



Course Outline: Grade 2 Mathematics

Course Name: Grade 2 Mathematics

Course Code: MAT2

Credit Value: None. Credits are not issued at the elementary level.

Prerequisite: None

Curriculum Policy Document: [*The Ontario Curriculum Grades 1-8: Mathematics, 2005 \(revised\)*](#)

Course Developer: Virtual Elementary School

Department: Primary

Development Date: 2019

Course Description

This course builds on the grade 1 curriculum to further develop students' understanding of fundamental mathematical concepts by exploring topics related to number sense and numeration, measurement, geometry and spatial sense, patterning and algebra, and data management and probability. Students work with numbers up to 100 representing money amounts, investigating fractions, and establishing a basic understanding of multiplication and division. Students begin exploring measurement with centimetres and metres, measure perimeter, area, mass and capacity in non-standard units, acquire an understanding of temperature, and build on their skills to tell time. Students develop an understanding of geometric properties, continuing to work with two- and three-dimensional shapes, locate a line of symmetry, and describe relative locations and paths of motion. Students identify and describe patterns, build on an understanding of equality using addition and subtraction, and develop strategies to facilitate computation. Students collect, organize, read, and display data using various graphs, and describe probability. Throughout the course, students reinforce the mathematical processes of problem-solving, reasoning, proving, reflecting, selecting tools and computational strategies, and connecting, representing, and communicating at a developing level.

Through investigation of real-life problems, students develop a strong foundation of mathematical knowledge and skills. Students apply mathematical processes and build transferrable critical-thinking skills in varied teaching and consolidation activities that appeal to diverse learning styles. Students participate in engaging storylines along with characters that connect their learning to real-world contexts and build confidence through facilitating a positive attitude towards mathematics. Various opportunities are provided to consolidate student learning through technology and offline activities, including tactile manipulatives, to reinforce essential mathematical strategies and tools. The course has a strong focus on reinforcing number sense and numeracy skills and provides various activities for practice throughout. This course prepares students for grade 3 mathematics.

Resources Required by the Student

This course is entirely online and does not require nor rely on any textbook. Students will require the following resources:

- A scanner, smart phone camera, or similar device to digitize handwritten or hand-drawn work
- A printer
- A physical binder, folder, or notebook for offline activities
- Various household items to complete offline activities

The following math tools and resources are optional:

- Ten frames
- Counting rods and unit cubes
- Tangrams (pattern/shape blocks)

Overall Curriculum Expectations

Strand	Overall Expectations
Number Sense and Numeration	<ul style="list-style-type: none">• Read, represent, compare, and order whole numbers up to 100, and use concrete materials to represent fractions and money amounts up to 100.• Demonstrate an understanding of magnitude by counting forward to 200 and backwards from 50 using multiples of various numbers as starting points.• Solve problems involving the addition and subtraction of one- and two-digit whole numbers using a variety of strategies, and investigate multiplication and division.
Measurement	<ul style="list-style-type: none">• Estimate, measure, and record length, perimeter, area, mass, capacity, time, and temperature using non-standard units and standard units.• Compare, describe, and order objects using attributes measured in non-standard units and standard units.
Geometry and Spatial Sense	<ul style="list-style-type: none">• Identify two-dimensional shapes and three-dimensional figures, and sort and classify them by their geometric properties.• Compose and decompose two-dimensional shapes and three-dimensional figures.• Describe and represent the relative locations of objects, and represent objects on a map.
Patterning and Algebra	<ul style="list-style-type: none">• Identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns.• Demonstrate an understanding of the concept of equality between pairs of expressions using concrete materials, symbols, and addition and subtraction up to 18.

Data Management and Probability	<ul style="list-style-type: none"> • Collect and organize categorical or discrete primary data, and display the data using tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers with labels ordered appropriately along horizontal axes as needed. • Read and describe primary data presented in tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers. • Describe probability in everyday situations and simple games.
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Teaching and Learning Strategies

Through a balance of problem-solving and direct instruction, students develop a strong foundation of mathematical processes, knowledge, and skills to apply in real-world contexts. The course utilizes a combination of technology and offline activities, providing opportunities to develop an understanding of skills and concepts in interactive and concrete ways and engage multiple learning styles. The lessons feature a variety of intriguing storylines, characters, videos, storybooks, and interactive games to reinforce students' learning. The activities also build a foundation of mathematical models and strategies that students will use throughout the elementary grades.

The course relies on the assistance of a learning coach to support young students through the content. The learning coach will be involved in facilitating technical aspects of the course (e.g. printing and scanning printable activities) and participating in discussion-based activities to assist students in developing communication skills.

Reporting (Facilitated Only)

Student achievement will be communicated formally to students via progress reports and official report cards. A progress report is provided after completion of the first unit in the course. The progress report is not an evaluation of the student's achievement. Rather, the purpose is to give students and parents early and specific feedback regarding the student's general progress during the first unit of study.

Report cards are issued at the midterm point in the course as well as upon completion of the course. Each report card will focus on two distinct but related aspects of student achievement. First, the achievement of curriculum expectations is reported as a letter grade. Additionally, the course median is reported as a letter grade. The teacher will also provide written comments concerning the student's strengths, areas for improvement, and next steps.

Second, the learning skills are reported as letter grades representing four levels of accomplishment. Upon completion of a course, VES will send a copy of the report card to the student's home school (if in Ontario) where the course will be added to the ongoing list of courses on the student's Ontario Student Record (OSR). The report card will also be sent to the student's home address.

Units

Unit	Description
Counting	Students show, compare, and order numbers up to 100. Students count by 1s, 2s, 5s, 10s, and 25s up to 200 and count back by 1s and 10s. Students also read and write numbers up to 20.
Patterns and Equality	Students identify, describe, and create growing, shrinking, and repeating patterns. Students also find patterns in addition and subtraction equations and explore equality.
Addition and Subtraction	Students learn about composing and decomposing numbers and rounding numbers to the nearest ten. Students also solve addition and subtraction problems using mental strategies, math tools, and vertical equations.
Data	Students collect, organize, and read data, create graphs, and ask and answer questions about data. Students also explore and describe probability with experiments.
Fractions, Multiplication, and Division	Students investigate fractions, multiplication and division. Students analyse the relationship between a whole and the size of its parts, compare fractions, and make a whole. Students also develop an understanding of multiplication and division with equal groups.
Shapes	Students go on a pirate adventure to identify, describe, sort, and build two-dimensional and three-dimensional shapes. Students also describe locations and draw a map.
Money	Students count and work with money. Students also add and subtract with money.
Measurement	In this unit, students measure height, length, and width using centimetres and metres. Students also describe temperature, tell and measure time, estimate, measure, and record capacity and mass, and estimate, measure, and record area.

The Final Grade (Facilitated Only)

The evaluation for this course is based on the student's achievement of curriculum expectations. The final letter grade represents the quality of the student's overall fulfillment of the expectations for the course and reflects the corresponding level of achievement as described in the achievement chart for the discipline. The final grade will be determined based on each of the 8 units (12.5% each) and will reflect the student's most consistent level of achievement throughout the course, although special consideration will be given to more recent evidence of achievement. There is no final assessment, such as an exam, in this course.