Outline of Course of Study

Name of School: Ottawa Islamic School

Department: Department of Math

Program Developer or Teacher: Safaa El Dahabi

Course Development Date: August 2023

Course Reviser / Revision Date: Safaa El Dahabi/ Oct 2023

Course Title / Grade / Type: Math

Course Level: Grade 6

Curriculum Policy Document: The Ontario Curriculum, 2006

Course Description/ Rationale:

This course ensures that students build a solid foundation in mathematics by connecting and applying mathematical concepts in a variety of ways. The course is divided into Six strands: Social-Emotional Learning (SEL) Skills, Number, Algebra, Data, Spatial Sense, Financial Literacy

Overall Expectations:

The expectations in the mathematics curriculum are organized into six distinct but related strands: 1. Social-Emotional Learning (SEL) Skills in Mathematics and the Mathematical Processes; 2. Number; 3. Algebra; 4. Data; 5. Spatial Sense; and 6. Financial Literacy.

Strand 1 Social-Emotional Learning (SEL) Skills
Overall Expectations
By the end of this strand, students will:

1. identify and manage emotions
2. recognize sources of stress and cope with challenges
3. maintain positive motivation and perseverance
4. build relationships and communicate effectively
5. develop self-awareness and sense of identity
6. think critically and creatively

Strand 2 (Unit 1,2,4,8) : Number
Overall Expectations
By the end of this strand, students will:

1. Read, represent, compare, and order whole numbers to 1 000 000, decimal numbers to thousandths, proper and improper fractions, and mixed numbers;
2. Solve problems involving the multiplication and division of whole numbers, and the addition and subtraction of decimal numbers to thousandths, using a variety of strategies;
3. Demonstrate an understanding of relationships involving percent, ratio, and unit rate.

Strand 3 Algebra (Unit 1,10)
Overall Expectations
By the end of this strand, students will:

1. identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts
2. demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts
3. solve problems and create computational representations of mathematical situations using coding concepts and skills
4. apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations

Strand 4 Data (Unit 5&11):

Overall Expectations

By the end of this strand, students will:

1. Collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including continuous line graphs;
2. Read, describe, and interpret data, and explain relationships between sets of data;
3. Determine the theoretical probability of an outcome in a probability experiment, and use it to predict the frequency of the outcome.
4. manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life
5. describe the likelihood that events will happen, and use that information to make predictions

Strand 5 Spatial Sense (Unit 3,6,7&9):

Overall Expectations

By the end of this strand, students will:

1. Estimate, measure, and record quantities, using the metric measurement system
2. Determine the relationships among units and measurable attributes, including the area of a parallelogram, the area of a triangle, and the volume of a triangular prism.
3. Classify and construct polygons and angles;
4. Sketch three-dimensional figures, and construct three-dimensional figures from drawings;
5. Describe location in the first quadrant of a coordinate system, and rotate two-dimensional shapes.

Strand 6 Financial Literacy

Overall Expectations

By the end of this strand, students will:

1. describe the advantages and disadvantages of various methods of payment that can be used to purchase goods and services
2. identify different types of financial goals, including earning and saving goals, and outline some key steps in achieving them
3. identify and describe various factors that may help or interfere with reaching financial goals
4. explain the concept of interest rates, and identify types of interest rates and fees associated with different accounts and loans offered by various banks and other financial institutions

Specific Expectations:

Specific Expectations for Social-Emotional Learning (SEL) Skills

1. identify and manage emotions
2. recognize sources of stress and cope with challenges

3. maintain positive motivation and perseverance
4. build relationships and communicate effectively
5. develop self-awareness and sense of identity
6. think critically and creatively

Specific Expectations for Learning Numbers

1. read and represent whole numbers up to and including one million, read and represent integers using appropriate tools and strategies, and describe various ways they are used in everyday life
2. read, represent, compare and order integers, decimal numbers, and fractions, separately and in combination, in various contexts
3. round decimal numbers, both terminating and repeating, to the nearest tenth, hundredth, or whole number, as applicable, in various contexts
4. describe relationships and show equivalences among fractions and decimal numbers up to thousandths, using appropriate tools and drawings, in various contexts
5. use the properties of operations, and the relationships between operations, to solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and whole number percents, including those requiring multiple steps or multiple operations
6. understand the divisibility rules and use them to determine whether numbers are divisible by 2, 3, 4, 5, 6, 8, 9, and 10
7. use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used
8. add and subtract fractions with like and unlike denominators, and represent and solve problems involving the addition and subtraction of whole numbers and decimal numbers, using estimation and algorithms using appropriate tools, in various contexts
9. represent composite numbers as a product of their prime factors, including through the use of factor trees
10. represent and solve problems involving the multiplication and division of three-digit whole numbers by decimal tenths, using algorithms
11. multiply and divide whole numbers by proper fractions, using appropriate tools and strategies
12. represent and solve problems involving the division of decimal numbers up to thousandths by whole numbers up to 10, using appropriate tools and strategies
13. solve problems involving ratios, including percents and rates, using appropriate tools and strategies

Specific Expectations for Learning Algebra

1. identify and describe repeating, growing, and shrinking patterns, including patterns found in real-life contexts, and specify which growing patterns are linear
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
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
4. create and describe patterns to illustrate relationships among whole numbers and decimal numbers
5. solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions

Specific Expectations for Learning Data

1. describe the difference between discrete and continuous data, and provide examples of each

2. collect qualitative data and discrete and continuous quantitative data to answer questions of interest about a population, and organize the sets of data as appropriate, including using interval

3. select from among a variety of graphs, including histograms and broken-line graphs, the type of graph best suited to represent various sets of data; display the data in the graphs with proper sources, titles, and labels, and appropriate scales; and justify their choice of graphs

4. create an infographic about a data set, representing the data in appropriate ways, including in tables, histograms, and broken-line graphs, and incorporating any other relevant information that helps to tell a story about the data

5. Analyze different sets of data presented in various ways, including in histograms and broken-line graphs and in misleading graphs, by asking and answering questions about the data, challenging preconceived notions, and drawing conclusions, then make convincing arguments and informed decisions

6. use fractions, decimals, and percent's to express the probability of events happening, represent this probability on a probability line, and use it to make predictions and informed decisions

7. determine and compare the theoretical and experimental probabilities of two independent events happening

Specific Expectations for Learning Spatial Sense

1. create lists of geometric properties of various types of quadrilaterals, including the properties of the diagonals, rotational symmetry, and line symmetry

2. construct three-dimensional objects when given their top, front, and side views

3. describe and perform combinations of translations, reflections, and rotations up to 360° on a grid, and predict the results of these transformations

4. measure length, area, mass, and capacity using the appropriate metric units, and solve problems that require converting smaller units to larger ones and vice versa

5. use a protractor to measure and construct angles up to 360°, and state the relationship between angles that are measured clockwise and those that are measured counterclockwise

6. use the properties of supplementary angles, complementary angles, opposite angles, and interior and exterior angles to solve for unknown angle measures

7. determine the areas of trapezoids, rhombuses, kites, and composite polygons by decomposing them into shapes with known areas

8. create and use nets to demonstrate the relationship between the faces of prisms and pyramids and their surface areas

9. determine the surface areas of prisms and pyramids by calculating the areas of their two-dimensional faces and adding them together

Specific Expectations for Learning Financial Literacy

1. describe the advantages and disadvantages of various methods of payment that can be used to purchase goods and services

2. identify different types of financial goals, including earning and saving goals, and outline some key steps in achieving them
3. identify and describe various factors that may help or interfere with reaching financial goals
4. explain the concept of interest rates, and identify types of interest rates and fees associated with different accounts and loans offered by various banks and other financial institutions
5. describe trading, lending, borrowing, and donating as different ways to distribute financial and other resources among individuals and organizations

Outline of Course Content:

Unit	Title	Time
1	Number Patterns	15h
2	Whole Numbers	5h
3	Geometry	10h
4	Decimals	10h
5	Data management	10h
6	Measurement	10h
7	Transformational Geometry	10h
8	Exploring fraction, percentage, Ratios, Rates	10h
9	Perimeter, Volume and Area	5h
10	Patterns in number and geometry	10h
11	Probability	5h
12	Financial Literacy	10h
Total		**Total: 110 hours**

Teaching and Learning Strategies:

Strategies most used in this course will be teacher-led as well as student discussion. Students will answer questions in their textbooks individually, then we will have a Class discussion and analysis of the questions. we will use manipulative, charts, place value mats and math games to enhance learning. At the end students will have home work.

Strategies for Assessment and Evaluation of Student Performance:

1- Ongoing observation
2- In class work
3- Quizzes
4- Reflect questions
5- Specific assessment questions
6- Unit test

Considerations for Program Planning

1. **Instructional Approaches in Mathematics**. Effective mathematics instruction focuses on the development of conceptual understanding and procedural fluency, skill

development, and communication, as well as problem-solving skills. It takes place in a safe and inclusive learning environment, where all students are valued, empowered, engaged, and able to take risks, learn from mistakes, and approach the learning of mathematics in a confident manner. Instruction that is student centred and asset based builds effectively on students' strengths to develop mathematical habits of mind, such as curiosity and open-mindedness; a willingness to question, to challenge and be challenged; and an awareness of the value of listening intently, reading thoughtfully, and communicating with clarity.

2. **The Role of Information and Communication Technology in Mathematics**, Technology can extend and enrich teachers' instructional strategies to support all students' learning in mathematics. Technology, when used in a thoughtful manner, can support and foster the development of mathematical reasoning, problem solving, and communication. For some students, technology is essential and required to access curriculum.
3. **Education and Career/Life Planning,** Mathematics teachers can support students in education and career/life planning by making authentic connections between the mathematics concepts students are learning in school and the knowledge and skills needed in different careers. These connections engage students' interest and allow them to develop an understanding of the usefulness of mathematics in the daily lives of workers.
4. **Planning Mathematics Programs for Students with Special Education Needs,** An effective mathematics learning environment and program that addresses the mathematical learning needs of students with special education needs is purposefully planned with the principles of Universal design for learning
5. **Planning Mathematics Programs for English Language Learners**
6. **Cross-Curricular and Integrated Learning in Mathematics,** When planning an integrated mathematics program, educators should consider that, although the mathematical content in the curriculum is outlined in discrete strands, students develop mathematical thinking, such as proportional reasoning, algebraic reasoning, and spatial reasoning, that transcends the expectations in the strands and even connects to learning in other subject areas. By purposefully drawing connections across all areas of mathematics and other subject areas, and by applying learning to relevant real-life contexts, teachers extend and enhance student learning experiences and deepen their knowledge and skills across disciplines and beyond the classroom.

Resources:

ADDISON WESLEY Math Makes Sense
PHB work book