

## Ontario Mathematics April 2022, EXPECTATIONS for CODING

Resource -"First Steps in Coding to Learn" (2022 Neufeld Learning Systems Inc.)

RS are Reproducible Sheets

### Grade 3 Coding Expectations

- 3.C3.1 Coding Skills** .. Solve problems and create computational representations of mathematical situations by writing & executing code including code that involves sequential, concurrent & repeating events.
- 3.C3.2 Coding Skills** .. Read and alter existing code, including code that involves sequential, concurrent and repeating events and describe how changes to the code affect the outcomes.

**In Preparation for Upcoming Lessons, discuss following from Resource with Students/Teachers/Parents.**

- 1. FORWARD** - An opportunity to set up a special learning environment for all.
- 2. PREFACE - The Role of Robots** to facilitate a special learning environment - learn by teaching.
- 3. PREFACE - The Role of Journaling** is an essential way to express understanding.

#### Chapter 1 - First Steps to Coding

- Goal:** Provide screen free, interactive experiences where students learn the importance of providing understandable, sequential directions -- the foundation of coding.
- Overview:** We will consider the role of and the coding of robots.  
Exercises will have students organize events sequentially.  
Communication skills will be emphasized.  
Exercises will introduce concepts in distance and turning.
- Concepts:** Communication, cooperative learning and sequencing  
Decomposition - breaking down problems into steps  
Accurate measurements of distances and turns

#### SPECIFIC ACTIVITIES: SEQUENTIAL EVENTS

RS are Reproducible Sheets

##### Part A: Coding - First Steps

One Appropriate Selection from Activities #1 to #10 in Gr 1

pg 2 to 12

Duplicate 1RS.1 to 1RS.5

##### Part C: Code for a Degree Turn

Activity #1: Introduce the DEGREE TURN CODE

Duplicate 1RS.8

pg 21

Exercise 1 for the DEGREE TURN CODE

pg 23

Exercise 2 for the DEGREE TURN CODE

pg 23

Exercise 3 for the DEGREE TURN CODE

pg 24

Exercise 4 for the DEGREE TURN CODE

Duplicate 1RS.9

pg 25

Activity #3: Command the Paper Robot

pg 27

Activity #4: Design When Given a Code

pg 28

Navigation: The Town Maze

Duplicate 1RS.10

pg 29

Navigation: Logan Circle

Duplicate 1RS.11

pg 31

Navigation: Bike to First Nations

Duplicate 1RS.12

pg 33

## Grade 3 Coding Expectations continued

### Chapter 2 - Code a Floor Robot ... the Blue-Bot

**Goal:** The popular Blue-Bot brings STEM - Science, Technology, Engineering, Mathematics and communication into the classroom and builds foundational skills

**Overview:** Apply the robot's keys to enter code into Blue-Bot.  
Apply estimation to determine distances & turns

**Concepts:** Investigate results of code.  
Given code, predict results or outcomes.  
Given results, an action or outcome, one can predict code.  
Sequencing, directionality, problem-solving, counting, estimation

#### SPECIFIC ACTIVITIES: SEQUENTIAL EVENTS

##### Part A: Code Blue-Bot with Blue-Bot's Keys

Investigation Activity	Duplicate 2RS.1	pg 37
Activity #1a: Investigate Code	Duplicate 2RS.2	pg 38
Activity #4: CODE - PREDICT -TEST	Duplicate 2RS.5	pg 42
Activity #7: CODE IT to CREATE IT	Duplicate 2RS.8	pg 45
Activity #8: CREATE IT then CODE IT	Duplicate 2RS.9	pg 46

##### Part C: Code Blue-Bot by Tablet or Computer

Information, Preparation		pg 54
Investigation Activity		pg 56
Prediction Activity #1	Duplicate 2RS.10	pg 57
Prediction Activity #2: REPEAT	Duplicate 2RS.11	pg 58
Prediction Activity #3:	Duplicate 2RS.12	pg 59
Prediction Activity #4:	Duplicate 2RS.13	pg 60
Prediction Activity #5: CREATE, CODE	Duplicate 2RS.14	pg 61
Prediction Activity #6: THERE from HERE		pg 62
MATH THEATRE:a special activity for gr 3 to 5		pg 63

### Chapter 3 - "An Environment for Interactive Coding"

**Overview:** Introducing the LOGO Learning Environment.

**Concepts:** Apply clear and concise learning skills.

Sequencing, Directionality, Problem-solving, Counting, Estimation, Repeating

#### SPECIFIC ACTIVITIES: SEQUENTIAL EVENTS, REPEATING EVENTS

Introduction to LOGO Learning Environment; Acquiring LOGO		pg 66
The LOGO Screen		pg 70
Activity #1: Explanation		pg 71
Activity #1: Investigate, Predict, Journal	Duplicate 3RS.1	pg 72
Activity #2: Investigate, Predict, Journal	Duplicate 3RS.2	pg 73
Activity #3: Investigate, Predict, Journal	Duplicate 3RS.3	pg 74
Activity #4: Shape Up	Duplicate 3RS.4	pg 75

Ontario Math Curriculum Expectations 2020  
Coding Strand .. Grade 3

Activity #5: Shape Up on Blue-Bot paired	<b>Duplicate 3RS.5</b>	pg 76
Activity #6: Shape Up on Blue-Bot	<b>Duplicate 3RS.6</b>	pg 77
Activity #7: Shape Up by Logo Code	<b>Duplicate 3RS.7</b>	pg 78
Activity #8: Shape Up on Blue-Bot paired	<b>Duplicate 3RS.8</b>	pg 79
Activity #9: REPEAT, Wait, Color, Setwidth	<b>Duplicate 3RS.9</b>	pg 80
Activity #10: Predict and Reinforce.. REPEAT	<b>Duplicate 3RS.10</b>	pg 82
Activity #11: Logo .. Experiments in Art Class		pg 83
Activity #14: TASKS within 7 Mazes		
Task 1:    Josh Maze	<b>Duplicate 3RS.11</b>	pg 91
Task 2    Jer Maze	<b>Duplicate 3RS.13</b>	pg 92
Task 3    Mars Maze	<b>Duplicate 3RS.14</b>	pg 93
Task 4    Katie Maze	<b>Duplicate 3RS.14</b>	pg 93
Task 5    Town Maze	<b>Duplicate 3RS.15</b>	pg 94
Task 6    Logan Circle	<b>Duplicate 3RS.16</b>	pg 94
Task 7    Bike Maze	<b>Duplicate 3RS.17</b>	pg 95

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