

**NUMBER CONCEPTS**  
**GRADE 3**  
**ONTARIO EDITION**

*hands-on*  
**mathematics**

*Project Editor*

Jennifer E. Lawson

*Senior Author*

Dianne Soltess

*Mathematics Consultant*

Meagan Mutchmor

*Unit Writers*

Patricia Ashton

Joni Bowman

Gail Ruta Fontaine

Betty Johns

Cathy Haggart

Kara Kolson

Suzanne Mole



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Series Editor:	Leslie Malkin
Book and Cover Design:	Relish Design Ltd.
Illustrations:	Jess Dixon
Senior Author:	Dianne Soltess
Mathematics Consultant:	Meagan Mutchmor

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PORTAGE & MAIN PRESS

100-318 McDermot Avenue

Winnipeg, Manitoba, Canada R3A 0A2

Email: [books@portageandmainpress.com](mailto:books@portageandmainpress.com)

Tel: 204-987-3500

Toll Free: 1-800-667-9673

Fax: 1-866-734-8477

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# Introduction

At the grade-three level, the focus of the module, *Number Concepts* is on number manipulation and place-value recognition of numbers to 1000. Lessons in this module concentrate on students' abilities to build sets of items to 1000 as well as their abilities to give meaning to these numbers by using place-value concepts.

In this module, students read and write numbers to 1000, build sets of items, and compare sets to note differences. Students also begin to work with rounding and estimation and to understand how both of these strategies increase their ability to add large numbers. In addition, students are introduced to the fractions fifths ( $\frac{1}{5}$ ) and tenths ( $\frac{1}{10}$ ). They learn both how these fractions relate to each other as well as how they each relate to a whole (i.e., how one fifth relates to five fifths and how one tenth relates to ten tenths). Throughout the module, students are also encouraged to consolidate their learning through online activities and quizzes.

As with any academic subject, students must learn to recognize the relation of each math concept they study to the world around them. The lessons in this module provide students with many opportunities to recognize numbers as they occur in their own lives.

Most of the lessons found in this module involve numerous steps and should be completed over the course of several days. Lessons provide opportunities for students of all aptitudes to contribute and to be challenged.

## Mathematics Vocabulary

Continue to use your classroom mathematics word wall to display new vocabulary as it is introduced. Throughout this module, teachers should use, and encourage students to use, vocabulary such as: *place value, doubles, multiples, ones, tens, hundreds, thousands, (empty) number line, fractions, one fifth, one tenth, one whole, penny, nickel, dime, quarter, one-dollar coin (loonie), and two-dollar coin (toonie)*. Use, and encourage students to use, this vocabulary both orally and in writing, and continue to review all vocabulary previously introduced.

Depending on your students' writing skills, consider having them begin mathematics logbooks for recording:

- new math vocabulary
- mental-math strategies
- problem-solving strategies
- graphic organizers

# 12 Doubling

## Material

- calculators
- Digiblocks or base-ten blocks
- paper
- pencils

## Activity: Part One

Present students with the following problem:

*Janessa and José are going to work for their parents over the holidays, and their parents will pay them in jellybeans. Both kids will work for 10 days, but each one has asked for a different rate of pay. Janessa asked to receive 100 jellybeans on the first day and 50 jellybeans on each of the following nine days. José asked to receive only 1 jellybean on the first day. For each remaining day, he will receive double the number of jellybeans he received the day before. Who made the better deal, Janessa or José? Why?*

Ask students to record their predictions in their math journals, challenging them also to explain their reasoning. Next, have students take turns sharing their predictions and their reasoning. Finally, distribute Activity Sheet A (5.12.1), and have students use the chart to work through the computations and determine the answer. Distribute calculators to students who need help with the addition.

## Activity Sheet A

### Directions to students:

Determine how many jellybeans Janessa and José will each receive on each day, and how many jellybeans each will receive after 10 days (5.12.1).

## Activity: Part Two

Divide the class into groups of five to ten students, and have students in each group sit in a circle. Give each group a block of 1000 Digiblocks (or base-ten blocks) as well as a piece of paper and a pencil. Have the first student in each group take one Digiblock. Then, moving in a clockwise direction, tell each student in the group to take a new set of blocks that is double the number of blocks the previous student took. Have one student in each group record the number of blocks each student takes.

Once students in all groups no longer have enough blocks to continue with the activity, gather students together again, and ask:

- Were the numbers in the sets of blocks that you built odd or even?
- How do you know?
- Could you divide all of the numbers of blocks by 2?
- How do you know?
- How would you know if a number could be divided by 5? Ten?

Distribute copies of Activity Sheet B (5.12.2), and have students double each consecutive number on the grid and then answer the questions that follows the grid.

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**Note:** The number at the beginning of a new row on the grid should be double the number at the end of the previous row.

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## Activity Sheet B

### Directions to students:

Double each consecutive number on the grid. Use your calculations to answer the questions that follows the grid (5.12.2).

# 12

## Problem Solving

Begin with the number 880. Cut the number in half three times. What number do you end up with? How many times can you cut the number in half again before you have to use fractions (or decimals) to continue halving?

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**Note:** A reproducible master for this problem can be found on page 147.

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## Activity Centre

At an activity centre, place the following books: *Sea Squares*, by Joy Hulme; *The Rajah's Rice: A Mathematical Folktale from India*, by David Barry; *Anno's Magic Seeds*, by Mitsumasa Anno; and *One Grain of Rice: A Mathematical Folktale*, by Demi. Also, have ready-made, blank booklets (fold together several pieces of white paper, and staple) at the centre. Ask students to read each of the books, all of which deal with doubling and multiplication patterns. Then, have students use blank booklets to create their own doubling books.

## Extension

Distribute the extension activity sheet called "Tripling Numbers." Have students triple each consecutive number on the grid and then answer the questions that follow the grid.

Date: \_\_\_\_\_

Name: \_\_\_\_\_

# How Many Jellybeans?

Day	Janessa	José
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
<b>Total Jellybeans Earned</b>		

After 10 days, Janessa earned \_\_\_\_\_ jellybeans while José earned \_\_\_\_\_ jellybeans.

Janessa/José made the better deal.  
(circle one)

# Doubling Numbers

1		

Can you divide the numbers in the grid evenly by 2? How do you know?

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# Tripling Numbers

1		

Are the numbers in the grid odd or even? \_\_\_\_\_

Can you divide the numbers in the grid evenly by 2? How do you know?

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