



# Helping your child learn math

## A Parent's Guide


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Manitoba



Building for the Future

# Helping your child learn math

## A Parent's Guide

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Manitoba Education, Citizenship and Youth

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<http://www.edu.gov.mb.ca/ks4/docs/parents/learn/math.html>

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# A Word About This Guide

Manitoba Education, Citizenship and Youth provides Early Years teachers with a research-based mathematics curriculum. Hands-on learning activities, problem solving, communication, connections to everyday life, and strategic instruction are means to helping students develop mathematical skills and understanding.

This guide suggests simple activities that parents\* can do with young children at home. It will be most useful for parents of young children who are just beginning to explore math.

You don't need to do every activity suggested in this guide! Choose the ones that you think will be most helpful for you and your child. If you are the parent of a child who has exceptional learning needs, you are encouraged to use the suggestions in a way that suits the particular needs of your child.

Many other resources are available to help you help your child learn math. You may wish to consult your child's teacher. You may also want to find out more about the Manitoba mathematics curriculum and the province-wide Grade 3 Mathematics Assessment conducted over the first four to six weeks of Grade 3. The last page of this guide provides a list of other resources.

If English is not your child's first language, this guide can still be of help. The important thing is to help your child become interested in and enthusiastic about math, in the language that is most comfortable for you.

*\* In this guide, the word "parent" is meant to include guardians, caregivers, and other family members who can help young children learn math.*

# Why Is It Important for My Child to Learn Math?

Math skills are important to a child's success – both at school and in everyday life. Understanding math also builds confidence and opens the door to a range of career options.

In our everyday lives, understanding math enables us to:

- ▶ *manage time and money, and handle everyday situations that involve numbers (for example, calculate how much time we need to get to work, how much food we need in order to feed our families, and how much money that food will cost)*
- ▶ *understand patterns in the world around us and make predictions based on patterns (for example, predict traffic patterns to decide on the best time to travel)*
- ▶ *solve problems and make sound decisions*
- ▶ *explain how we solved a problem and why we made a particular decision*
- ▶ *use technology (for example, calculators and computers) to help solve problems*

**Knowing how to do math makes our day-to-day lives easier!**

# How Will My Child Learn Math?

Children learn math best through activities that encourage them to:

- ▶ *explore*
- ▶ *think about what they are exploring*
- ▶ *solve problems using information they have gathered themselves*
- ▶ *explain how they reached their solutions*

Children learn easily when they can 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.

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.

**This guide contains suggestions for everyday math activities that you and your child can have fun doing together.**

**Some of the activities include questions you can ask to help your child build problem-solving skills.**

At school, children learn the concepts and skills identified for each grade in the Manitoba mathematics curriculum in four major areas, or *strands*, of mathematics. The names of the four strands are: Number, Shape and Space, Patterns and Relations, and Statistics (Data) and Probability. The activities in this guide are connected with the different strands of the curriculum.

# What Tips Can I Use to Help My Child?

## 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.
- ▶ Point out the ways in which different family members use math in their jobs.
- ▶ Be positive about your own math abilities. Try to avoid saying “I was never good at math” or “I never liked math.”
- ▶ Encourage your child to be persistent if a problem seems difficult.
- ▶ Praise your child when he or she makes an effort, and share in the excitement when he or she solves a problem or understands something for the first time.

## Make math part of your child’s day.

- ▶ Point out to your child the many ways in which math is used in everyday activities.
- ▶ Encourage your child to tell or show you how he or she uses math in everyday life.
- ▶ Include your child in everyday activities that involve math – making purchases, measuring ingredients, counting out plates and utensils for dinner.
- ▶ Play games and do puzzles with your child that involve math. They may focus on direction or time, logic and reasoning, sorting, or estimating.
- ▶ Do math problems with your child for fun.
- ▶ When doing math with your child, use household objects such as measuring cups and containers of various shapes and sizes, as well as math tools such as a ruler and calculator.

## Encourage your child to give explanations.

- ▶ *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.)*
- ▶ *Suggest that your child act out a problem to solve it. Have your child show how he or she reached a conclusion by drawing pictures and moving objects as well as by using words.*
- ▶ *Treat errors as opportunities to help your child learn something new.*

***The “activities” section of this guide offers suggestions for putting these tips into action, and for helping to build your child’s math skills.***

# What Math Activities Can I Do With My Child?

## 1 Understanding Number

Numbers are used to describe quantities, to count, and to add, subtract, multiply, and divide. Understanding numbers and knowing how to combine them to solve problems helps us in all areas of math.

- ▶ **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. ♦ Count forwards and backwards from different starting places. ♦ Use household items to practise adding, subtracting, multiplying, and dividing.
- ▶ **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?” ♦ “We are having a birthday party with nine friends. If each person gets three party favours, how many favours do we need?” ♦ “Two guests are coming to eat dinner with us. How many plates will we need?”
- ▶ **Practise “skip counting.”** Together, count by 2s, 5s, 10s, 3s, and 4s. ♦ 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, 100, or even 1000.
- ▶ **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.
- ▶ **Play “Broken Calculator.”** Pretend that the number 8 key on the calculator is broken. Without it, how can you make the number 18 appear on the screen? (Sample answers:  $20 - 2$ ,  $15 + 3$ ). Ask other questions using different “broken” keys.



## 2 Understanding Shape and Space

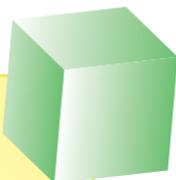
**Part A:** We use measurements to determine the height, length, and width of objects, as well as the area they cover, the volume they hold, and other characteristics. We measure time and money. Developing the ability to estimate and to measure accurately takes time and practice.

- **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? ♦ When you are shopping, have your child estimate the change from the \$20, \$30, \$40, or \$50 that you give to pay the bill.
- **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.

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- ▶ **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.
  - ▶ **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. ♦ Trade equal amounts of money. How many pennies do you need to trade for a nickel? for a dime?

## 2 Understanding Shape and Space

**Part B:** The ability to identify and describe shapes, sizes, positions, directions, and movement is needed in many work situations, such as construction and design, as well as in creating and understanding art. Becoming familiar with shapes and spatial relationships in their environment will help children understand the importance of these principles.



- **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." "What shape is a stop sign?"
- **Build structures using blocks or boxes.** Discuss the need to build a strong base. Ask your child which shapes stack easily, and why.
- **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 your 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 juice can is like a cylinder.



## 3 Understanding Patterns and Relations

We find patterns in nature, art, music, and literature. We also find them in numbers. Patterns are at the very heart of math. The ability to recognize patterns helps us to make predictions based on our observations. Understanding patterns helps prepare children for the study of mathematical relations.

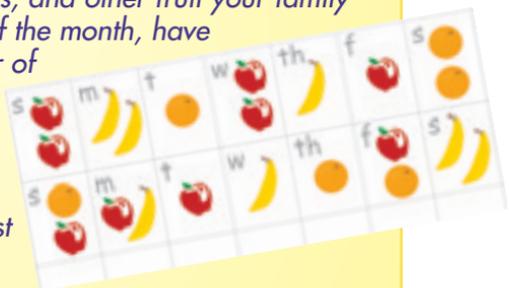
- ▶ **Look for patterns in storybooks and songs.** Many children's books and songs repeat lines or passages in predictable ways, allowing children to recognize and predict the patterns.
- ▶ **Create patterns using your body.** Clap and stomp your foot in a particular sequence (clap, clap, stomp), have your child repeat the same sequence, then create variations of the pattern together. ♦ Teach your child simple dances that include repeated steps and movements.
- ▶ **Hunt for patterns around your home 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.
- ▶ **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.

1	2	3	4	5	6	7	8	9	
11	12	13	14	15	16	17	18	19	
	21	22	23	24	25	26	27	28	29

## 4 Understanding Data and Probability

Every day we are presented with a vast amount of information, much of it involving numbers. Learning to collect, organize, and interpret data at an early age will help children develop the ability to manage information and make sound decisions in the future.

- ▶ **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, condiments on another.
  - ◆ Encourage your child to sort other household items – crayons by colour, cutlery by type or shape, coins by denomination.
- ▶ **Make a weather graph.** Have your child draw pictures on a calendar to record each day's weather. At the end of the month, make a picture graph showing how many sunny days, cloudy days, and rainy days there were in that month.
- ▶ **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 were 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. Discuss why you never do some things (swim outside in January).
  - ◆ Ask your child if it's likely to rain today. Is it likely that a pig will fly through the kitchen window?



# Where Can I Get Help?

Many people are willing to support you in helping your child learn math, 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 friends, and your child's caregivers can add their support and encouragement.*
- ▶ *If your child attends a child care centre, the staff there may be able to suggest additional math activities to do with your child.*

## Other Government Resources

Curriculum Information for Parents:

<http://www.edu.gov.mb.ca/ks4/cur/parents/>

Mathmatics Activities and Games:

[http://www.edu.gov.mb.ca/ks4/cur/math/activity\\_games.html](http://www.edu.gov.mb.ca/ks4/cur/math/activity_games.html)

Mathematics: *A Parent Report on What's New in Math:*

<http://www.edu.gov.mb.ca/ks4/docs/parents/mathmatters/index.html>

Assessment Information: <http://www.edu.gov.mb.ca/ks4/assess/>





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