CHAPTER 1

# Patterns in Mathematics

## Family Newsletter

Dear Parent/Caregiver:

Over the next two weeks, your child will be exploring shape and number patterns. Patterns are used in math to help solve problems. Much of your child's later number learning, such as multiplication, will be easier if they can recognize patterns. The goal will be for your child to recognize, extend, create, and describe shape patterns and number sequences. Your child will learn to place information in a table, find patterns in the numbers, and write a pattern rule.

Throughout this time, you and your child can practise some At-Home activities such as the following:

- Play a number pattern game with your child. Player A chooses a start number that is between 0 and 5. Player B decides how to change the number (e.g. add 3) and states the next term in the pattern (thinks 8 + 3 and says "11" out loud). Player A then continues the pattern by saying "14" and so on. The first person to reach 50 wins the round. The game can begin with a large number and the rule can be "subtract…." Winner would be the first to pass 0.
- Your child can use skip-counting patterns on the calculator to find out the age of each person in the family in months or weeks. For example, using 52 weeks = 1 year, enter 52 + 52 = = = = = = into the calculator to find the number of weeks in 7 years.
- Your child can use a one-month calendar to record activities that occur on a regular basis, such as weekly or daily—sports, groups, music lessons, favourite TV programs). Have them describe any patterns that they see.

You may also want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics and develop a positive attitude toward learning math and for books that relate children's literature to patterning. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using *Nelson Mathematics 4 Workbook*, pages 1 to 9 belong to Chapter 1. There is a page of practice questions for each of the eight lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

## Family Newsletter

Dear Parent/Caregiver:

Over the next three weeks, your child will be working with numbers to 10 000. Students will represent numbers such as 4725 in a variety of ways and situations. Relationships among numbers and among digits in numbers will be emphasized as students compare and order numbers, explore number patterns, and develop number sense. Your child will also work with play money as students estimate, count, and write money amounts up to $50.

Throughout this time, you and your child can practise some At-Home activities such as the following:

- Your child can read and write numbers found in newspapers or magazines that are between 1000 and 10 000.
- Your child can relate numbers of distances between places she or he has been or has heard about.
- Your child can research migration facts about other animals and compare them to the monarch butterfly.
- Your child can open a book (with a minimum of several hundred pages) to two different pages and compare the two numbers using clear math language.
- Your child can count out the amount of money needed when you are purchasing items together at a store.
- Your child can look through newspaper or store flyers and count out the bills and coins needed to purchase various items.

You may want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics and for books that relate children's literature to numbers up to 10 000. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using the *Nelson Mathematics 4 Workbook*, pages 11 to 19 belong to Chapter 2. There is a page of practice questions for each of the 8 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

# Family Newsletter

Dear Parent/Caregiver:

Over the next three weeks, your child will be learning about various ways to collect and organize data, making pictographs and bar graphs by hand and creating bar graphs and circle graphs using a computer. The goals will be for your child to learn to gather and organize information appropriately; to read and interpret tables, charts, and graphs correctly; and to understand and be able to explain how people use data.

Throughout this time, you and your child can practise some activities such as the following:

- Your child can practise collecting and displaying data. One way to do this is by collecting data about the time spent on various activities during the week. Your child can also predict which activity takes up the most or the least time. The data gathered can be displayed in a table, bar graph, or pictograph. For the pictograph symbol, your child can use stickers of one shape and size, cutting them in equal parts to create fractions.
- Your child can also start a collection of graphs from newspapers, magazines, and the Internet to illustrate the wide variety of information graphs are used to display.
- Your child can choose a regular activity (e.g., brushing teeth, making a sandwich) and write out step-by-step instructions for accomplishing it, breaking the task into steps small enough for someone else to do that activity in exactly the same way. Your child can then ask you to try to complete the activity using only those steps, in the sequence specified.

You may also want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics and develop a positive attitude towards learning math. The Web site also lists children's literature that can be related to data management. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using the *Nelson Mathematics 4 Workbook*, pages 20 to 29 relate to Chapter 3. The workbook includes a page of practice questions for each of the 8 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

# Family Newsletter

Dear Parent/Caregiver:

Over the next three weeks, your child will be learn to use paper and pencil to add two 4-digit numbers and to subtract a number from a 4-digit number. Your child will also learn how to estimate to determine the reasonableness of a computed answer. They will use mental calculation to add and subtract 2-digit numbers such as 40 − 19 and 52 + 28. Your child will learn that there are many different ways to add and subtract numbers mentally. They will also use addition and subtraction to solve money problems such as adding and comparing prices and making change.

Throughout this time, you and your child can practise some activities such as:

- Your child can examine advertising flyers for prices less than $50. For example, they might determine what items can be purchased with $40 and what change they can expect to receive. To make the problems more realistic, you can provide your child with figures for the expected taxes to include in their calculations.
- You can provide your child with various combinations of bills and coins and challenge them to determine the totals and what coins and bills can be used to make up certain amounts. For example, what coins and bills can he or she use to make $15?
- Your child can measure distances in centimetres and use them to solve addition and subtraction problems. For example, measure the sides of a table and calculate the perimeter or distance around. They can measure and use subtraction to determine the difference between the length and width of a room.
- You can provide your child with addition and subtraction calculations to estimate and then use a calculator to determine the reasonableness of his or her estimations.

You may want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics and develop a positive attitude towards learning mathematics, and for books that relate children's literature to addition and subtraction. Also check the Web site for links to other Web sites that provide on-line tutorials, math problems, and brainteasers.

If your child is using the *Nelson Mathematics 4 Workbook*, pages 30 to 40 belong to Chapter 4. There is a page of practice questions for each of the 10 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

# Family Newsletter

Dear Parent/Caregiver:

Over the next 3 weeks, your child will be investigating linear and time measurement. There will be opportunities to measure, to choose appropriate measurement units, and to relate measurement units to each other. The metric unit decimetre will be introduced. Students will also explore the reasoning behind using more than one unit when measuring (for instance, 1 m 55 cm). As well, they will find the perimeter of rectangles and begin to explore the relationship between length, width and perimeter. Your child will solve length problems and make use of diagrams as a problem-solving strategy.

Throughout this time, you and your child can practise some activities such as the following:

- Your child can look around the home and find objects that could be measured in decimetres. An appropriate activity would be to first estimate the measurement in decimetres and then compare their answer to the measured one. Your child can then change the decimetre measurements to centimetres.
- Using a household ruler, your child could practice measuring and record findings using millimetres, centimetres, and decimetres. It is important for children to practice measuring accurately using tools such as rulers.
- At home, you and your child can look for opportunities to measure how long certain activities take to complete in hours and minutes, such as completing homework, watching a video, or getting ready for bed. Reading clock faces to measure the length of time certain activities take will help your child build confidence in reading, reporting, and measuring time.

You may want to visit the Nelson Web site at **www.mathK8.nelson.com** for more suggestions to help your child learn mathematics and develop a positive attitude towards learning mathematics, and for books that relate children's literature to linear measurement and time. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child has been using *Nelson Mathematics 4 Workbook*, pages 41–48 belong to Chapter 5. There is a page of practice questions for each of the seven lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

## Family Newsletter

Dear Parent/Caregiver:

Over the next three weeks, your child will be learning multiplication and division facts to $9 \times 9 = 81$. We will be using a variety of strategies to remember these facts. The goal will be for your child to either recall or be able to apply a strategy to find each fact. We will also be using these facts to multiply by multiples of 10, such as 60, 80, and 200.

Throughout this time, you and your child can practise some activities such as the following:

- Your child can look around for things that come in 5s, 6s, 7s, 8s, and 9s. Then they can ask and answer questions, such as "Our house has 5 front steps. How many front steps would 6 houses like ours have?" (30)
- Your child can use division to show sharing packaged or sets of objects equally among family members. For example, this package has 24 cookies. Each person in our family can have 6 cookies because $24 \div 4 = 6$.
- Your child can locate items that come in arrays and identify the fact family for each array. For example, a carton of eggs shows an array. The fact family is $2 \times 6 = 12$, $6 \times 2 = 12$ , $12 \div 2 = 6$, and $12 \div 6 = 2$.
- Your child can find items that have a measure which is a multiple of 10 or 100. Then they can ask and answer questions, such as "A new bar of soap is 90 grams. How many grams are in 6 new bars of soap?" (540) and explain how they know. ($6 \times 9$ tens is 54 tens. 54 tens is 540.)

You may want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics and develop a positive attitude toward learning mathematics, and for books that relate children's literature to multiplication and division facts. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using the *Nelson Mathematics 4 Workbook*, pages 49 to 59 belong to Chapter 6. There is a page of practice questions for each of the 10 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

# Family Newsletter

Dear Parent/Caregiver:

Over the next 2 or 3 weeks, your child will be studying geometry, a very important strand of mathematics. Your child will have many opportunities to explore geometric concepts using concrete materials, think about the design of objects in the world around, and create designs. At this time, your child will be focusing on 2-D shapes. Your child will explore 3-D shapes later this year.

Throughout this time, you and your child can explore geometric ideas together through activities such as the following:

- You and your child might enjoy using the concept of similarity to enlarge drawings of cartoon characters. Draw a grid over the image, and then, on a piece of paper, draw the same grid, but with larger squares. Copy the shapes in the grid squares on the original onto the squares of the larger grid.
- You might play a simple card game to help your child identify shapes by name, as follows: make 20 cards showing names or drawings of quadrilaterals, 4 each of parallelogram, rhombus, trapezoid, square, and rectangle. Shuffle the cards. Then each player draws 4 cards. On a turn, a player can discard 1 card and pick 1 new card. The first player with 4 cards in 1 category (all are trapezoids, or parallelograms, and so on) wins.
- Your child might use drinking straws, cut to different lengths, to explore the different shapes they can make with different side lengths. They could also draw the shapes they create.
- You might help your child look for pictures in magazines that model symmetry.

You may also want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics and for books that relate children's literature to 2-D geometry. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using *Nelson Mathematics 4 Workbook*, pages 60 to 68 belong to Chapter 7. There is a page of practice questions for each of the 8 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

# Family Newsletter

Dear Parent/Caregiver:

Over the next three weeks, your child will be learning about standard area measurement units, including how to measure area using grids, how changes in shape affect perimeter and area, and how to solve area and perimeter problems. The problem-solving strategy of making an organized list is highlighted in this chapter.

Throughout this time, you and your child can practice activities such as the following:

- You and your child can play the Area Logic game on Student Book page 217.
- Identify and discuss opportunities around the house where knowing how to measure area and perimeter are needed; for example, putting up a fence, laying sod, wallpapering a room, tiling a floor, and selecting a tablecloth for the dining room table.
- Look for area patterns at home; for example, pictures on a wall, tiles, fields, buildings, interlocking brick in patios and sidewalks, quilts, brick walls and fireplaces, and fabric.

You may want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics, and for books that relate children's literature to area and grids. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using a *Nelson Mathematics 4 Workbook*, pages 69–76 belong to Chapter 8. There is a page of practice questions for each of the six lessons in the chapter and two Test Yourself pages at the end. If your child requires assistance, you can refer to the At-Home Help section in each Workbook page.

## Family Newsletter

Dear Parent/Caregiver:

Over the next two weeks, your child will be extending and applying the multiplication skills from Chapter 6 to multiply 2- and 3-digit numbers by 1-digit. One of the goals of this chapter is to create and solve multiplication problems using different strategies. Your child will use a variety of calculation methods, such as estimation, mental math, modelling and diagrams, and calculators, as well as pencil and paper when solving problems. This will help your child develop flexibility in their thinking, which can lead to better recall of facts. In addition, your child will learn that there are several effective pencil-and-paper methods for multiplying numbers with accuracy.

Throughout this time, you and your child can practise some activities, such as the following:

- Your child can create and solve their own 2- or 3-digit by 1-digit multiplication questions. They can use quantities encountered in daily life (e.g., My drink box holds 250 mL. I take a juice box to school every day. How much juice do I drink each week?), prices in advertising flyers or catalogues, or information from newspapers, reference books, and Web sites, or use dice to generate numbers for problems. Your child can explain to you the method they used to calculate the product (e.g., half of $250 \times 10 = 1250$ mL).
- Your child can find household items that are in the form of an array, such as game boards or a tiled floor. They can draw the array on grid paper, record the multiplication sentence, and determine the product.
- Your child can collect data about how many minutes are used in various recurring activities (e.g., combing hair, walking to school, doing homework, playing games), and then calculate how much time is spent on the activity in a week.

You may also want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics and for books that relate children's literature to multiplying greater numbers. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using the *Mathematics 4 Workbook*, pages 77 to 84 belong to Chapter 9. There is a page of practice questions for each of the 7 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

# Family Newsletter

Dear Parent/Caregiver:

Over the next three weeks, your child will be using different strategies to solve division problems. The relationship between multiplication and division that was introduced in Chapter 6 will be further developed. The goal is for your child to build on this relationship while learning a variety of strategies to solve division problems. Your child will also be required to explain their thinking behind answers to problems in order to consolidate their understanding of the concepts being taught.

Throughout this time, you and your child can practise some activities such as the following:

- Review multiplication and division facts to $9 \times 9$ with your child by utilizing flash cards or by having them recall fact families (e.g., $2 \times 8$, $3 \times 8$, $4 \times 8$) or by having them use repeated addition and subtraction to find a root number.
- Your child can look for things that involve division for sharing and/or division for grouping. For example, if there are 60 minutes of computer time and 3 children in your family, how many minutes would each child get to work on the computer?
- Your child can solve division problems with 3-digit numbers. For example, if there are 138 tulip bulbs to plant in 4 gardens, how many bulbs will there be in each garden?
- Your child can look to objects that are left over to formulate their own questions. For example, if there are 3 eggs left in the carton and everyone in a family of 4 had 2 eggs for breakfast, how many eggs were originally in the carton?

You may want to visit the Nelson Web site at **www.mathK8.nelson.com** for more suggestions to help your child learn mathematics and for books that relate children's literature to multiplication and division. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using the *Nelson Mathematics 4 Workbook*, pages 85 to 93 belong to Chapter 10. There is a page of practice questions for each of the 8 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

# Family Newsletter

Dear Parent/Caregiver:

In our next unit in mathematics, "3-D Geometry and 3-D Measurement," the students will be examining shapes and solids commonly seen around them. Over the next three weeks, your child will be learning to identify, build, and describe 3-D shapes.

Students will also be exploring connections between 3-D geometry and 3-D measurement. They will have many opportunities to estimate, measure, and compare the capacity, mass, and volume of the 3-D shapes with which they will be working.

Throughout this time, you and your child can practise some activities such as the following:

- Your child can find a box and show your family how many faces and edges it has.
- Your child can draw and label some items at home that are made up of 2-D shapes.
- Your child can name and sketch any object in your house that is made by combining 3-D shapes; for example, a sofa or bookshelf.
- Your child can find 3-D objects, measure them in different ways, and record their measurements and observations. For example, a chewy oatmeal bar is shaped like a rectangle-based prism. It measures 7 cm by 2 cm. It has a mass of 26 g. Find two more items: one with a mass less than the bar and one with a mass more than the bar.
- Your child can look at one box or container in your food cupboard. Together, write then answer questions about the box concerning geometry and measurement (mass, capacity) using any of the numerical data on the container. For example: a cake box—What shape is the package? (rectangle-based prism) What shape are the faces of the package? (rectangles) What are its dimensions? (use a ruler) How much water is needed to make the batter for one cake? How much oil? What is the mass of the package?

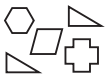
You may also want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics and for books that relate children's literature to 3-D geometry and/or 3-D measurement. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using the *Nelson Mathematics 4 Workbook*, pages 94 to 103 belong to Chapter 11. There is a page of practice questions for each of the 9 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

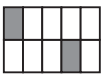
# Family Newsletter

Dear Parent/Caregiver:

Over the next three weeks, your child will be learning about fractions and decimals—how to use them to describe wholes and parts, and to describe and create sets and areas.



$\frac{2}{5}$ of the set are triangles



$\frac{2}{10}$ of the area is shaded

Students will add and subtract and compare and order improper fractions ($1\frac{1}{2}$) and mixed numbers ($5\ \frac{1}{2}$), decimal tenths (0.3) and hundredths (0.33). They will be using many different materials to extend their understanding of fractions and decimals. Your child will learn to read a decimal point as "and" and the decimals as "tenths" and "hundredths." For example, 1.4 is read as "1 and 4 tenths"; 0.53 is read as "53 hundredths."

Throughout this time, you and your child can practise some activities such as the following:

- Your child can look around for things that come in sets of 10. Then they can write decimals and fractions about the items in the set. For example, "$\frac{5}{10}$ of the cookies were eaten tonight." This can be written as 0.5 or $\frac{5}{10}$ or $\frac{1}{2}$.
- Your child can toss 10 coins and describe the ways the coins land using fractions and decimals. For example, 0.6 (six tenths) of the coins are heads.
- Include your child in any measuring activities involving decimals that you may be doing at home. For example, measure yourself and your child in metres, and compare your heights by finding the difference.

You may want to visit the Nelson Web site at **www.mathK8.nelson.com** for more suggestions to help your child learn mathematics and develop a positive attitude towards learning mathematics, and for books that relate children's literature to fractions and decimals. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using the *Nelson Mathematics 4 Workbook*, pages 104 to 116 belong to Chapter 12. There is a page of practice questions for each of the lessons in the chapter and 2 Test Yourself pages at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

# Family Newsletter

Dear Parent/Caregiver:

Over the next couple of weeks, your child will be learning about probability. We will describe, compare, and predict the probability of events, as well as conduct probability experiments and solve problems using tree diagrams. Your child will gain confidence using probability terms such as impossible, certain, likely, unlikely, very likely, very unlikely, equally likely, probable, more probable, less probable, and equally probable.

Throughout this time, you and your child can practise some activities such as the following:

- Your child can clip or record sentences with probability words from newspapers, flyers, newsletters, TV, radio, and daily conversations. Then they should place them on a probability line and explain their placement.
- Your child can look through your family's board games for any that use a spinner, and then play the game(s).
- Your child might write numbers on slips of paper and predict which number is more probable to be drawn from a paper bag. For example, they could write 7 on 8 slips, and other numbers on 2 slips. After predicting which will be drawn more often, they draw and replace, and keep a tally for 20 draws.
- Your child could look through your families' board games for any that use a spinner again, and then predict the probability of spinning each section on each spinner in 40 spins.
- Your child can design a spinner for doing chores around the house, where they make chores they like doing more probable than the less desirable chores.
- Your child can use a tree diagram to list all the possible combinations of after-school snacks for 3 different drinks and 3 different foods.

You may want to visit the Nelson Web site at **www.mathK8.nelson.com** for more suggestions to help your child learn mathematics and develop a positive attitude toward learning mathematics, and for books that relate children's literature to addition and subtraction. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using *Nelson Mathematics 4 Workbook*, pages 117 to 123 belong to Chapter 13. There is a page of practice questions for each of the 7 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.

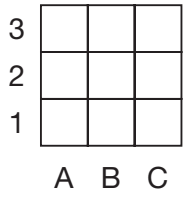
# Family Newsletter

Dear Parent/Caregiver:

For the next two weeks, your child will be naming locations using letter and number coordinates; continuing, explaining, and making geometric patterns; and using geometric reflections, rotations, and translations to solve problems. We will be using different concrete materials, such as pattern blocks, colour counters, and protractors.

Throughout this time, you and your child can practise some activities such as the following:

- You and your child can play tick-tack-toe on a 3-by-3 grid using 2 sets of coloured counters. As you each take a turn, name the coordinates on the grid where you place your counter. The game is over when a player marks 3 same-colour counters in a straight line.




- Your child can make a list of objects from around your home and community that move as a translation.
- Your child can choose a design from a wallpaper border, a piece of clothing, or a book cover and predict what it would look like if it were rotated 90° counterclockwise, then test the prediction.

You may want to visit the Nelson Web site at **www.mathk8.nelson.com** for more suggestions to help your child learn mathematics and for books that relate children's literature to geometry. Also check the Web site for links to other Web sites that provide online tutorials, math problems, and brainteasers.

If your child is using a *Nelson Mathematics 4 Workbook*, pages 124–131 belong to Chapter 14. There is a page of practice questions for each of the 7 lessons in the chapter and a Test Yourself page at the end. If your child requires assistance, you can refer to the At-Home Help section on each Workbook page.