encourage your child to describe the patterns found. Try to identify the features of the pattern that are repeated.
• Use household items to create and extend patterns. Lay down a row of spoons pointing in different directions in a particular pattern (up, up, down, up, up, down) and ask your child to extend the pattern.
• Sort household items. As your child tidies up toys or clothing, discuss which items should go together and why. Show your child how you organize food items in the fridge – fruit together, vegetables together, drinks on one shelf, and condiments on another. Encourage your child to sort other household items – crayons by colour, cutlery by type or shape, coins by denomination.
• Discuss weather patterns and reflect on your discussion through art e.g. paintings, drawings.
• Make a food chart. Create a chart to record the number of apples, oranges, bananas, and other fruit your family eats each day. At the end of the month, have your child count the number of pieces of each type of fruit eaten. Ask how many more of one kind of fruit was eaten than of another. What was your family’s least favourite fruit that month?
• Talk about the likelihood of events. Have your child draw pictures of things your family does often, things you do sometimes, and things you never do.
• Have your child measure various objects in the house using a variety of everyday objects.
**Prep**

**Overall expectations**

**Chance and Data**
Children will sort real objects, create *graphs* and compare quantities. They will discuss and identify outcomes that will happen, won’t happen or might happen.

**Measurement**
Children will identify and compare objects and events.
Children will use informal units to measure objects.

**Shape and space**
Children will sort, describe and compare 3-D shape, 2-D shapes and explore the paths, regions and boundaries of their immediate environment and their position.

**Pattern**
Children will find, describe and create simple *patterns* in their world.

**Number**
Children will read, write, count, compare and order numbers to 100 and count to 20 and beyond.
They will *model* number relationships and develop a sense of 1–1 correspondence and conservation of number.

**Families can help by:**

Responding to children’s ideas by...
- listening to, and talking with them about the number, shape and size of things in, for example, games, constructions, drawings, rhymes and stories
- asking questions

Looking for opportunities where children can...
- sort, organise and count collections of things like: clothes, toys, books, shells, rocks, birthday candles
- choose from a variety of materials of different shapes and sizes to use for play and solving problems
  - Play games in the car such as: Let’s count all the blue cars we see on our way to …. When your child asks: How long will it take to get there? You can respond with: It will take about the same time as it takes to……get to school, watch Playschool etc.
  - Stopping at a service station ask: How many ice-creams will we need to buy? Do we have enough money to pay for them? How much does the petrol cost here?
  - When going for a walk point out house numbers and ask your child: What number do you think the next house will be? Will it be an odd or even number?
  - When deciding what to wear, talk about the weather. Ask: Is it likely to rain today?
  - When playing computer games ask: How did you know which way to go?
  - When talking about TV programs ask: What is the time? What time does the program start? Do we have enough time to read this book before it begins?
  - When preparing a meal involve your child in deciding how much food to prepare for the whole family. You can ask: Are there enough for us to have one each?
When young children play with their calculator they learn to recognise the numbers on the keys. They notice that when they press a number it will show on the screen. Children enter numbers such as their age, telephone number, big numbers like one million and ‘blast off’ numbers (counting down from 10 to 0).

Using the calculator to explore number patterns

To count by 1s press

Try this with your child and see the numbers ‘grow’ on the screen. Ask your child to stop and predict which number comes next. Check to find out.

Ask your child to say the numbers as they show on the screen. Some children enjoy writing the numbers down a long strip of paper. They could look for a pattern.

- Count the number of eyes in the family by 1s, by 2s. Ask: Did you get the same amount both times?
- Include your child in activities that involve measurements. Have your child measure the ingredients in a recipe, or the length of a bookshelf you plan to build.

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.

Explore patterns created by numbers. Write the numbers from 1 to 100 in rows of 10 (1 to 10 in the first row, 11 to 20 in the second row, and so on). Note the patterns that you see when you look up and down, across, or diagonally. Pick out all the numbers that contain a 2 or a 7.

- Play board games as a family and discuss the chance of throwing a particular number on a die 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 refer to and use.
Year One and Two

Overall expectations
Chance and Data: statistics and probability
Students will sort, label, collect, display and compare data in a variety of forms, including pictographs and bar graphs. They will understand the purpose of graphing data. They will discuss, identify, predict and place outcomes in order of likelihood.

Measurement
Students will estimate, measure, label and compare using non-standard units of measurement, and understand why we use standard units of measurement to measure length, mass, time and temperature. They will read and write time to the hour, half hour and quarter hour, and identify and compare lengths of time (days, weeks and months).

Shape and space
Students will describe the properties of 3-D shapes, including the 2-D shapes that can be seen, using mathematical vocabulary. They will find and explain symmetry in the immediate environment and create symmetrical patterns. They will give and follow simple directions using left, right, forward and backward.

Patterns
Students will describe, continue, create and compare patterns. They will recognize and extend patterns in number. They will identify commutative property. They will model the relationships in and between addition and subtraction.

Number
Students will read, write, estimate, count, compare and order numbers to 1000. They will read, write, model and understand addition and subtraction, using mathematical vocabulary and symbols. They will automatically use addition and subtraction facts to 10. They will explore multiplication and division using their own methods, use fraction names to describe part and whole relationships, and explore counting patterns. They will select and explain appropriate methods for solving a problem and estimate reasonableness of answers.

SUGGESTED ACTIVITIES FOR YEAR 1 AND 2 LEVEL

- Have your child help create a number line (0–15) outside with chalk. Call out a number and have your child jump on that number. Make up directions such as “Hop to the number that is two less” or “Jump to the number that is four more.” Give a few more directions and then have your child call out directions while you jump. If you don’t have chalk, use paper, crayons and fingers.

- Divide a deck of cards evenly between you and your child and put the cards face down. For each turn, players flip their top card face up and decide who has the larger number. That player collects both cards. Continue playing until the deck has been used. Play a second round, but have the player with the smaller number take both cards. You may assign points to Aces, Kings, Queens, and Jacks or remove them.

- Have your child create tally marks in batches of five until you say “Stop.” Then skip count by 5s to see how many marks were written.

- Let your child count the dollars and coins in your wallet, together, brainstorm the items that you can buy.

- Count orally by 2s, 5s, and 10s, sometimes starting at numbers other than 0.
  - Choose a time “on the hour” (7:00, 2:00), and help your child set an analogue clock or watch to that time.
  - Practise ”skip counting”. Together, count by 2’s and 5’s. Ask your child how far he or she can count by 10’s. Roll two dice, one to determine a starting number and the other to determine the counting interval. Ask your child to try counting backwards from 10, 20, or even 100.

- Label each cup of an egg carton with the numbers 0–11. Put two coins in the carton, close the lid, and shake it up. Using the numbers of the two sections the coins landed in, make up and solve addition and subtraction problems.
• Look for geometric shapes around the house, in the supermarket, on buildings, and on street signs. Help your child use geometric names for the shapes, such as triangle, square, rhombus, hexagon, and so forth.

• Help your child use paper and scissors to make various shapes such as rhombus, hexagon, trapezoid, pentagon, square, or circle. Take turns holding up each shape and naming them. After naming all of the shapes, make a design.

• From purse or wallet take out a dollar coin, a two dollar coin, a five dollar bill, and lots of change. Name an amount of money, such as “one dollar and 25 cents,” and have your child use the real money to show you that amount. Try a few more and then switch roles.

• With your child, cut food, such as pizza, celery, carrots, sandwiches, pies, or green beans into halves, quarters, and so on. If you are cutting more than one of the same item, look at the pieces to compare the fractional parts. Ask questions such as “Which is bigger: the halves or the thirds?”

• Take out various measuring cups and line them up. Ask your child, “Which holds more?...? If your child can’t determine which holds more, fill the measuring cups with water and pour the water into clear glasses to compare the amounts.

  • Pick three single-digit numbers. Ask your child to write the smallest number and largest number using all three digits. For example, using 4, 2, and 7, the smallest number is 247 and the largest number is 742. Relate to number plates when on car journey.
  
  • Have your child name a temperature that is hot, cold, and mild. Using a map of Australia, discuss with your child states that are hot, cold, have temperatures of 0 degrees in the winter, have temperatures over 40 degrees in the summer and so on. Discuss temperature at holiday locations.

• 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. 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.

• Ask your child to count by certain intervals. For example, “Start at zero and count by 4s.”

• Use the family calendar to discuss the number of months in a year, weeks in a month, and days in a week. Count how many days, weeks or months it is until a special event, such as a birthday, holiday, party, or picnic.

• Practice turn-around facts with your child such as 6 + 4 = ? Then try 4 + 6 = ? Take turns creating turn-around facts and quizzes each other.

• Roll two dice and practice addition and subtraction by adding or subtracting the two numbers. Alternate turns with your child and have her check your answers.

• Gather a handful of coins with a value less than $2. Have your child calculate the total value.

  • Ask the time throughout the day. Encourage alternate ways of naming time, such as half past two for 2:30.
  
  • Make up number stories involving estimation. For example, your child has $2.00 and wants to buy a pencil that is marked $0.65, a notepad marked $0.95 and an eraser marked $0.30. Help your child estimate the total cost of the items to determine if there is enough money.

• Practice addition and subtraction involving multiples of 10 by asking your child “What is 20 + 10 = 40 + 50 = 60 + 20 = ”

• Look for 2- and 3-dimensional shapes in your home or neighbourhood. Name the shapes and discuss their characteristics.

• Use household items (toothpicks and marshmallows, straw and twist-ties) to construct and name shapes. Encourage your child to try combining shapes to make other shapes.
• Think of two 2-digit numbers and ask your child to estimate the sum. For example 23+46 (Estimate is 20 + 50 = 70.)
• Think of a theme (such as animals, shopping, or sports). Take turns making up addition and subtraction number stories related to the theme. Share solution strategies.
• Try doubling, tripling, and quadrupling small numbers.
• Pick three objects in the house that measure less than 30 cm. Measure in centimetres.
• When cooking, read a recipe, and discuss the fractions in it. For example, ask “How many ¼ cups of sugar would we need to get 1 cup of sugar?” Have your child compare two fractions and tell which is greater.
• While eating pizza ask questions to help your child visualize the fractions, such as “Which would give you more pizza: 1/3 of a pizza or 1/4?”
• Find containers that hold 1 litre, 1 cup, 2 litres. Hold up the litre and ask your child to guess how many cups are in a litre. Fill the litre with water and pour into the cup until it is filled. Check your guess. Now try cups to 2 litres.
• Gather a tape measure, ruler, cup, litre container, bucket and scale. Discuss which is the best tool for different measurement situation For example, ask “What would you use to measure the length of a room?” or “Which would you use to find out how much water the bathtub holds?
  • Practice multiplying numbers by 2, 5, and 10.
  • Make up games using dice and playing cards. Try rolling dice and adding or multiplying the numbers that come up. Add up the totals until you reach a target number, like 100. Play the game backwards to practise subtraction.
• 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.
• 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, ...
• 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 10. What is the number?’
  • 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.
  • Explain information presented in the media that uses the term ‘average’ e.g. ‘the average temperature in December was 24 degrees’.
  • Join your child in working out measurements for cooking, building, craft or sewing.
• 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?’
• 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.
• Create number stories that involve two or more items. For example, “I want to buy a doughnut for 45 cents and a juice box for 90 cents. How much money do I need?”
Year Three and Four- Overall expectations

Chance and Data: statistics and probability
Students will discuss, compare and create sets; design a survey and process and interpret the data on a bar graph where the scale represents larger quantities. They will use probability to determine the outcome of mathematically fair and unfair games.

Measurement
Students will estimate, measure, label and compare length, mass, time and temperature using formal methods and standard units of measurement. They will determine appropriate tools and units of measurement including the use of small units of measurement for precision (cm, mm, °C). They will also estimate, measure, label and compare perimeter and area, using non-standard units of measurement. Students will model the addition and subtraction of money and be able to read and write time to the minute and second.

Shape and space
Students will sort, describe and model regular and irregular polygons, including identifying congruency in 2-D shapes. They will combine and transfer 2-D shapes to create another shape. They will identify lines and axes of reflective and rotational symmetry, understand angles as a measure of rotation and locate features on a grid using coordinates.

Structure
Students will recognize, describe and analyse patterns in number systems. They will identify patterns and rules for multiplication and division, together with their relationship with addition and subtraction. They will model multiplication as an array and use number patterns.

Number
Students will read, write, estimate, count, compare and order numbers to 1000, extending understanding of the base 10 system to the thousands. They will read, write and model multiplication and division problems. They will use and describe multiple strategies to solve addition, subtraction, multiplication and division problems, reasonably estimating the answers. They will compare fractions using manipulatives, mathematical vocabulary and fractional notation. They will understand and model the concept of equivalence to one.

SUGGESTED ACTIVITIES FOR YEAR 3 AND 4 LEVEL

- Help your child identify real-world examples of right angles (the corner of a book)
- Draw an analogue clock face with the hour and minute hands showing 8 o’clock. Ask your child to write the time shown. Repeat with other times such as 3:30, 11:45, and 7:10. If you don’t want to draw a clock face each time, use craft sticks or toothpicks for the hour and minute hands.
- Make combinations of bills and coins using money from your wallet or a piggy bank. Have your child write the amount shown using a dollar sign and a decimal point. For example, suggest 4 dollar coins and 3 10c, your child would write $4.30.
- Practice addition and subtraction fact extensions, for example, 6 + 7 = 13; 60 + 70 = 130; 600 + 700 = 1,300.
- Use Fact Triangles to practice multiplication by covering the product. Practice division by covering one of the other numbers. Make this brief and fun.
  - Measure various items with your child with each of you using personal measures, such as paces or hand spans. Discuss why, for example, the width of your living room is only 15 of your paces but 25 of your child’s. Talk about why standard units are useful.
- Draw three different polygons such as a square, a rectangle, and a triangle. Ask your child to estimate which has the largest and which one has the smallest perimeter. Then, help your child measure the sides with a ruler and determine the exact perimeter of each polygon. Compare your child’s estimate with the actual perimeter. Ask questions that involve multiples of equal groups. For example, say “Pencils are packaged in boxes of 8. There are 3 boxes. How many pencils are there?”
• Ask questions that involve equal sharing. For example, say “Seven children share 49 cards. How many cards does each child get? How many cards are left over?
• Write down two 4- or 5-digit numbers. Ask your child to tell which is larger and explain why. Try a few more and then switch roles.
• Search for geometric figures with your child. Identify figures by name, if possible, and talk about their characteristics. For example, a stop sign is an octagon, with 8 sides and 8 angles. A brick is a rectangular prism, where all faces are rectangles.
• Provide your child with problems with missing factors for multiplication practice. For example, ask “6 times what number equals 18?”
• Help your child find fractions in the everyday world—in advertisements, on measuring tools, in recipes, and so on.
• Have your child trace around an object such as a deck of cards, a box, a plate, a cup, a can, and so on. Divide the figure equally into 4 parts. Ask your child to colour ¾ of the shape. Use different figures and divide them into different fractional parts.
• Instead of tracing around an object, draw figures such as squares, rectangles and circles.
• Ask your child how many 10s are in 30, 50, 100, and 1,000 and so on.
• Take out different objects such as buttons, counters, coins and paper clips. Divide them into 3 equal groups. How many are in each group? How many are left over?
• Review equivalent names for measurements. For example, ask “How many cups are in a litre?” To test it out, count how many cups of water a pint container will hold.
• Name items around the house that weigh less than 5 kilos, 10 kilos and 20 kilos. If you have a scale, place the items on the scale to check your guesses.
  • Use the weather as a springboard to discuss probability. Begin by noting the chance (percentage) for rain, and then ask your child if it seems likely or unlikely that it will rain.
  • Make a number line from –6 through 6, leaving off some of the numbers. Ask your child to fill in the missing numbers. Try another number line with a different range of numbers and blank spaces. Then switch roles, and have your child create a number line, leaving off some labels for you to fill in.
• Have your child compile a shapes scrapbook or create a collage of labelled shapes. Images can be taken from newspapers, magazines, and photographs.
• Help your child look up the population and land area of the state and city in which you live, and compare these facts with those of other states and cities.
  • Continue practicing multiplication and division facts by using Fact Triangles and fact families or by playing games.
  • Gather money from piggy banks or wallets. Ask your child to show you two different amounts, such as $1.35 and $4.20. Practice adding or subtracting the amounts. Your child can use a calculator to check the answers.
• Have your child write numbers through the millions and practice reading them. Then select two and ask your child to tell which one is the greater number
• Hide an object in a room of your house, and give your child directions for finding it. Your child can move only according to your directions, and the directions can be given only in fractions or degrees. For example, say “Make a ¼ turn and walk 3 ½ steps. Now, turn 180° and walk 4 steps.” Switch roles and have your child hide an object and give you directions to find it.
• Make a game of identifying and classifying angles: acute (less than 90°), obtuse (between 90° and 180°), right (90°), straight (180°), and reflex (between 180° and 360°) in everyday things (buildings, bridges, ramps, furniture).
• Encourage your child to recognize how probability is used in everyday situations, such as weather reports. Have your child make a list of things that could never happen, things that might happen, and things that are sure to happen.
• Have your child measure the perimeters of rooms in your house or of household objects. Then have him or her find the areas of the objects.
• Help your child draw a map of your city, town, neighbourhood, or have your child do a scale drawing of the floor plan of your home.
• Have your child look for everyday uses of fractions and percents. Look in games, grocery stores, cookbooks, measuring cups, and newspapers. When finding fractions, decimals, or percents, ask your child to change them from one form to another. For example, if you ¼ off”, ask your child to tell what percent is equal to ¼ (25%).
• Have your child look for repeating borders or frieze patterns (a design made of shapes that are in a line or lined up) on buildings, rugs, and floors. Your child may want to sketch the friezes or draw original patterns.
  • Have your child find the volume of various rectangular prisms around your house, such as shoe boxes and fish tanks.
  • During trips in the car, let your child know how far you will be travelling and the approximate speed you’ll be moving at.
• Ask your child to estimate about how long it will take to get to your destination.
• When shopping, ask your child to help you find the “best buy” by comparing the cost per unit (gram,) of different package sizes. For example, compare the cost of a family-size box of cereal with the cost of a regular-size box.
• 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’.
• 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 to check 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 the 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.
Chance and Data: statistics and probability
Students will collect, display and interpret data in a variety of ways. They will compare data displays, including how well they communicate information. They will create and manipulate an electronic database and set up a spreadsheet using simple formulas to create graphs. They will find, describe and explain the range, mode, median and mean in a set of data, use a numerical probability scale 0–1 or 0%–100%. They will determine the theoretical probability of an event and explain why this might be different from the experimental probability.

Measurement
Students will estimate, measure, label and compare perimeter, area and volume using formal methods and standard units of measurement. They will develop procedures for finding perimeter, area and volume and recognize the relationship between them. They will use the correct tool for any measurement with accuracy. They will measure and construct angles in degrees using a protractor. They will know that the accuracy of measurement depends on the situation and the precision of the tools. They will use and construct 12-hour and 24-hour timetables and be able to determine times worldwide.

Shape and space
Students will use the mathematical vocabulary of 2-D and 3-D shapes and angles. They will turn a 2-D net into a 3-D shape and vice versa. They will find and use scale and ratio to enlarge and reduce shapes. They will use the language and notation of bearing to describe position, and be able to read and plot coordinates in four quadrants.

Structure
Students will understand and use the relationships between the four operations. They will model and explain number patterns and use real-life problems to create a number pattern following a rule. They will develop, explain and model simple algebraic formulas. They will model exponents as repeated multiplication, and understand and use exponents and roots as inverse functions.

Number
Students will read, write and model numbers to one million and beyond, extending the base 10 system to the millions and thousandths. They will automatically use number facts. They will read, write, model, compare and order fractions (including improper fractions and mixed numbers), decimals (to any given place), and percentages. They will interchange fractions, decimals and percentages. They will add and subtract fractions with related denominators, simplify fractions and explore fractions using a calculator. They will add and subtract decimals to the hundredths and will model multiplication and division of decimals in the context of money. They will find and use ratios; read, write and model addition and subtraction of integers; and use exponential notation. They will use and describe multiple strategies to create and solve more complex problems, reasonably estimating the answers. They will select and defend the most appropriate and efficient method.

SUGGESTED ACTIVITIES FOR YEAR 5 AND 6 LEVEL

- Ask your child to name as many factors as possible for a given number such as 24 (1, 24, 6, 4, 12, 2, 8, 3). To make sure the factors are correct, your child can multiply them with a calculator.
- Practice extending multiplication facts. Write each set of problems so that you child may recognize a pattern. Set A: 6 x 10, 6 x 100, 6 x 1,000; Set B: 5 x 10, 5 x 100, 5 x 1,000
- When your child adds or subtracts multi-digit numbers, talk about the strategy that works best for him or her. Try not to impose the strategy that works best for you! Here are some problems to try: 467 - 343; 761 - 79; 894 - 444; 842 - 59.
- To learn more about population data and its uses, visit a population Web site. Have your child write three interesting pieces of information that she learned.
• Draw various angles: acute (less than 90°), obtuse (between 90° and 180°), and right (90°). Ask your child to estimate each angle measurement and then use a protractor to find the actual measurement. Compare the results. Switch roles, letting your child draw angles for you to estimate and measure.

• Find a map of your state and ask your child to use the scale to find the distance from a particular city to another city.

• Identify percentages used in stores, newspapers, and magazines. Help your child find the sale price of an item that is discounted by a percent. For example, a $40 shirt discounted by 25% will cost $30.

• Practice writing numbers as a fraction and then as a decimal. Try one-fourth (1/4, 0.25), three-tenths (3/10, 0.3) and so on.

• Have your child practice adding fractional parts of an hour with a digital clock. Ask questions, such as “What time will it be an hour and a half from now? What was the time a quarter of an hour ago?”

• Practice adding and subtracting fractions with the same denominator.

• Create a number sentence that includes at least three numbers, several different operations, and parentheses. Have your child solve the number sentence. Then change the problem by placing the parentheses around different numbers. Ask your child to solve the new problem and explain how it changed according to the order of operations, for example, (6 x 5) - 3 =27 and 6 x (5 - 3) =12.

• Use a deck of cards to practice comparing fractions. Use only the number cards 2 through 9. Each player is dealt two cards and creates a fraction using one card as the numerator and one card as the denominator. The player with the greater fraction takes all four cards.

• When at a store, reinforce percents by pointing out discounts and asking your child to figure out the sale price. If, for example, a sign shows “40% off”, select an item, round the price to the nearest dollar, and help your child calculate the savings.

• Have your child draw a picture using rectangles, parallelograms, and triangles. Once completed, work together to find the area of each shape, and write it inside each shape. Ask your child, “What do you notice about the size of the area and the size of the shape?”

• Draw several circles and ask your child to find the radius, diameter, and circumference of each. Cut them out and make a design.

• Practice evaluating simple algebraic expressions by asking your child, “If y is equal to 4 what is … y + y, 3 +y, y x 2 and so on.

• Find two real world 3-dimensional shapes and guess which will have the greatest and the least volumes. Then find the volume of each one and check to see if your guess was correct.

• Reinforce ratios with a deck of cards. Ask your child, “What is the ratio of 3s to the whole deck?” (4 to 52 or 1 to 13); “Jacks to Aces and Queens?” (4 to 8 or 1 to 2); “Hearts to the whole deck?” (14 to 52 or 7 to 26).

• In a car park, select a row or section and count the number of cars parked in that section. Ask how many of those cars in that section are red. Have your child determine the ratio of red cars to the number of cars parked in that section.

• Scan the paper or magazines for graphs, and discuss with your child whether the information presented seems accurate or intentionally misleading. Analyse and discuss the statistics with your child to make it more meaningful.

• Ask your child to draw squares with an area of 12 square centimetres of 8 square centimetres, and of 20 square centimetres.
• Look through the paper for examples of number-and-word notation such as 7.5 million or 1.5 trillion, and ask your child to write the number in standard notation (7,500,000 or 1,500,000,000). If you can’t find examples in the paper, make up some of your own.

• Create algebraic expressions that contain at least one variable. For example, you might say “John is 4 centimetres taller than his brother Sam.” Ask your child to write the algebraic sentence which represents John’s height \((S + 4)\). Use family examples to make the expressions more meaningful.

• Name some fractions, decimals, or whole numbers, and have your child find the reciprocal of each.

• When cooking in large quantities, ask your child to double or triple the amounts in your recipes. Watch to make sure that your child does the math for every ingredient. Or, halve a recipe if you need to make a smaller amount.

• Ask your child to find examples of right angles \(90^\circ\), acute angles (less than \(90^\circ\)), and obtuse angles (between \(90^\circ\) and \(180^\circ\)). Guide your child to look particularly at bridge supports for a variety of angles.

• While driving in the car together, direct your child to look for congruent figures (two or more figures with the same size and shape). Windows in office buildings, circles on stop lights, and so on, can all represent congruent figures.

• Draw a number line from -5 to 5 with chalk outside. Give your child addition or subtraction problems with positive and negative numbers. Have your child solve the problems by walking to the numbers while explaining his or her thinking.

• Make up true and false number sentences. Ask your child to tell you whether each one is true or false and explain why. For example, try \(30 \times (4 - 2) > 60\) (false, because the answer is exactly 60). Switch roles.

• While playing a game that uses a die, keep a tally sheet of the total number of times you roll the die and how many times a certain number is rolled. For example, find how many times during the game that the number 5 comes up. Have your child write the probability for the chosen number. The probability is the number of times the chosen number came up over the number of times the die was rolled during the game. The probability will be close to?

• Use graph paper to practice drawing shapes that are similar (exact shape but different size).

• Use graph paper to draw polygons with given areas. For example, see if your child can draw a trapezoid with an area of 20.5 square centimetres or a rectangle with an area of 30 square centimetres and a perimeter of 15 square centimetres.

• Review tessellations with your child. Encourage your child to name the regular tessellations and to draw and name the eight semi regular tessellations. Challenge your child to create non polygonal Escher-type translation tessellations. You may want to go to the library first and show your child examples of Escher’s work.
Games

- **High Card - Addition**

A game suitable for students from Prep to Year 6
Two students place a deck of cards in front of them face down. Remove the Kings, Jacks, and Jokers. The Ace represents the number one and the Queen represents a zero. All other cards are face value.

Share out all the cards and place their cards in front of them in one pile.

Player one turns over his/her top two cards and adds them up i.e. 7 and 10 = 17. Player two then turns over his/her top two cards hoping to get a higher score than player one. Whoever has the higher score takes all 4 cards and places them at the bottom of their pack. Play continues until teacher says stop or all cards are used. Player with most cards wins.

**Variations**

Turn over three cards, Subtract, turn over three cards and add and subtract between cards to make greatest total. Make the largest two/three digit number, multiply

- **Odd or Even - Reading numbers and identifying odd and even numbers**

A game suitable for Prep to Year 6
Two people place a deck of cards in front of them face down. Kings, Jacks, Tens and Jokers removed. The Queens represent zero and the Aces represent one. Each person takes it in turns taking one card at a time. Before they flip it over and read out the number they guess whether or not it is odd or even. [Children can draft a sheet with odd numbers on one side and even numbers on the other side and place a counter on their guess before flipping the card. This stops arguments about what was and wasn’t said.] If the child guesses correctly he/she keeps the card. If he guessed incorrectly the card is given to his/her partner. Keep playing until the cards have all been used. The person with the most cards wins that game. Cards are shuffled and a new game begins.

Play the game with more than one card. The focus is not identifying odd and even numbers as children read larger numbers. The focus is correctly reading and saying 2,3,4,5 etc digit numbers.

- **Addition Top-It**

**Basic Game**

Materials: A set of number cards with four cards each of the numbers 0-10, a coin (optional)
Number of Players: 2 or 3

Directions: A player shuffles the cards and places the deck number-side down on the playing surface. Each player turns over two cards and calls out their sum. The player with the highest sum wins the round and takes all the cards.

In the case of a tie, each player turns over two more cards and calls out their sum. The player with the highest sum then takes all the cards from both plays.

Play ends when not enough cards are left for each player to have another turn. The player with the most cards wins.

Option: Children toss a penny to determine whether the player with the most or the fewest cards wins.

**Game Variations**

1. Use a set of double-nine dominoes instead of a set of number cards to generate addition problems. Place the dominoes facedown on the playing surface. Each player turns over a domino and calls out the sum of the dots on the two halves. The winner of a round takes all the dominoes then in play.

2. To practice addition with three addends, use three cards.
• Name that Number
Basic Game
Materials: 4 cards each of numbers 0-10 and 1 card each of numbers 11-20
Number of Players: 3 or 4
Directions: A player shuffles the deck and places five cards face-up on the playing surface. This player leaves the rest of the deck facedown and then turns over and lays down the top card from the deck. The number on this card is the number to be named. In turn, players try to (re)name the number on the set-apart top card by adding or subtracting the numbers on two of the five face-up cards. A successful player takes both the two face-up cards and the number-named top card. A successful player also replaces those three cards by drawing from the top of the facedown deck. Unsuccessful players lose their turns. But they turn over and lay down the top card from the facedown deck, and the number on this card becomes the new number to be named. Play continues until all facedown cards have been turned over. The player who has taken the most cards at the end wins.
Example: Mae's Turn:
The number to be named is 6. It may be named with 4+2, 8-2, or 10-4. Mae selects 4+2. She takes the 4, 2, and 6 cards. She replaces the 4 and 2 cards with the top two cards from the facedown deck and then turns over and lays down the next card to replace the 6.
Mike's Turn:
The new number to be named is 16. Mike can't find two cards with which to name 16, so he loses his turn. He also turns over the next card from the facedown deck and places it on top of 16, and the number on this card becomes the new number to be named. Play continues as before.
Game Variations
If children are finding the game difficult, increase the number of face-up cards.
Use any combinations of two or more numbers and all operations. For example, Mike could have named 16 as follows:
10+7-1
10+12-7+1
8+12-10+7-1
Children can experiment by using different numbers of face-up cards.

• 10 in a row - Choosing and using operations
A game suitable for all levels
Children play game in pairs. All picture cards removed leaving numbers 1 – 10.
Place 10 cards face up in a row. The remainder of the deck kept together face down. Take it in turn rolling a ten sided dice [Can use a six sided dice]. Using the number that is displayed to use combinations of cards to equal the number. Cards used to make the answer are collected and kept by each person and then replaced from the deck. The game continues until all cards have been used. Young children will use addition / subtraction to make answers using two cards. Older or more able peoples can use any combination of operations, decimals, negative numbers, fractions, order of operations etc and use up to five cards. People need to articulate how they make the answer, trying to gather more cards than their partner.
Variations
Use six sided dice. Offer counters that can be added to total collection of cards at end of game for using operations and signs other than addition or subtraction.
Roll two dice making a two digit number as the target.
• **Making Tens – Addition, extension to other operations**
A game suitable for all levels
Children play game in pairs. All picture cards and tens removed leaving numbers 1 – 9. Place 9 cards face up in three rows of three similar to the channel 9 logo on TV. The remainder of the deck are placed on top of the cards face up until all are gone leaving the nine piles of cards. Take it in turns collecting two cards that when added together make ten. This continues until all cards are removed. Children need to say aloud the combinations as they collect the pairs.

**Variations**
Collect more than two cards to make ten, use subtraction and addition, roll a dice and use the number displayed as the target instead of ten, make 100 using the displayed cards as two digit numbers, create equations to make 100 using any operation, make 10 using mixed numbers e.g. 4.7 + 5.3, make 1 using decimals e.g. 0.46 + 0.54.

• **Cover Up – Choosing and using operations**
A game suitable for students from Year 1 to Year 6
Children play the game in pairs. A deck of cards with all pictures removed. Game board with the numbers 0 – 20 displayed in a grid.
Each child has 6 counters of the same colour. Their partner has a different colour.
Children take it in turns taking two cards at a time from the top of the deck and add or subtract the numbers to make an answer from 0 - 20. One of their six counters is placed on that number. The objective is to get rid of all counters first. If a student lands on top of number that has their partner’s counter on it they take the place and send the counter back to their partner. Students can have more than one counter of their own on the same number but if their opponent lands on that number all counters are sent back.

**Variations**...use three cards, use dice instead of cards, allow any operation, simplify the game by using a 0 – 12 board and a cards 1 to 6 or a six sided dice.

• **More / less / the same - Place value**
A game suitable for students from Prep to Year 6
Card game for groups of four Remove picture cards and jokers Deal each child 6 cards. Cards left placed in the middle and turn the top one over.
Taking turns the children place a card down according to
* same number * one more or one less * two more or two less * double the number
* half the number
The child must verbalise the choice they have made to discard and why. If a card cannot be discarded then a card is picked up from the deck.
First to discard all their cards wins the game.

• **Make my number - Choosing and using operations / Equations**
A game best suited to students from year 4 onwards.
Students can play in pairs
Deck of cards with Jokers included but all picture cards removed. All cards have face value with the Ace representing 1. The Joker is wild and can represent any number from 1 to 10.
Six cards are dealt face up. The seventh card or the next card on the deck is the target number. Students are challenged to make as many equations as possible using combinations of the six cards displayed to equal the target number. They must write the equations down. Encourage students to begin using simple equations to make the target number and then extend to using more than one operation, brackets, order of operations, negative numbers, square root, decimal notation etc. A scoring system can be used earning extra points for using more cards in the equations or using operations other than addition and subtraction. Place a time limit of perhaps 3 or 4 minutes per game. Students tally their points to see how they went. Discard these cards and play again using the next seven numbers. It may be worth modelling this activity with the whole class from the front and everybody using the same set of numbers.
Family Math Books

Early Years

Baylor, Byrd. Everybody Needs a Rock.
Boynton, Sandra. Blue Hat, Green Hat.
Brett, Jan. The Mitten.
Fox, Mem. Time for Bed.
Hutchins, Pat. Rosie's Walk.
Inkpen, Mick. The Blue Balloon
Keats, Ezra Jack. Over in the Meadow
Lobel, Arnold. Frog and Toad are Friends.
Murphy, Stuart. The Best Bug Parade.
Murphy, Stuart. A Pair of Socks
Raffi. Five Little Ducks
Rosen, Michael and Helen Oxenbury. We're Going on a Bear Hunt.
Walsh, Ellen Stoll. Mouse Count.
Wood, Don and Audrey Wood. Little Mouse, the Red Ripe Strawberry & the Big Hungry Bear

Addition

The 500 Hats of Bartholomew Cubbins by Dr. Seuss
Bartholomew really wants to take off his hat to the King of Didd… but how? And how many hats will he end up with?

The Great Pet Sale by Mick Inkpen
Attracted by a sale at the pet store, a boy tries to decide which animal to buy.

Leaping Lizards by Stuart Murphy
Learn to count by 5s and 10s by counting the lizards as they arrive for a show. It’s almost time for the show to begin -- but where are all the lizards? As a frantic snake looks high and low for the performers, they start to arrive, first by fives…

The Very Hungry Caterpillar by Eric Carle
Follows the progress of a hungry little caterpillar as he eats his way through a varied and very large quantity of food.

Counting

Counting on Frank by Clement, Rod.
One Bear at Bedtime by Mick Inkpen
Introduces the numbers one through ten as a little boy describes all the animals he needs to help him get ready for bed.

One Gorilla by Atsuko Morozumi
A playful gorilla makes his way through jungles, gardens, and forests full of hidden creatures waiting to be counted.

Over in the Meadow by Jane Cabera
Different numbers of animals are all playing in the meadow.

The Shopping Basket by John Burmingham
On his way to the store to get six eggs, five bananas, four apples, three oranges, two doughnuts, and a bag of chips, Steven is waylaid by several animals who demand that he give them his groceries.

Ten Apples Up On Top by Theo LeSieg
A lion, a dog, and a tiger are having a contest—can they get ten apples piled up on top of their heads? You better believe it! This first counting book works as a teaching tool as well as a funny story.
Division

The Doorbell Rang by Pat Hutchins
Each time the doorbell rings, there are more people who have come to share Ma’s wonderful cookies.

The Little Mouse, The Red Ripe Strawberry and The Big Hungry Bear by Audrey and Don Wood
Little Mouse worries that the big, hungry bear will take his freshly picked, ripe, red strawberry for himself. There’s only one solution – to share it!

Fractions

The Doorbell Rang by Pat Hutchins
Each time the doorbell rings, there are more people who have come to share Ma’s wonderful cookies.

Measurement

Counting on Frank by Rod Clement
"What if I drew with this ball point pen until it ran out, how long would the line be?" "What if I ran this bath until the room filled up with water, how long would it take?" These are the sort of questions that all kids ask. The difference is that this kid has the answers.

Jim and the Beanstalk by Raymond Briggs
Jim climbs the beanstalk and discovers the giant needs a little help getting back to his boy-eating ways.

Length by Pluckrose, Henry;

Multiplication

Anno’s Magic Seeds by Mitsumasa Anno
The reader is asked to perform a series of mathematical operations integrated into the story of a lazy man who plants magic seeds and reaps an increasingly abundant harvest.

The Doorbell Rang by Pat Hutchins
Each time the doorbell rings, there are more people who have come to share Ma’s wonderful cookies.

Leaping Lizards by Stuart Murphy
Learn to count by 5s and 10s by counting the lizards as they arrive for a show. It’s almost time for the show to begin -- but where are all the lizards? As a frantic snake looks high and low for the performers, they start to arrive, first by fives…

Size

All Shapes and Sizes by Shirley Hughes
A nursery picture book, featuring a lively toddler and her baby brother. It is designed to introduce the concepts of shapes and sizes to young children.

The Bad-Tempered Ladybird by Eric Carle
A grouchy ladybug, looking for a fight, challenges everyone she meets regardless of their size or strength.

The Blue Balloon by Mick Inkpen
A boy and his dog find a fantastic blue balloon that can be lots of different sizes.
Hop! Plop! by Corey Schwartz
When mouse and elephant go to the playground together, it seems as if everything they try to play on together gets broken, until they finally find the piece of equipment that is just right for them.

A House for Birdie by Stuart Murphy
Birdie needs a new house, his friends of various sizes help him look and everyone ends up with a house the right size for them – tall, short, thin or wide.

Pardon? Said the Giraffe by Colin West
A small frog hops from the ground onto bigger and bigger animals in order to be heard by a giraffe.

Shrinking Mouse by Pat Hutchins
Four animal friends notice that the size of distant objects seems to change depending on the location and movement of the viewer.

Titch by Pat Hutchins
Titch has a sister Mary, who was a bit bigger, and a brother Peter, who was a lot bigger. It seems everything his big brother and sister have is always bigger and better than what Twitch has to play with each day. But then one day Titch discovers that something little can grow very big indeed.

Watch Out Big Bro’s Coming! by Jez Alborough
Terror spreads through the jungle as animals hear the news that rough, tough Big Bro is coming. A crew of animals learns that size is relative.

Who Sank The Boat? by Pamela Allen
The reader is invited to guess who causes the boat to sink when five animal friends of varying sizes decide to go for a row.

Bed Hogs by Kelly DiPucchio and Howard Fine
Hoping to get some sleep, Little Runt boots his hog family out of bed one by one, but then finds that he needs them back again.

Dora’s Chicks by Julie Sykes
While Dora is out looking for their breakfast all six of her chicks disappear.

5 Little Ducks by Wendy Straw
When her five little ducks disappear one by one, Mother Duck sets out to find them.

Five Little Monkeys Go Shopping by Eileen Christelow
Five little monkeys go shopping for school clothes with their mama, but in spite of her warnings about not wandering off, things quickly get complicated.

Hardworking Puppies by Lynn Reiser
One by one, ten energetic puppies find important jobs as dogs who help people in different ways, including by pulling sleds and saving swimmers.

Safari Park by Stuart Murphy
As five cousins try to decide how to spend their one hundred tickets at the new Safari Park, readers can practice interpreting number sentences to find out how many rides they can go on.

The Shopping Basket by John Burningham
On his way to the store to get six eggs, five bananas, four apples, three oranges, two doughnuts, and a bag of chips, Steven is waylaid by several animals who demand that he give them his groceries.

Six Chicks by Henrietta Branford
Red Hen has got six lively chicks to settle off to sleep. One by one they fall asleep.
Time

**All in One Hour** by Susan Crummel

At 6:00 a.m., a small boy and his cat are dozing as a mouse nibbles a chocolate-chip cookie in much-too-close proximity to a cat. A digital display on the side of each left-hand page alerts readers to the passing of time.

**The Bad-Tempered Ladybird** by Eric Carle

A grouchy ladybug, looking for a fight, challenges everyone she meets regardless of their size or strength.

**Cluck O'Clock** by Kes Gray

A group of chickens has a full day on the farm, from eating breakfast early in the morning to avoiding a fox late at night.

**Five Minutes Peace** by Jill Murphy

Mrs. Large tries to take a peaceful, relaxing bath but her family has other ideas.

**Mr Wolf's Nursery Time** by Colin and Jacqui Hawkins

Wolf sets out at nine o'clock, when he meets three hungry little pigs. He can't find any food for them, so by ten o'clock he's knocking on Old Mother Hubbard's door. Can he find any breakfast there? Comes with a 3-D clock

**My Grandmother's Clock** by Geraldine McCaughrean

Grandma says you can tell time without a clock. You can count seconds by the beating of your heart, an hour is how long it takes the bathwater to go cold, and you know each day is over when your mother kisses you goodnight.

**One Hundred Days of Cool** by Stuart Murphy

Four students arrive on the first day of school looking cool and their teacher challenges them to keep it up as they count down one hundred days to a cool celebration.

**What Time is it Mr Crocodile?** by Judy Sierra

Mr. Crocodile's timetable to catch and eat some pesky monkeys does not work out and he becomes friends with them instead.

Other Concepts

**Mr Archimedes Bath** by Pamela Allen

Mr Archimedes hops in and out of a bath with, variously a kangaroo, goat and wombat, examining the water level each time, and trying to understand why when ALL the friends are in the bath it always overflows.

**Nesta and the Missing Zero** by Julie Leibrich

Mr Abacus has lost the number zero and its amazing how much chaos nothing can cause!

**The Biggest Number in the Universe** by Julie Leibrich

Nesta needs a number, a really big number. Grumpy Mr Abacus, the mathematician, tells her to go away, he's too busy. But he doesn't know how determined a little girl can be.

**Math Curse** by Jon Scieszka

When the teacher tells her class that they can think of almost everything as a math problem, one student acquires a math anxiety which becomes a real curse.
Where can I get help?

Many people are willing to support you in helping your child learn maths and there are also many resources available.

Your Child’s Teacher

Your child’s teacher can provide advice about helping your child with math. Here are some topics you could discuss with the teacher:

- your child’s level of performance in math
- the goals your child is working towards in math and how you can support your child in achieving them
- strategies you can use to assist your child in areas that he or she finds difficult
- activities to work on at home with your child
- other resources, such as books, games, and websites

Others Who Can Help

Consider involving relatives and friends in helping to motivate your child to learn math. Older siblings, grandparents, family and friends can add their support and encouragement.

Tips for parents:

- Get involved - be proactive about your child's numeracy
- Be positive - avoid imparting your fear of maths onto your children
- Show your child how mathematics applies to real-life situations
- Encourage children to take part in activities that use their maths skills like grocery shopping within a budget or measuring materials for craft activities
- Get a list or poster of multiplication tables at home
- Remain calm when helping with homework - play some classical music in the background if it helps your child and take a break when it gets frustrating for both parent and child
- Talk to the teacher to clarify teaching methods if your child says "we don't do it this way in class"
- Use maths on the weekend - if you are planning a visit to a number of theme parks, ask your child to work out which is better value for money