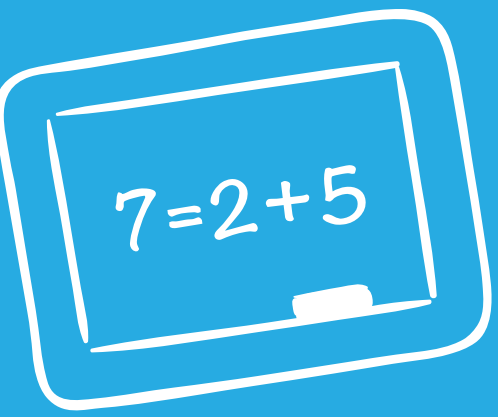
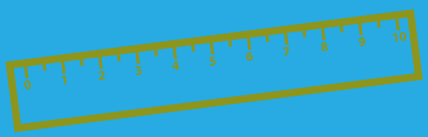
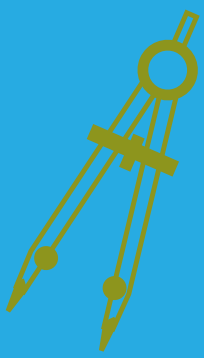
Doing Mathematics with Your Child

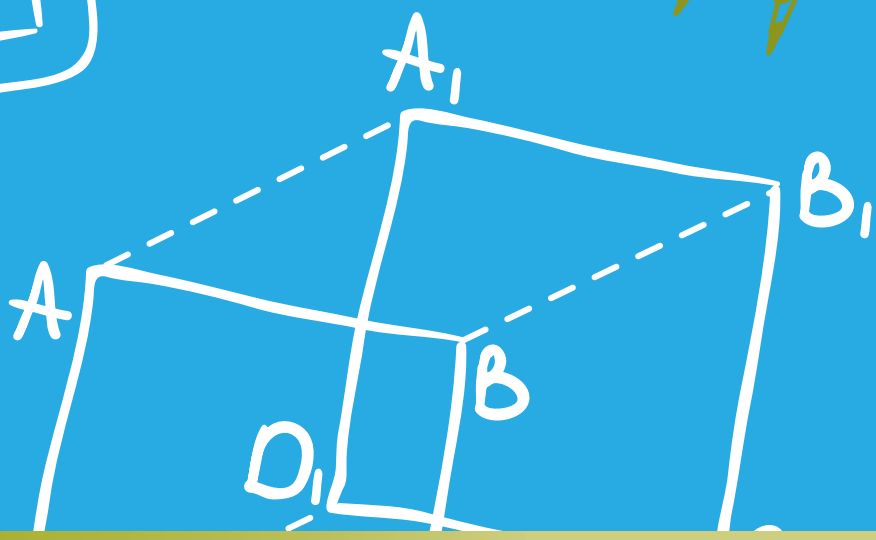
Kindergarten to Grade 6

A PARENT GUIDE



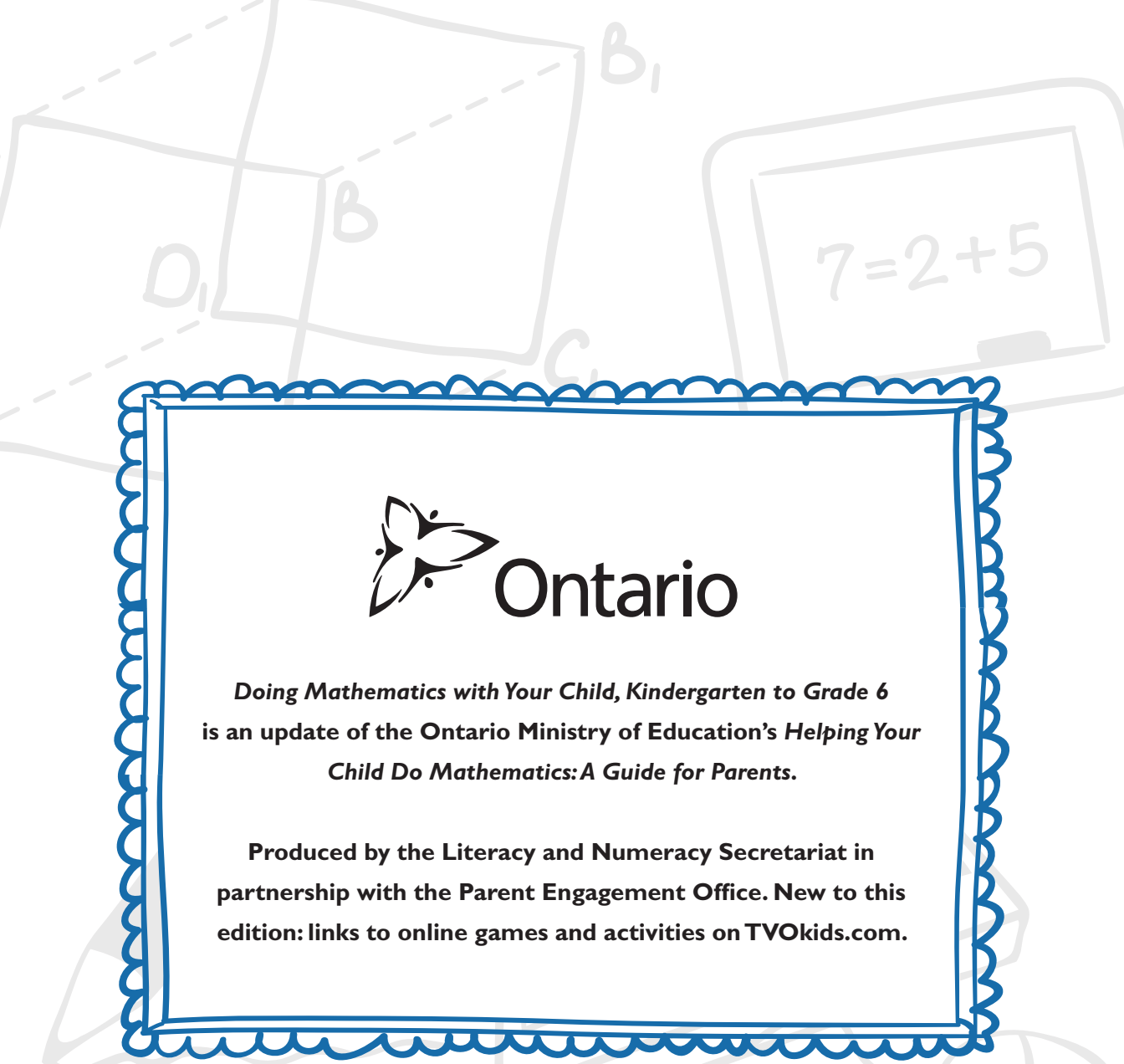






reach every student

Ontario



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Doing Mathematics with Your Child, Kindergarten to Grade 6 **is an update of the Ontario Ministry of Education's *Helping Your Child Do Mathematics: A Guide for Parents*.**

Produced by the Literacy and Numeracy Secretariat in partnership with the Parent Engagement Office. New to this edition: links to online games and activities on TVOkids.com.

Contents

> The greater the support that families provide for their children's learning and educational progress, the more likely that their children will do well in school and continue on with their education.
>
> **Karen Mapp and Anne Henderson, 2002**
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> *The Impact of School, Family, and Community*
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NOTE TO PARENTS

How can I support my child's learning?

You are an important partner in your child's mathematics education.

When you find ways to engage your child in thinking and talking about mathematics, you are providing an important key for unlocking his or her future success.

Today, critical thinking, problem solving, reasoning ability and the ability to communicate mathematically are essential skills. These processes are the foundation of mathematics instruction in Ontario schools. They are brought into play as you engage your child in the activities suggested in this guide.

Enjoy learning together!

Top Tips for Parents

- **Build strong, positive attitudes about math.** When children feel positively engaged and successful, they are more likely to stick with an activity or a problem to find a solution.
- **Begin with activities that meet your child's level of mathematical understanding.** Early success in solving problems will build your child's confidence. Gradually move to activities that provide more challenge for your child.
- **If you and your child are more comfortable in a language other than English, use it.** Your child will understand concepts better in the language that he or she knows best.

Please note: In this guide, the word *parent* refers to parents, guardians, caregivers and other family members who help children learn mathematics.

Why is a belief in our children's ability to learn mathematics essential?

Understanding mathematics builds confidence and opens doors to many jobs and careers. Understanding mathematics enables us to:

- Solve problems and make sound decisions
- Explain how we solved a problem and why we made a particular decision
- Use technology (such as calculators and computer applications) to help solve problems
- Understand patterns and trends so that we can make predictions (for example, we can keep track of how much juice is consumed so that we know how much juice to buy each week)
- Manage our time and money (for example, we can calculate how much time we need to get to work, how much food we need to make meals and how much money we need to buy food)
- Handle everyday situations that involve numbers (such as figuring out when the next bus will arrive and dividing a recipe)

Before your child can learn mathematics, he or she needs to believe in his or her ability to do so. That's where you come in. You can be your child's first role model for learning. When you engage with your child in a supportive, relaxed atmosphere, your child will enjoy taking risks while having fun with math!

What are the connections to the curriculum?

The activities in this guide were selected to help your child see math in everyday activities. They also build on children's love of games. And they support the learning expectations in the Ontario mathematics curriculum.

Remember that you don't have to do all the activities in this guide to support your child's math success. And although many activities have been included, they don't cover everything in the curriculum. The guide offers a sampling of the kinds of activities that you can do with your child to encourage him or her to start thinking – and talking – mathematically!

You will recognize the names of the five strands of the Ontario mathematics curriculum from reading your child's report card.

The Five Strands

- Number Sense and Numeration
- Patterning and Algebra
- Measurement
- Data Management and Probability
- Geometry and Spatial Sense

Learning to Think (and Talk) Like a Mathematician

The Ontario mathematics curriculum emphasizes seven processes that are essential for learning mathematics:

- Problem solving
- Reasoning and proving
- Reflecting
- Connecting
- Selecting tools and computational strategies
- Representing
- Communicating

In each grade, a set of "mathematical process expectations" describes how children actively learn and apply mathematical understanding.

Ontario Mathematics curriculum:
www.edu.gov.on.ca/eng/curriculum/elementary/math18curr.pdf

NUMBERS ARE EVERYWHERE!

You will find activities that support **Number Sense and Numeration** on the orange pages. This is the strand in the Ontario mathematics curriculum that is about understanding how numbers work and how they relate to each other. It also covers the basic operations: addition, subtraction, multiplication and division. Number Sense and Numeration provides the foundation for mathematical thought.

Legend

- Numbers are everywhere!
- How high? How low? How much? How little?
- What's your angle on that?
- Over and over again!
- What are the chances?

So Many Things to Count!

Benefits

When children first begin to count, they learn important mathematical ideas:

- One-to-one correspondence (one number for one object)
- Stable order (we count 1, 2, 3, 4, … not 1, 2, 7, 5, …)
- Cardinality (the last number counted tells how many)

Tip!

When children are learning to count, they like to touch, point to and move objects as they say the number aloud – so encourage them to!

- Have your child count toys, kitchen utensils, items of clothing as they come out of the dryer, collections (such as stickers, buttons or rocks) and any other items your child shows interest in counting.
- Mix it up! Have your child count a set of objects but start at different places in the set (for example, start counting in the middle of the set rather than at the beginning). This helps to develop the idea that the counting of objects can begin with any object in a set and the total will still be the same.
- Sing counting songs and use counting in meaningful ways in games, such as Hide-and-Seek. Counting games, rhymes and songs exist in every culture. Some counting songs and rhymes help children to count forward and backward as well.
- Have your child skip count (counting by twos, fives or tens) to count larger groups of items quickly. Use such objects as blocks, pasta pieces, toothpicks or buttons.

How Many?

Benefits

As children count, they learn to connect quantities (such as five buttons) with their number names (such as the word five) and symbols (such as 5).

- Develop your child's awareness of the symbols used to represent numbers by making it a game. Look for number symbols in your home and neighbourhood: on the television remote, on the microwave, on the telephone keypad, in flyers and media, on signs and on team sweaters.
- Play a number version of I Spy. For example, "I spy something that has the number five on it," or "I spy something in this room that there are three of."
- Ask for your child's help to count items in your home. "I wonder how many chairs we have around the table? In this room? In the house?" Count windows, light switches, lamps or beds. You might record "how many" by using a combination of numbers and pictures.

Solve Everyday Problems

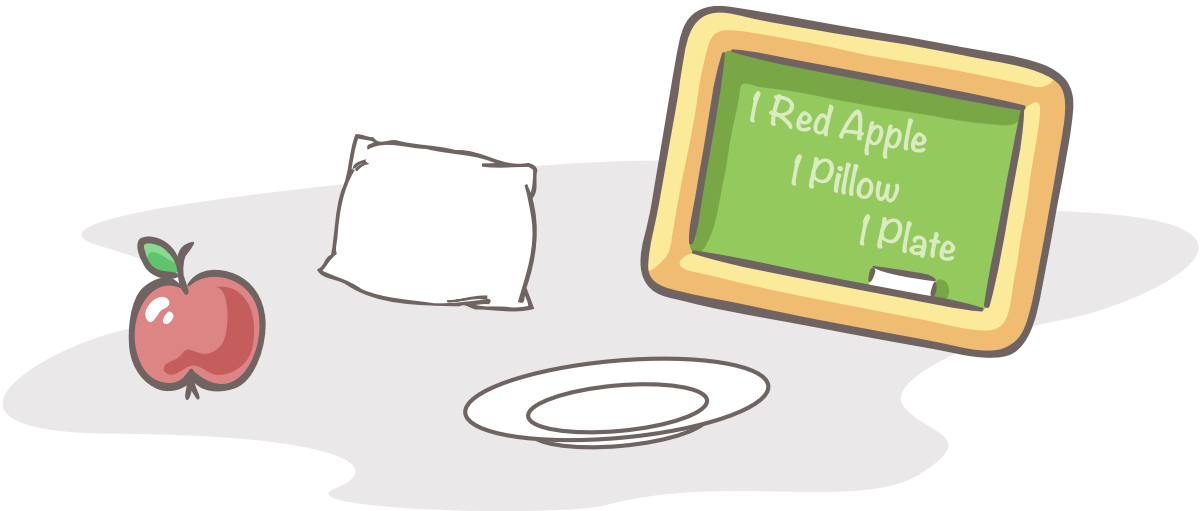
Tip!

Encourage your child to talk about and show a math problem in a way that makes sense to her or him – for example, your child may act it out, use the actual materials, draw it or count on his or her fingers!

Involve your child in using numbers to solve problems and make everyday decisions. You might ask the following:

- "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? How many utensils?"

More challenging situations might involve adding or subtracting larger numbers, or situations in which your child has to add or subtract more than once to solve the problem.



Adding and Subtracting Made Fun

Benefits

By playing these games, your child will learn there is no right way to add and subtract – mathematicians use a variety of strategies.

Tip!

Encourage your child to use a strategy that makes sense to him or her – for example, a "counting-on" strategy might help your child keep track of the score in a game, starting with the larger number (such as 12) and then counting on the remaining quantity (such as 13, 14, 15, …).

You can make up games that involve adding and subtracting numbers by using number cubes and number cards. Have your child help you make four or more sets of number cards. Each card will have a number from one to ten on one side of it. Here are some games to try:

- Higher Number. Shuffle or mix up the cards and then leave them face down in a pile. Each player takes two cards and adds the numbers. The player with the higher sum gets the other player's cards. Players continue to take and add up two cards at a time until no cards are left. The player with more cards is the winner. You can play the same game with subtraction, but it would be called Lower Number. The player with the lower difference (answer) gives his or her cards to the other player. The person with the fewest cards at the end is the winner. You can play the same game with multiplication.
- Number Cube Twice. Each player rolls two number cubes and adds the numbers shown. The higher number wins. You can play the same game with subtraction and multiplication.

The Broken Calculator Game

Benefits

Mathematicians know that there are different ways to represent a quantity – for example, 18 can be represented as 20 – 2 and as 15 + 3.

- Ask your child to pretend that the number 8 key on the calculator is broken. Ask how he or she can make the number 18 appear on the screen without the 8 key. (Sample answers include 20 – 2 and 15 + 3).
- Ask other questions of the same type by using different "broken" keys. Make this task easier or more challenging by varying the number your child must show on the calculator.

One Half Equals One Half – Or Does It?

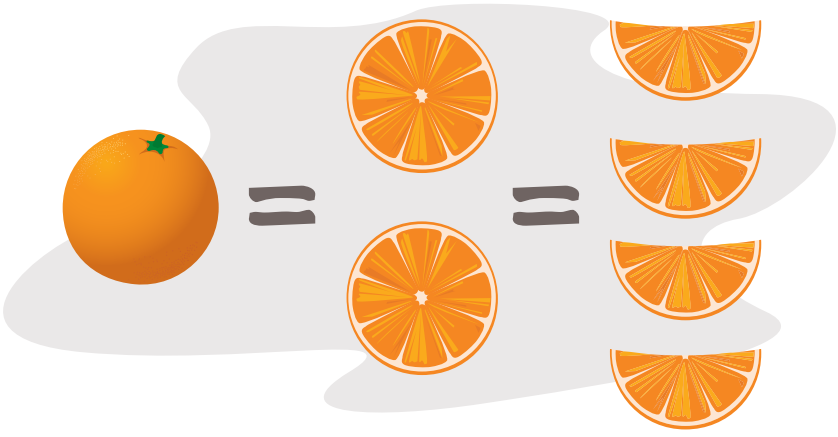
Benefits

A fraction shows the relationship between a part and the whole. When comparing two fractions, your child will learn to consider what the size of the "whole" is.

Tip!

Children come to know that one half of a small amount (such as a short rope) may be much smaller than one third of a large amount (such as a longer rope).

- With your child, gather several similarly shaped objects, such as a piece of paper, a towel, a placemat, a picture frame, a mirror, a magazine and a book.
- Ask your child to show you one half of each object, perhaps by using a string to mark the halfway point. This is also an opportunity for your child to see that fractional portions must be of equal size.
- Compare one half of a towel with one quarter of a blanket. Ask, "Is one half always larger than one quarter?" Use other materials to extend the conversation to a variety of situations, such as portions on different-sized plates or space in different-sized rooms.



Money Games

Benefits

Numbers can be represented in many different ways. This is the math idea your child will learn from playing money games.

Tip!

Children may start totalling one type of coin because they find it easier. Which coin does your child total first: dimes or quarters?

- Find out which coin your child prefers to total first. This may tell you the number by which he or she is most comfortable skip counting. Place a variety of coins in a pile, and ask your child to tell you the total amount for each coin. For example, there might be 85 cents in nickels and 50 cents in dimes. Observe your child as he or she begins sorting and totalling the coins. Ask your child how he or she chose which coin to total first. Suggest that you both race to total the coins that your child is less comfortable with. For example, if your child is comfortable counting nickels, race to count quarters instead. The first person to total those coins wins.
- The Money Game. One person is the banker and the other is the accountant. You can alternate roles with your child in the game. Use amounts of money that can be shown by using coins only – for example, $1.75.
    1. Banker: "I have $1.75 in my bank. What combination of coins might I have?" The accountant shows one or more possible combinations.
    2. Banker: "I have $1.75 in my bank. What is the smallest number of coins I could have to make this amount?" The accountant uses the fewest coins possible to show the amount.
    3. Banker: "I have $1.75 in my bank. I have ten coins. What coins could they be?" The accountant uses ten coins to show the amount.
- You can make the Money Game easier or harder by varying the number of coins you are playing with or by restricting the types of coins (for example, just dimes and nickels).

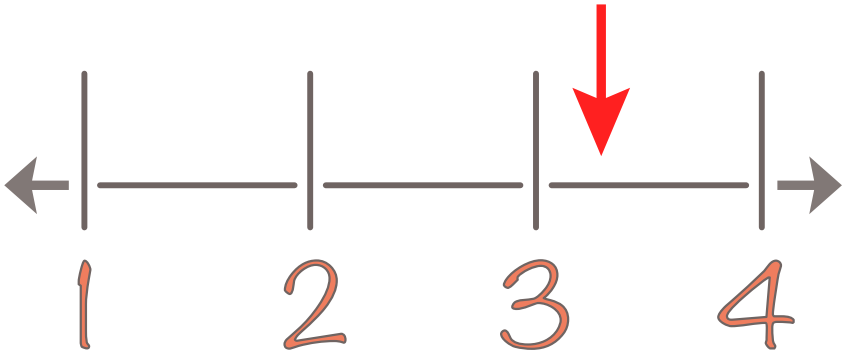
What's My Number?

Benefits

Thinking about how a number compares or relates to another number helps us to think about numbers like mathematicians do – flexibly, that is!

Tip! Watch for the strategies your child is using to narrow down the possibilities when playing the game What's My Number?

- A number line is a visual tool used to compare numbers. Here's an example of a number line:



- The red arrow pointing down shows the decimal number 3.2 on the number line.
- Think of a decimal number to use in the game. For example, tell your child, "My decimal number lies somewhere on this number line. It is greater than 1 and less than 4."
- Your child now tries to guess your number by asking questions to which you can give only a yes or a no response. For example, "Is the number between 2 and 4?" "Is the number greater than 3.5?" Continue until your child guesses the number you have picked and writes your number on the number line where it belongs.
- Reverse roles and let your child pick a decimal number and a number line and repeat the process.

Proportional Thinking Is All Around Us

Benefits

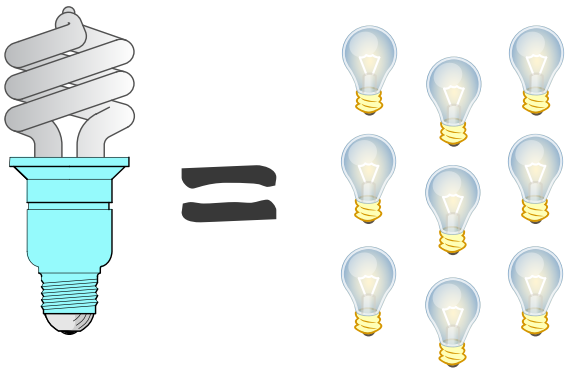
With lots of experience in making comparisons, your child will eventually progress to proportional thinking – that is, being able to make comparisons by using multiplication.

Tip!

Qualitative comparison: "The adult is taller than the child."
Additive comparison: "The adult is 100 centimetres taller than the child."
Multiplicative comparison: "The adult is twice as tall as the child."

Look for situations involving proportional thinking in real life. Have your child explain his or her thinking. Some examples are provided here:

- Mr. C.'s car lights are not working at full strength. They are dimming and losing 25% of their brightness. Should he drive at night? Why or Why not?
- Gabriella promises to help her sister to do her paper route each day. Her sister says she'll give her one quarter of her profits. Is this a good deal for Gabriella? Explain why.
- Explain the meaning of this illustration. What decisions could a family make with this information?

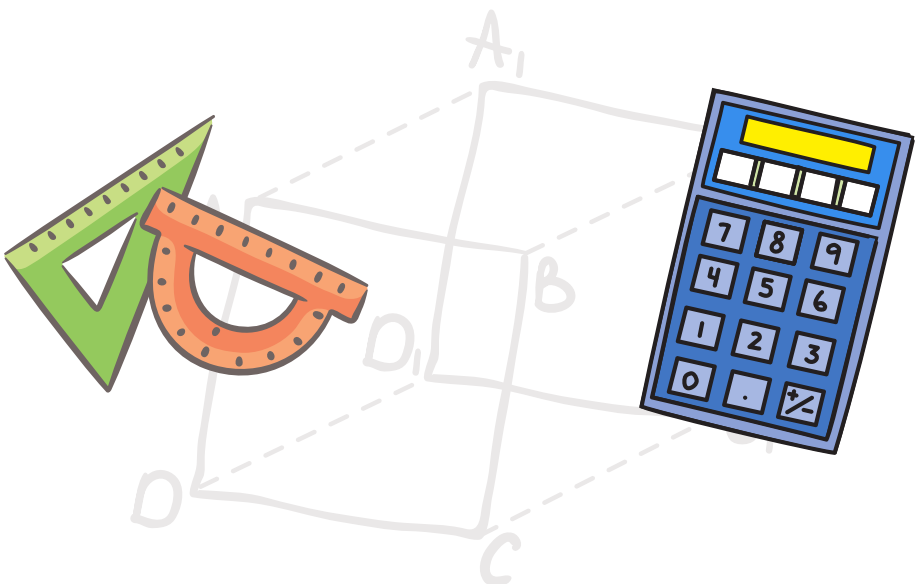


HOW HIGH? HOW LOW? HOW MUCH? HOW LITTLE?

You will find activities that support **Measurement** in the purple pages. This is the strand in the Ontario mathematics curriculum that introduces your child to how mathematicians determine the height, length and width of objects. It also explains how to determine the area that objects cover, the amount that objects hold (capacity) and the space that objects take up (volume).

Legend

- Numbers are everywhere!
- **How high? How low? How much? How little?**
- What's your angle on that?
- Over and over again!
- What are the chances?



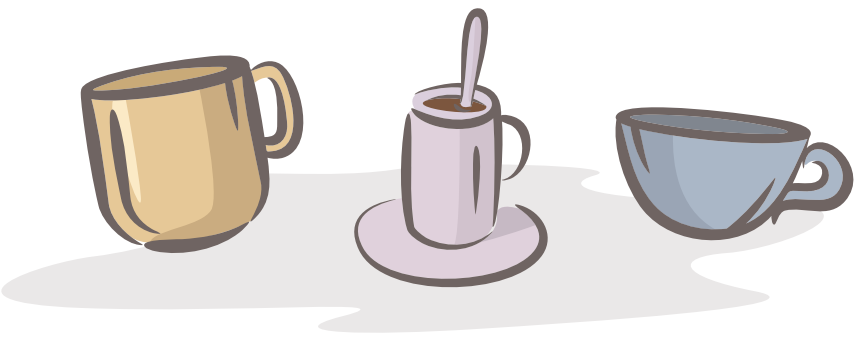
Comparing Things Around the Home

Benefits

Just by comparing items around the home, your child can begin to understand some basic principles of measurement:

- Sometimes, we can estimate an amount. We don't always need an exact measure.
- The same object can be measured in different ways.
- A measuring tool needs to be used the same way each time.

- Ask your child to estimate how many of a grocery item (for example, a type of fruit or vegetable, bread or pet food) your family will need for the week. Ask, "Why do you think that amount will be needed?" At the end of the week, have your child count the number actually used.
- Gather containers, boxes and packages from the cupboard. Ask your child to put them in some type of order (for example, taller and shorter, holds more and holds less, empty and full, heavier and lighter).
- Gather empty containers of all sizes and a coffee scoop, a plastic cup or the scoop from a box of laundry soap. Have your child use sand in a sandbox or water in the sink to measure and compare the capacity of several containers. Have your child count and compare the number of scoops or cups it takes to fill each container. Ask, "Which container held the most? Which one held the least?"



How Long Does It Take?

Benefits

Learning to use standard units of time takes practice and experience. When your child connects the passage of time to personal events, he or she will begin to develop an understanding of measurement terms involving duration:

• *Longer* and *shorter* • *Faster* and *slower* • *First* and *last* • *Before* and *after*

- Use cues to let your child know the passage of time (for example, "It took us only two minutes to tidy up your toys"). Tell your child the time in the context of daily activities (for example, "It will be 7 p.m. in ten minutes and time for your bath").
- With your child, use a clock to know how much time it takes to get to school, eat meals, get ready for bed or play a game.
- Involve your child in learning to organize personal and family events on a calendar. Have your child write on the calendar some favourite "away from home" activities (such as playing a sport, going to the library or visiting a friend) and what time the activity will take place (for example, soccer 7 p.m. to 8 p.m.).

Weather and More Weather

- Put an outdoor thermometer outside a window for you and your child to view together. With your child, record the temperature over a day, a week or a few weeks. Ask your child to look at the recordings and find which temperature was the warmest and which was the coldest. Ask your child how the temperature affected his or her activities. Have your child compare the temperature from your outdoor thermometer with the temperature reported on the news. Discuss any differences and the possible reasons why.

Estimation: An Important Mathematical Skill

Benefits

When to round up or round down, how to keep track of a running total – soon these estimation strategies will become second nature to your child!

Tip!

Friendly numbers are numbers that are easy to work with mentally, and children can use them to estimate an answer. What friendly numbers are helping your child to track the total when rounding to the nearest dime? Quarter? Dollar?

- When you are shopping, have your child keep a running total of how much you are spending by using prices that he or she rounds up or rounds down. For a challenge, set a limit on the amount of money you will spend.
- Give your child an imaginary budget to spend at his or her favourite store (flyers or online catalogues may be helpful). Without writing down the amounts, have your child choose items to purchase. He or she will have to use estimation to stay within the budget. Then, have your child add up the actual costs. Did she or he stay within the budget? For a challenge, help your child estimate any taxes.

Measurement Matters

Benefits

Once your child understands how the metric system is organized and how the units relate to one another, conversions will be a snap!

Tip!

The metric system is organized like this:
10 millimetres = 1 centimetre
100 centimetres = 1 metre
1000 metres = 1 kilometre

Another way to think of the metric system is that the metre is the basic unit of length:
A kilometre is 1000 metres.
A centimetre is 1/100 metre.
A millimetre is 1/1000 metre.

With your child, look for situations involving metric measures, and discuss and compare them:

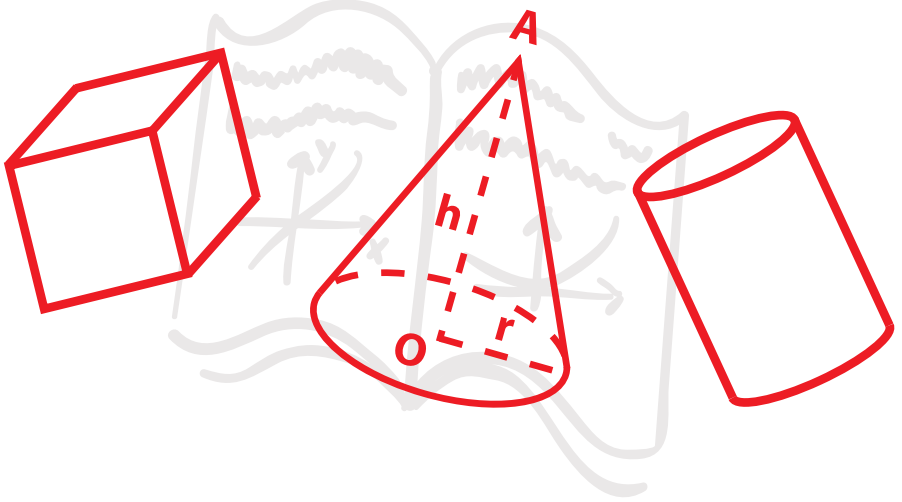
- When cooking or baking, ask your child to help you discover what the measurements given in grams would be in kilograms (or the reverse).
- When building something, ask your child to find what the measurements given in centimetres would be in metres.
- When travelling, ask your child to find what the measurements given in kilometres would be in metres.

WHAT'S YOUR ANGLE ON THAT?

You will find activities that support **Geometry and Spatial Sense** in the red pages. This is the strand in the Ontario mathematics curriculum that builds your child's foundations for this branch of mathematics and for success in many professions, from construction and industrial design to the visual arts. Children who become familiar with shapes and spatial relationships in their environment will be prepared to understand the principles of geometry in later grades.

Legend

- Numbers are everywhere!
- How high? How low? How much? How little?
- **What's your angle on that?**
- Over and over again!
- What are the chances?



Clue Game

Benefits

This game introduces your child to the foundations for geometric thought – namely, that the location of objects can be described mathematically.

- Pick an object and give your child clues to that object by using directional language: up, down, over, under, between, through, beside, behind, in front of and on top of.
- You can make the game more challenging:
  - Give two-part directions – for example, "It is on top of the table and to the right of the notebook."
  - Have your child ask questions such as, "Does it have a flat top?" "Is it under the table?"
  - Give clues about objects that are in another room so your child has to visualize the object.

Familiar Shapes in Our World

- When talking with your child, identify things by their shape and size: "Please pass me the rectangular placemat, the largest box out of the cupboard, the square-shaped cracker and the circular plate."
- Ask your child to look for two-dimensional shapes, such as circles, squares, triangles and rectangles, on objects at home or outside. For example, help your child find various shaped street signs and name the shapes that are on them.
- 3-D Hunt. Help your child look for three-dimensional objects: cubes, cones, spheres (such as a ball), prisms (such as a box), pyramids and cylinders. Talk about how a pop can or a paper towel roll is like a cylinder.
- Play I Spy with your child by asking him or her to guess an object you identify by its shape: "I spy something that is round," "I spy something that has a cylinder shape." Make this game more challenging by stating two shapes: "I spy something that is round and has a square on it."

Mapping My World

Benefits

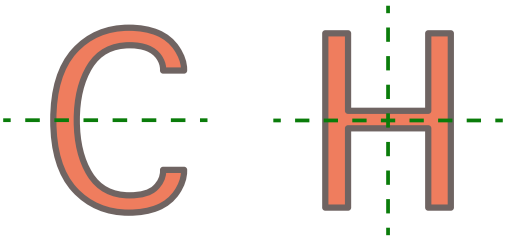
In this activity, your child will learn some basic concepts about maps – most importantly, that pictures and symbols on a map represent actual objects in the world.

Tip! Creating a concrete (three-dimensional) map helps your child to develop concepts about paper (two-dimensional) maps.

- Help your child make a map of a familiar setting (such as his or her bedroom or the park) by using small objects to represent larger objects (for example, a paperclip can represent a bed, or a block can show the location of a tree).
- Talk with your child about where you live in relation to where a friend lives or in relation to the corner store. Use directional words and phrases, such as *beside* and to *the right of*. Together, draw a map of your neighbourhood, marking landmarks and familiar places.

Symmetry Is All Around Us

- With your child, identify all the symmetrical capital letters. Have your child sort the capital letters according to whether they have one line or two lines of symmetry. For example, C has one horizontal line of symmetry; H has two lines of symmetry, one vertical and the other horizontal.



- Go on a symmetry hunt. With your child, find shapes, objects, patterns and designs around your home that have lines of symmetry. Discuss whether they have horizontal, vertical or diagonal lines of symmetry. Look at wallpaper, floor tiles, pictures and designs on packaging.

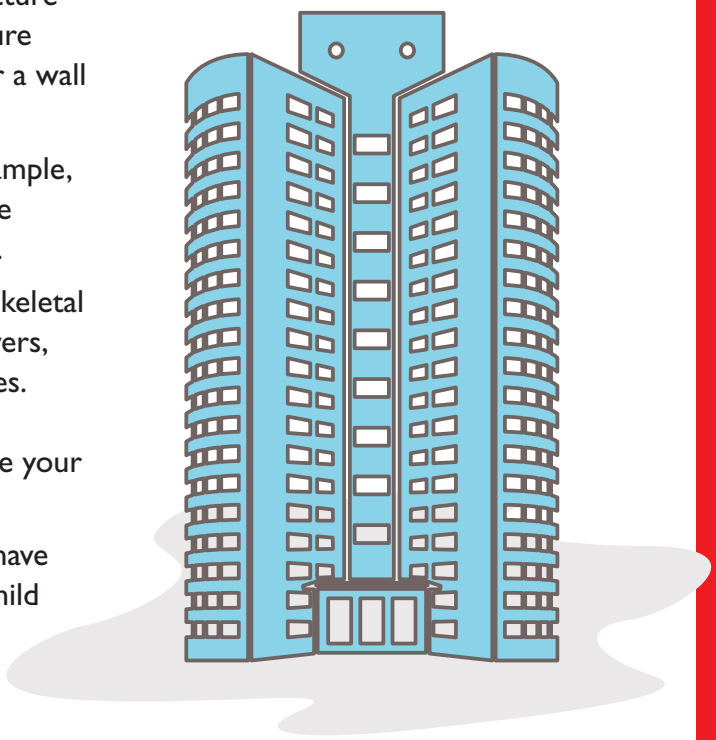
What Shapes Make Structures Stable?

Benefits

In playing these games, your child will come to understand that some shapes are more stable than others.

Tip! Building activities help your child to think about how certain shapes keep things from falling down.

- Invite your child to use 50 straws or tightly rolled tubes of newspaper and some tape to build the tallest freestanding structure that he or she can build. The structure must not be attached to the floor or a wall or a piece of furniture.
- Ask your child which shapes (for example, rectangle, triangle or circle) he or she thinks will make the structure stable.
- With your child, look at pictures of skeletal structures, such as hydroelectric towers, roller coasters and suspension bridges. Ask your child which features of the structures make them stable and have your child explain why.
- Ask your child whether the designs have examples of symmetry. Have your child explain how he or she knows.

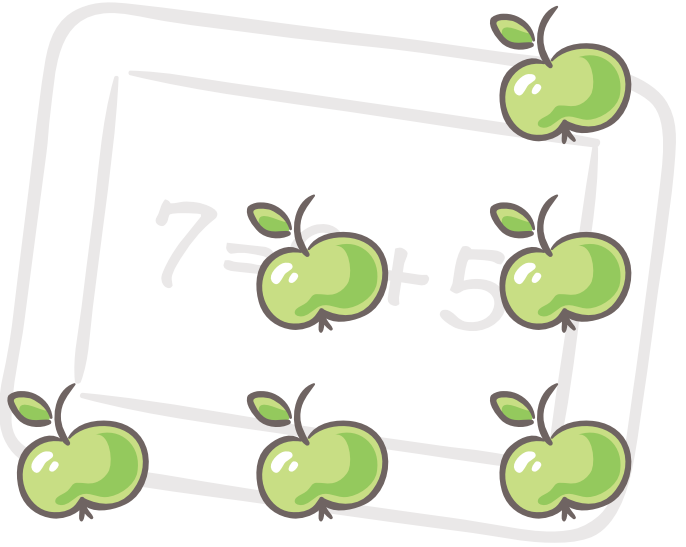


OVER AND OVER AGAIN!

You will find activities that support **Patterning and Algebra** in the green pages. This is the strand in the Ontario mathematics curriculum that helps prepare children for the study of number sense, measurement, geometry, algebra and data management in later grades. The ability to recognize and identify patterns helps children make predictions based on their observations.

Legend

- Numbers are everywhere!
- How high? How low? How much? How little?
- What's your angle on that?
- **Over and over again!**
- What are the chances?



Listening for Patterns

- Clap your hands and stomp one foot in a sequence (such as clap, clap, stomp; clap, clap, stomp; clap, clap, stomp). Have your child repeat the same sequence. Then together create variations of the pattern.
- Have fun teaching your child simple dances that include a sequence of steps and movements.

Patterns at Home or in the Neighbourhood

Benefits

Help your child to recognize the patterns that are all around – and to describe them by using mathematical words, such as *repeat, over again, it's the same* and *it changes to*.

- Your child will find patterns in clothing, in wallpaper, in tiles, on toys and among trees and flowers. Encourage your child to describe the patterns found. Have your child try to identify the features of the pattern that repeat.
- With your child, try searching for images on the Internet by using such keywords as "patterns around us."

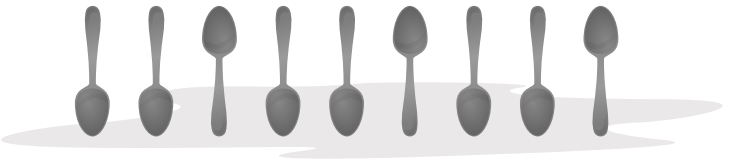
Describing Patterns

Benefits

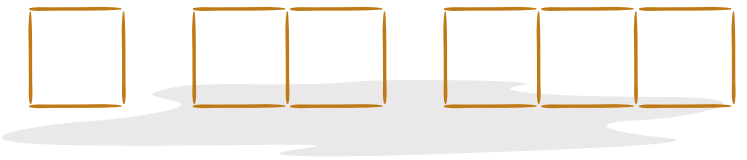
In a repeating pattern, the pattern core is the part that repeats over and over – for example, in the pattern ABB ABB ABB, the pattern core is ABB. Help your child recognize the structure of repeating patterns in these fun exercises!

Tip! Charts, tables and graphs are some ways to highlight patterns.

- Lay a row of nine spoons so that each handle points up or down in a pattern with a core of up, up, down (up, up, down; up, up, down; up, up, down). Ask your child to extend the pattern.



- Make this task more challenging and ask your child to describe and say the patterns aloud:
  - Make the pattern core longer – for example, up, up, down, up; up, up, down, up; up, up, down, up.
  - Change one of the elements in the pattern core – for example, up, up, down, sideways; up, up, down, sideways; up, up, down, sideways.
- Explore growing patterns with your child by using toothpicks or straws. Ask your child to keep the pattern growing. What comes next?



Predict How Many

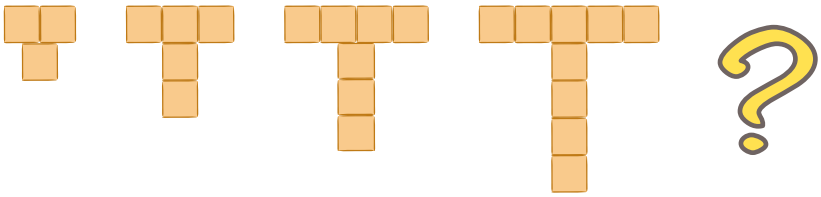
Benefits

This activity helps your child to think about how a pattern continues beyond what he or she can see – the basis for mathematical predictions!

Tip!

Help your child to understand by showing the repeating part of the pattern at least three times. For example, in the pattern 3, 6, 5, 10, 9, 18, 17, the pattern could be described as double the number and subtract one, double the number and subtract one, double the number and subtract one.

- Use bread tags or blocks to create a growing (or shrinking) pattern by using an initial in your name. Here's an example for a growing pattern for the letter T:



- Ask your child to try to create the next three T's in the pattern, and ask her or him to describe what the rule is for the pattern. The pattern shown starts with three blocks and adds two blocks each time.
- Ask your child to try to figure out how many blocks he or she would need for a Size 15 letter T. This type of question allows children to generalize the pattern rule and to begin to solve more complex pattern problems without having to build the pattern each time. (It would take 31 blocks to build a Size 15 letter T.)
- Switch roles and ask your child to create a letter pattern for you.

Guess My Rule!

- Create a numerical pattern and ask your child to predict a number later in the pattern. For example, ask your child to predict what number will be in the eighth place in a pattern such as 1, 4, 7, 10, ….

Place	1	2	3	4	5		
Number	1	4	7	10			

- Your child might see a pattern rule from one number to the next and say, "I start with one and add three each time." By extending the pattern, she or he would then find the value of the eighth place (1, 4, 7, 10, 13, 16, 19, 22). Or your child might see a relationship between the place and the number, such as the eighth term would be 1 plus 7 threes or 1 + (3 × 7) = 1 + 21 = 22.

Looking for Patterns Among Multiplication Facts!

Tip! When children have the opportunity to develop their own reasoning, they also develop a greater understanding of a mathematical concept.

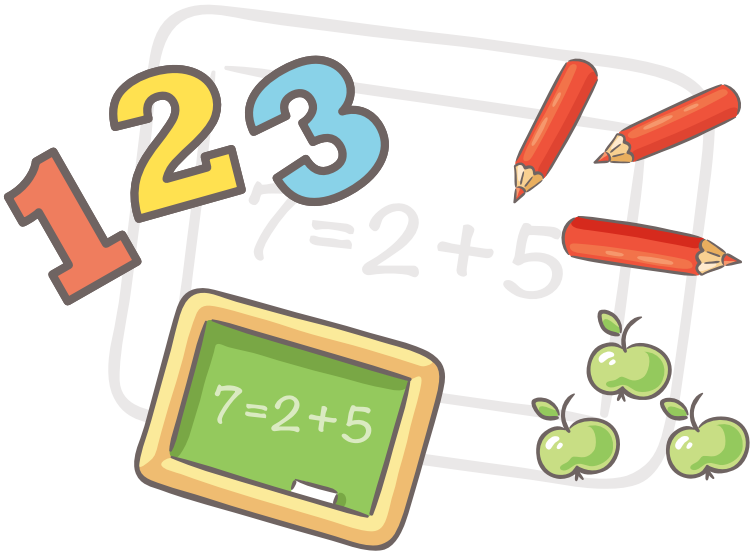
- Allow your child to explore a variety of ways that patterns can help him or her remember multiplication facts. For example, if your child cannot recall the product (answer) of 6 × 4 but does know that 6 × 2 = 12, he or she can apply the knowledge of the two times table to the four times table by using the strategy of doubling. When the product (answer) of 6 × 2 is doubled, it is the same as the product (answer) of 6 × 4.
- If your child cannot recall the product (answer) of 3 × 7 but knows that 2 × 7 = 14, he or she can add one more group of 7 to make 21. This strategy also works for the six times table. Children can use their comfort with the friendly-number five times table to solve the six times table – for example, the product (answer) of 4 × 6 is the same as the product (answer) of 4 × 5 + one more group of 4 to make 24.

WHAT ARE THE CHANCES?

You will find activities that support **Data Management and Probability** in the pink pages. This is the strand in the Ontario mathematics curriculum that introduces your child to how to collect, organize and interpret information. Every day children are presented with a vast amount of information, much of it involving numbers.

Legend

- Numbers are everywhere!
- How high? How low? How much? How little?
- What's your angle on that?
- Over and over again!
- **What are the chances?**



Sorting for Life

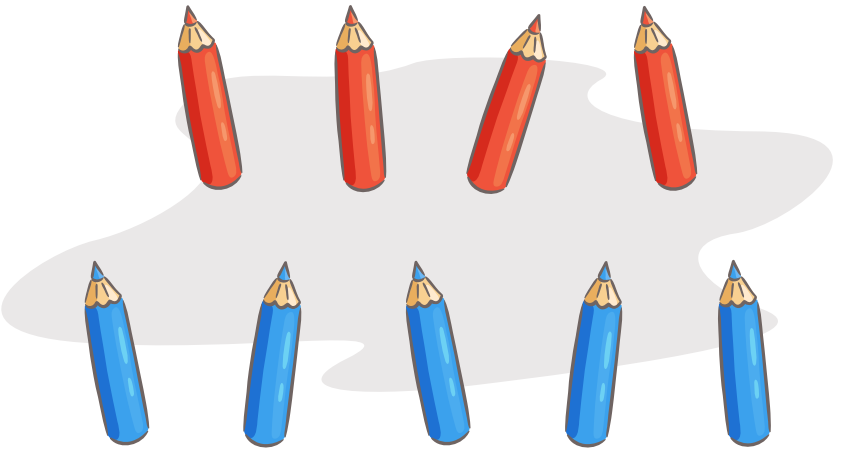
Benefits

Early experiences in sorting and classifying objects around the house can help prepare children for organizing data into meaningful categories.

Tip!

Children can often explain how they sorted objects but may have difficulty understanding how others have sorted the objects.

- Begin by thinking of a simple sorting rule (such as "Everything in the group is blue"), and sort some objects according to the rule. Ask your child to guess the rule. Reverse roles.
- Encourage your child to sort household items – crayons by colour, cutlery by type or shape, materials for the recycling box or items in the refrigerator and cupboard.
- Have your child sort objects into two groups: those that have a certain characteristic and those that do not (for example, a group of clothes that go on hangers and a group of clothes that do not). Talk about your child's thinking by asking, "How did you sort these?" "How are the objects the same? Different?" "Can you sort these another way?"



More Sunny Days or Rainy Days?

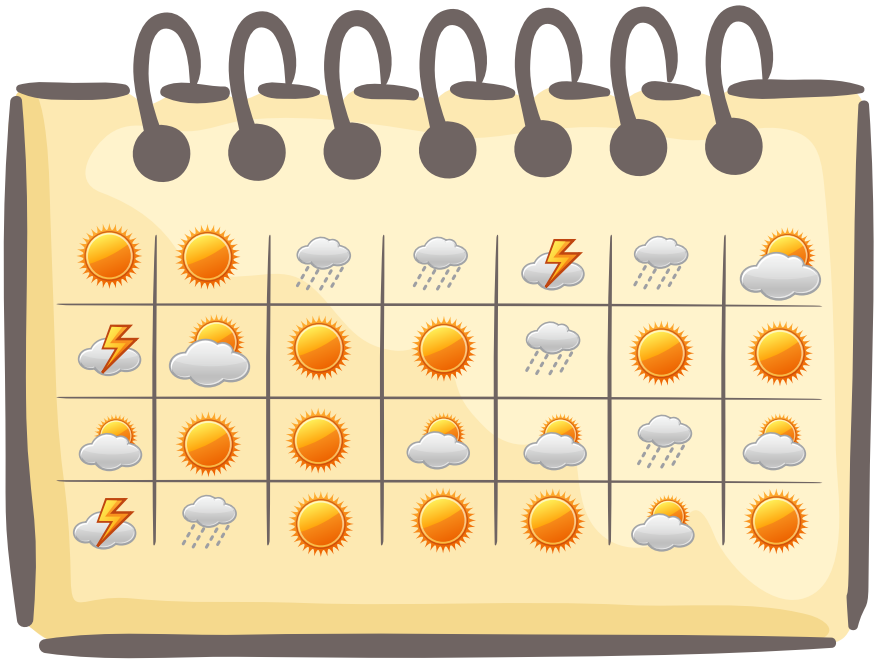
Benefits

Even young children can use simple graphs, tables, charts and other graphic organizers to help make sense of data.

Tip!

A pictograph is a graph that uses pictures to represent numerical data.

- Have your child draw pictures on a calendar to record each day's weather. At the end of a week or month, make a pictograph showing how many sunny days, cloudy days and rainy days were in that month.



Using Data to Plan a Family Event

Benefits

This activity will introduce your child to the reasons we collect and organize data in the first place – namely, to answer questions and to make plans for the future!

Tip!

Encourage your child to make decisions about:

- What survey questions to ask
- How to gather data (such as who will answer the survey questions)
- How to organize the data (such as by using a tally or drawing symbols beside names)

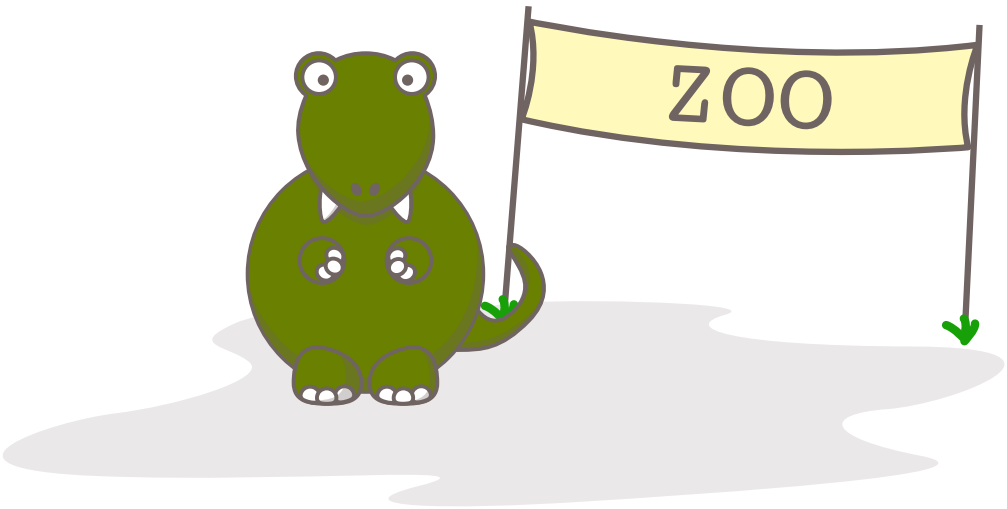
- Your child may want to conduct a survey about an upcoming family event – for example, "What kind of activity would family members most like to do?" "What types of food and beverages would people most enjoy?"
- Encourage your child to create survey questions that require more than a yes or no answer (for example, "What kind of drink would you like?" rather than "Would you like juice?").
- Let your child decide who will be surveyed (Just immediate family members? Extended family members? All children? Children and adults?).
- Ask how your child will track and share the survey information.
- After the survey, ask your child to think about how who was surveyed (the sample) influenced the results.

The Often, Sometimes or Never Game

Benefits

Through games, you can introduce your child to the language mathematicians use to describe the likelihood of an event happening: *certain, likely, unlikely, impossible* and *equally likely*.

- Have your child draw pictures of or talk about things your family does *always, often* and *sometimes* and some things your family *never* does. Ask your child what other everyday events he or she could talk about by using this kind of language.
- Try this game during a car ride. Call out events and have your child decide whether it is something that is *likely*, is *not likely* or will *never* happen. You are limited only by your imagination! For example:
  - We will swim in January.
  - We will swim outside in January.
  - A horse will fly through our kitchen window.
  - The leaves will change colour in the fall.
  - A dinosaur is coming to the local zoo.



How Do We Spend Our Time on the Weekend?

Benefits

This family survey gives your child experience in collecting primary data – pieces of information collected first-hand through surveys, observations and experiments.

Tip!

Encourage your child to start thinking about data:

- What are some ways you can gather and record your data?
- What would the data look like if you included weekdays?
- How might your findings influence our family's use of leisure time on weekends?

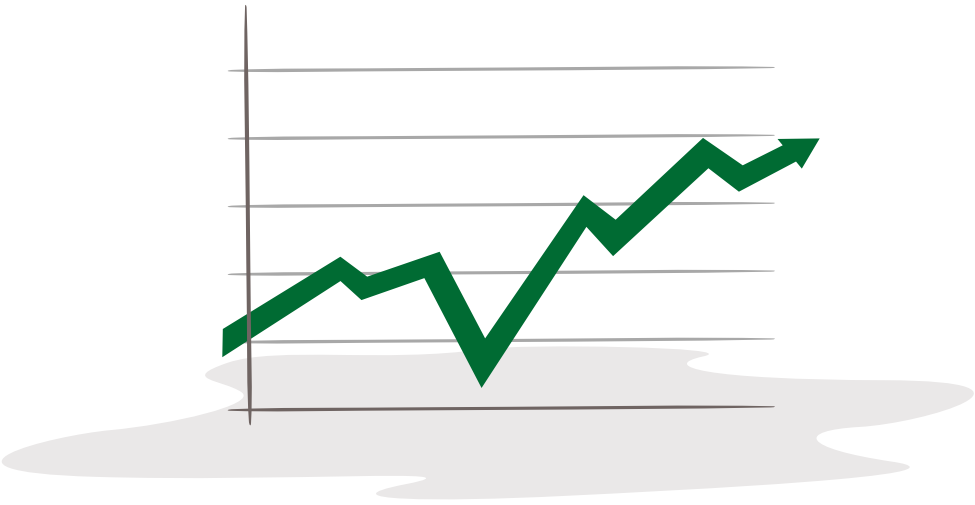
- People debate about the healthy use of leisure time. Different people have different viewpoints. Have a conversation with your child to get his or her ideas about this topic.
- Have your child collect some data about your own family's leisure time – for example, indoor versus outdoor activity, the amount of time spent on games, sports, visiting and walking and the amount of time spent in front of a screen (such as a television, computer, video game or handheld device).

Data Hunt

Benefits

Introduce your child to the idea of secondary data – data from a magazine, a newspaper, a government document or a database – through this fun activity.

- Talk with your child about an interest she or he has or a current issue in the news. What opinions, thinking and questions does your child have? What might your child like to find out more about?
- With your child, discuss these questions about secondary data:
  - What is the source of the data? How reliable do you think the data are? What questions do you have?
  - What point of view is put forward? What are the limitations of these data? Is anything missing?
  - How are the data useful in terms of what you are trying to find out? Are there any surprises or items of interest you notice?
  - Do the data raise any new questions for you?



ONLINE RESOURCES

Esso Family Math
The activities, research and information on this site help parents and children share their thinking and understanding of mathematics in a safe and relaxed atmosphere.

www.edu.uwo.ca/essofamilymath

Math Frog
Here you'll find resources and online games for Grades 4, 5 and 6.

http://cemc2.math.uwaterloo.ca/mathfrog/main.shtml

ABC Life Literacy
This resource introduces children to and teaches them about financial literacy.

http://abclifeliteracy.ca/financial-literacy-tips-and-resources

Figure This
This site has math games and challenges for children to do with their parents.

www.figurethis.org

Math Wire
This site hosts a variety of math tools, tests and games.

http://mathwire.com

PedagoNet
Here you'll find many math links and games.

www.pedagonet.com

Math Dictionary for Kids
This online tool helps children learn the definitions of math terms.

www.amathsdictionaryforkids.com

Math Forum
Tips, tricks and math problems specifically for elementary students are gathered on this site.

www.mathforum.org/students/elem/probs.html

National Library of Virtual Manipulatives
This online toolbox has age-appropriate virtual manipulatives from Utah State University.

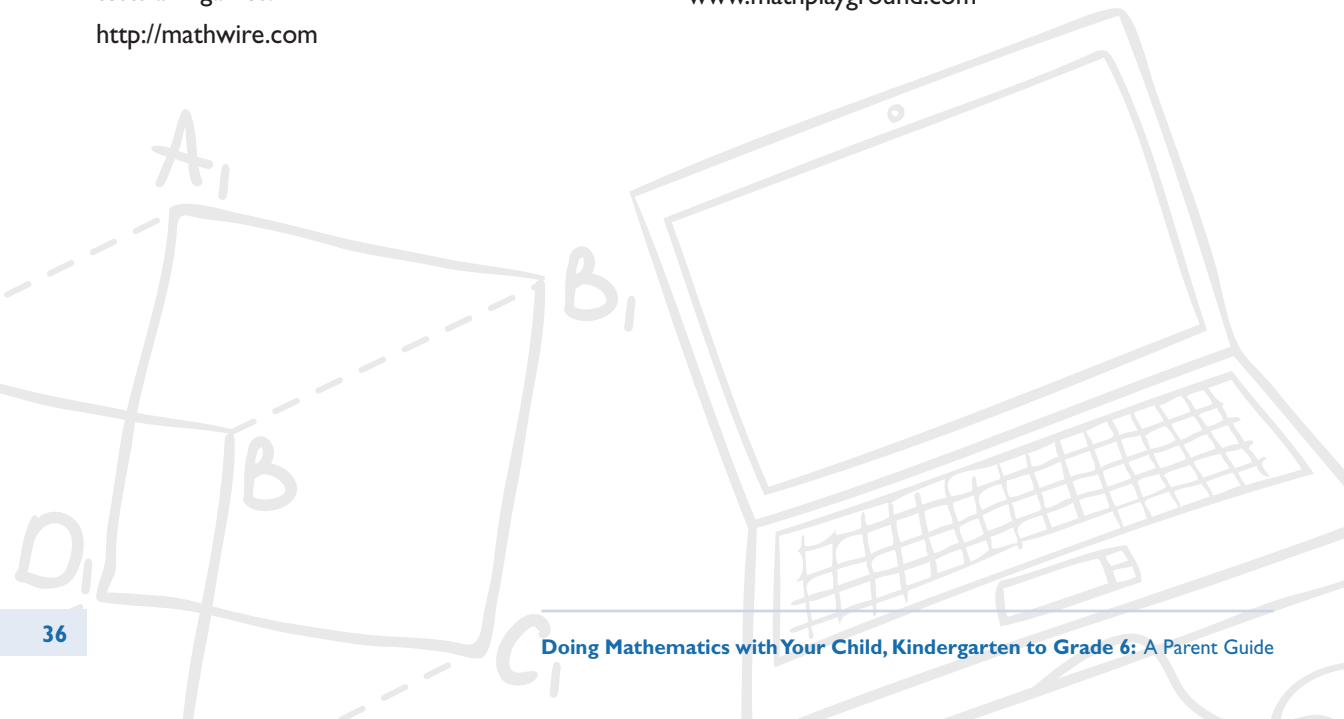
http://nlvm.usu.edu/en/nav/vlibrary.html

Kid Sites
You'll find a list of math sites for kids here.

www.kidsites.com/sites-edu/math.htm

Math Playground
This site has a variety of games and worksheets for age- and grade-appropriate math study.

www.mathplayground.com



TVOKIDS.COM AND MATH

NUMBER SENSE AND NUMERATION

Kindergarten to Grade 3

Caterpillar Count
www.tvokids.com/games/caterpillarcount

Connect the Dots with Artt
www.tvokids.com/games/connectdotsartt

Count with Artt
www.tvokids.com/games/countartt

Grade 4 to Grade 6

Tumbleweed's MathMaze (beginner and medium levels)
www.tvokids.com/games/tumbleweedsmathmaze

Bruce McBruce Doodle Dots
www.tvokids.com/framesets/play.html%3Fgame%3D51

Tumbletown Mathletics
www.tvokids.com/games/tumbletownmathletics

Big Wig Sub Shop
www.tvokids.com/games/bigwigsubshop

MEASUREMENT

Kindergarten to Grade 3

Clock Talk
www.tvokids.com/games/clocktalk

Grade 4 to Grade 6

Beat the Clock
www.tvokids.com/games/beatclock

Tumbletown Mathletics
www.tvokids.com/games/tumbletownmathletics

GEOMETRY AND SPATIAL SENSE

Kindergarten to Grade 3

Shapeville
www.tvokids.com/games/shapeville

Grade 4 to Grade 6

Triangle Alley
www.tvokids.com/games/trianglealley

Build Math City
www.tvokids.com/activities/buildmathcity

Pirates Maps and Traps
www.tvokids.com/games/piratesmapsandtraps

PATTERNING AND ALGEBRA

Kindergarten to Grade 3

A Lotta Dessert
www.tvokids.com/games/lottadessert

Grade 4 to Grade 6

Flower Frenzy
www.tvokids.com/games/flowerfrenzy

DATA MANAGEMENT AND PROBABILITY

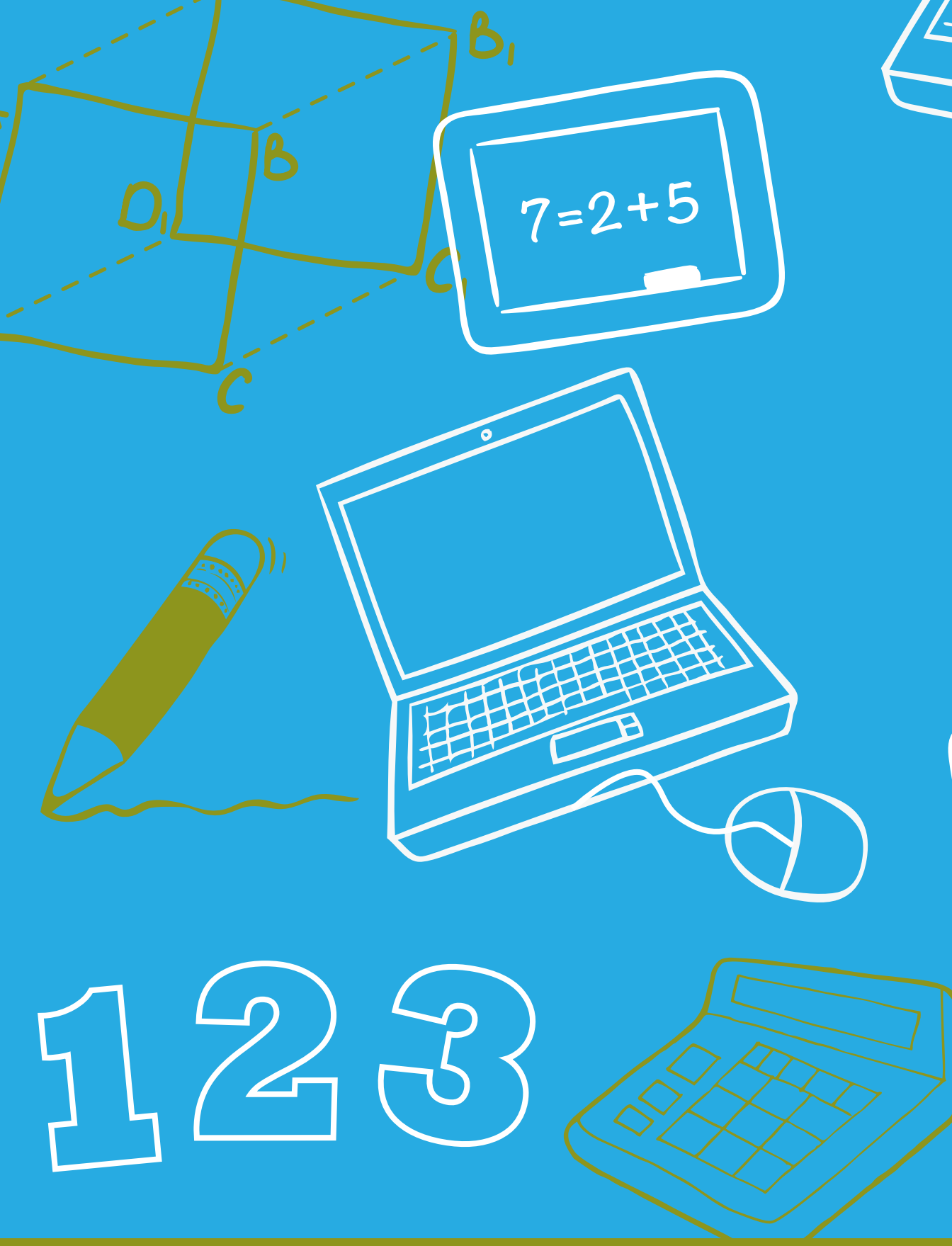
Kindergarten to Grade 3

Sort It
www.tvokids.com/games/sortit

Grade 4 to Grade 6

Space Trek Galaxy
www.tvokids.com/games/spacetrekgalaxy

Visit the Homework Zone at **www.tvokids.com** for free videos, games and activities to help your child with literacy development, math and science. Also visit **www.tvoparents.com** for Ontario-focused resources to support your child's learning journey.



Ontario Ministry of Education
Cette publication est disponible en français.
ISBN 978-1-4435-9373-1 (Print) ISBN 978-1-4435-9374-8 (PDF)
ISBN 978-1-4435-9375-5 (TXT)