

C. ALGEBRA

By the end of each grade, students will:

Ontario Mathematics Curriculum Expectations, Grades 1 to 8, 2020

| OVERALL EXPECTATION C1. identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts | | | | | | | |
|---|--|--|---|---|---|--|--|
| SPECIFIC EXPECTATIONS | | | | | | | |
| Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
| Patterns | | | | | | | |
| <p>C1.1 identify and describe the regularities in a variety of patterns, including patterns found in real-life contexts</p> | <p>C1.1 identify and describe a variety of patterns involving geometric designs, including patterns found in real-life contexts</p> | <p>C1.1 identify and describe repeating elements and operations in a variety of patterns, including patterns found in real-life contexts</p> | <p>C1.1 identify and describe repeating and growing patterns, including patterns found in real-life contexts</p> | <p>C1.1 identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts</p> | <p>C1.1 identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and specify which growing patterns are linear</p> | <p>C1.1 identify and compare a variety of repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and compare linear growing patterns on the basis of their constant rates and initial values</p> | <p>C1.1 identify and compare a variety of repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and compare linear growing and shrinking patterns on the basis of their constant rates and initial values</p> |
| <p>C1.2 create and translate patterns using movements, sounds, objects, shapes, letters, and numbers</p> | <p>C1.2 create and translate patterns using various representations, including shapes and numbers</p> | <p>C1.2 create and translate patterns that have repeating elements, movements, or operations using various representations, including shapes, numbers, and tables of values</p> | <p>C1.2 create and translate repeating and growing patterns using various representations, including tables of values and graphs</p> | <p>C1.2 create and translate growing and shrinking patterns using various representations, including tables of values and graphs</p> | <p>C1.2 create and translate repeating, growing, and shrinking patterns using various representations, including tables of values, graphs, and, for linear growing patterns, algebraic expressions and equations</p> | <p>C1.2 create and translate repeating, growing, and shrinking patterns involving whole numbers and decimal numbers using various representations, including algebraic expressions and equations for linear growing patterns</p> | <p>C1.2 create and translate repeating, growing, and shrinking patterns involving rational numbers using various representations, including algebraic expressions and equations for linear growing and shrinking patterns</p> |

OVERALL EXPECTATION C1. identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts

SPECIFIC EXPECTATIONS

| Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|--|---|--|--|---|---|--|
| Patterns | | | | | | | |
| C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in patterns | C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in patterns represented with shapes and numbers | C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in patterns that have repeating elements, movements, or operations | C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating and growing patterns | C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns | C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns | C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in repeating, growing, and shrinking patterns involving whole numbers and decimal numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing patterns | C1.3 determine pattern rules and use them to extend patterns, make and justify predictions, and identify missing elements in growing and shrinking patterns involving rational numbers, and use algebraic representations of the pattern rules to solve for unknown values in linear growing and shrinking patterns |
| C1.4 create and describe patterns to illustrate relationships among whole numbers up to 50 | C1.4 create and describe patterns to illustrate relationships among whole numbers up to 100 | C1.4 create and describe patterns to illustrate relationships among whole numbers up to 1000 | C1.4 create and describe patterns to illustrate relationships among whole numbers and decimal tenths | C1.4 create and describe patterns to illustrate relationships among whole numbers and decimal tenths and hundredths | C1.4 create and describe patterns to illustrate relationships among whole numbers and decimal numbers | C1.4 create and describe patterns to illustrate relationships among integers | C1.4 create and describe patterns to illustrate relationships among rational numbers |

OVERALL EXPECTATION C2. demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts

SPECIFIC EXPECTATIONS

| Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|---|---|--|---|--|---|--|
| Variables | | | | Variables and Expressions | | | |
| C2.1 identify quantities that can change and quantities that always remain the same in real-life contexts | C2.1 identify when symbols are being used as variables, and describe how they are being used | C2.1 describe how variables are used, and use them in various contexts as appropriate | C2.1 identify and use symbols as variables in expressions and equations | C2.1 translate among words, algebraic expressions, and visual representations that describe equivalent relationships | C2.1 add monomials with a degree of 1 that involve whole numbers, using tools | C2.1 add and subtract monomials with a degree of 1 that involve whole numbers, using tools | C2.1 add and subtract monomials with a degree of 1, and add binomials with a degree of 1 that involve integers, using tools |
| | | | | C2.2 evaluate algebraic expressions that involve whole numbers | C2.2 evaluate algebraic expressions that involve whole numbers and decimal tenths | C2.2 evaluate algebraic expressions that involve whole numbers and decimal numbers | C2.2 evaluate algebraic expressions that involve rational numbers |
| Equalities and Inequalities | | | | | | | |
| C2.2 determine whether given pairs of addition and subtraction expressions are equivalent or not | C2.2 determine what needs to be added to or subtracted from addition and subtraction expressions to make them equivalent | C2.2 determine whether given sets of addition, subtraction, multiplication, and division expressions are equivalent or not | C2.2 solve equations that involve whole numbers up to 50 in various contexts, and verify solutions | C2.3 solve equations that involve whole numbers up to 100 in various contexts, and verify solutions | C2.3 solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions | C2.3 solve equations that involve multiple terms, whole numbers, and decimal numbers in various contexts, and verify solutions | C2.3 solve equations that involve multiple terms, integers, and decimal numbers in various contexts, and verify solutions |
| C2.3 identify and use equivalent relationships for whole numbers up to 50, in various contexts | C2.3 identify and use equivalent relationships for whole numbers up to 100, in various contexts | C2.3 identify and use equivalent relationships for whole numbers up to 1000, in various contexts | C2.3 solve inequalities that involve addition and subtraction of whole numbers up to 20, and verify and graph the solutions | C2.4 solve inequalities that involve one operation and whole numbers up to 50, and verify and graph the solutions | C2.4 solve inequalities that involve two operations and whole numbers up to 100, and verify and graph the solutions | C2.4 solve inequalities that involve multiple terms and whole numbers, and verify and graph the solutions | C2.4 solve inequalities that involve integers, and verify and graph the solutions |

OVERALL EXPECTATION C3. solve problems and create computational representations of mathematical situations using coding concepts and skills

SPECIFIC EXPECTATIONS

| Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|---|---|---|--|--|---|---|
| Coding Skills | | | | | | | |
| C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential events | C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential and concurrent events | C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, and repeating events | C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves sequential, concurrent, repeating, and nested events | C3.1 solve problems and create computational representations of mathematical situations by writing and executing code, including code that involves conditional statements and other control structures | C3.1 solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves conditional statements and other control structures | C3.1 solve problems and create computational representations of mathematical situations by writing and executing efficient code, including code that involves events influenced by a defined count and/or sub-program and other control structures | C3.1 solve problems and create computational representations of mathematical situations by writing and executing code that involves the analysis of data in order to inform and communicate decisions |
| C3.2 read and alter existing code, including code that involves sequential events, and describe how changes to the code affect the outcomes | C3.2 read and alter existing code, including code that involves sequential and concurrent events, and describe how changes to the code affect the outcomes | C3.2 read and alter existing code, including code that involves sequential, concurrent, and repeating events, and describe how changes to the code affect the outcomes | C3.2 read and alter existing code, including code that involves sequential, concurrent, repeating, and nested events, and describe how changes to the code affect the outcomes | C3.2 read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes | C3.2 read and alter existing code, including code that involves conditional statements and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code | C3.2 read and alter existing code, including code that involves events influenced by a defined count and/or sub-program and other control structures, and describe how changes to the code affect the outcomes and the efficiency of the code | C3.2 read and alter existing code involving the analysis of data in order to inform and communicate decisions, and describe how changes to the code affect the outcomes and the efficiency of the code |

OVERALL EXPECTATION C4. apply the process of mathematical modelling* to represent, analyse, make predictions, and provide insight into real-life situations

This overall expectation has no specific expectations. Mathematical modelling is an iterative and interconnected process that is applied to various contexts, allowing students to bring in learning from other strands. Students' demonstration of the process of mathematical modelling, as they apply concepts and skills learned in other strands, is assessed and evaluated.

*Read more about the mathematical modelling process.