Grade 7 Mathematics and Science Syllabus

A. Strazar, J. Spring, M. Heisz
Glenview Senior Public School, 2018-2019

Overview

Mathematics

In Grade 7 Mathematics, students continue to work on the five strands they are familiar with from Junior School:

- **Number Sense & Numeration**
- **Data Management & Probability**
- **Measurement**
- **Geometry**
- **Patterning & Algebra**

Though each strand is required to be reported on separately (four strands per term), we embed the strengthening of number sense skills and concepts throughout the whole year. Students engage in group, paired, whole class, and individual activities, and work on rich inquiry-based tasks where their problem solving skills are further developed. Students are encouraged to be independent thinkers, to ask good questions, and to notice patterns in numbers.

Science

Learning goals focus on three main components:

1. to relate science and technology to society and the environment,
2. to develop the skills, strategies, and habits of mind required for scientific inquiry and technological problem solving
3. to understand the basic concepts of science and technology.

The four units which are covered in Grade 7 are listed below with the main points.

Understanding Structures and Mechanisms – Form and Function

- Structures have a purpose
- The form of a structure is dependent on its function
- The interactions between structures and forces is predictable

Understanding Matter and Energy – Pure Substances and Mixtures

- Matter can be classified according to its physical characteristics
- The particle theory of matter
- Pure substances and mixtures have an impact on society and the environment

Understanding Earth and Space Systems – Heat in the Environment

- Heat is a form of energy that can be transformed and transferred
- There are many sources of heat
- Heat has both positive and negative effects on the environment

Understanding Life Systems – Interactions in the Environment

- Ecosystems are made up of biotic and abiotic elements that depend on each other
- Ecosystems are in a constant state of change
- Human activities have the potential to alter the environment

Texts

Math Makes Sense 7 - Pearson Addison Wesley
Supplemental work is employed from a variety of sources such as the Ministry created EduGains, CEMS Waterloo, TIPS4RM, JUMP Math, Mathpower 7, and online resources.

Investigating Science and Technology 7, Pearson, will be used in the classroom.

Extra Help:

Each teacher will post their availability for extra help sessions outside of their classrooms.

If students cannot see their own classroom teacher due to a scheduling conflict, they are encouraged to seek out a math teacher in the same grade team.

Technology:

Teachers employ the use of SMARTBoard technology in the classroom.
Google Classroom is available to support student learning. It will provide links to videos, examples and extra work to complement and reinforce in-class activities.

Assessment and Evaluation

Students will be observed daily, both individually and on their contributions to large and small group activities. They may be asked to explain an aspect of what the group is doing, or take on a leadership role. It is therefore very important that they are positively involved in their classroom community, come prepared with the materials and mindset for learning and being challenged, and ask good questions. Students are encouraged to maintain a considerate environment that is conducive to the whole class feeling free to ask questions, volunteer answers, and take risks.

Students will be given short and long-term assignments, and will regularly have in-class time to start their work. Any unfinished work should be completed at home. The consistent completion of homework is imperative, as it allows for reinforcement of concepts covered in class and the mastery of new concepts.

Students are encouraged to use their class time wisely, as this helps them manage their workload in all subject areas. Homework is taken up frequently, but is not checked on a daily basis. Spot checks will occur, and any students who appear to be struggling will be asked to meet with the teacher in order to get organized and formulate more effective goals and strategies.

Mathematics
Math units may include pop quizzes, quizzes, homework assignments, tests, and unit problems.

Science
Chapter quizzes - The Pearson textbook has 3 chapters for each unit, and there may be quizzes at the end of chapters to confirm understanding.

Unit test – Each test will consist of some short answer (multiple choice, fill in the blank, matching, etc.) as well as descriptive questions. If students are absent on the day the test is written, they will write it during the next class period or an alternate, mutually agreed-upon time.

Class Assignments - Students will complete a variety of activities on a regular basis. There will usually be one formal lab activity and report assigned to each unit. All of these must be completed and submitted. If a student is absent, he/she should seek assistance from the teacher or a homework buddy to ensure that all work is finished.

Final grades are determined in accordance with the Ministry of Education's *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools*, 2010 document. All evidence collected through observations, conversations, and student products (tests, reports, assignments) will be used for evaluation. Formative feedback and summative assessment of student work will be provided according to the Ontario provincial achievement chart categories below as they relate to the curriculum expectations being evaluated.

- Knowledge and understanding
- Thinking - Processing and interpretation
- Communication - Interpretation and expression
- Application - Transfer of knowledge and skills to make connections

Determining a report card grade will involve teachers' professional judgement and interpretation of evidence, and should reflect the student's most consistent level of achievement, with special consideration given to more recent evidence.

Results from activities that meet expectations related to the STEM subjects (Science, Technology and Mathematics) will be shared among corresponding subject teachers and will be considered when determining the final mark for report cards.

Learning Schedule (Subject to change)

Grade 7 Mathematics

Term 1 (including Progress Report)	Term 2
Number Sense ● Generate multiples and factors ● Identify lowest common multiples (LCM) & Greatest Common Factors (GCF) ● Evaluate expressions using order of operations ● Represent perfect squares and square roots **Measurement** ● Converting units of measure ● Explain the relationship between exponential notation and area & volume ● Develop and implement a formula to determine the area of a trapezoid ● Calculate the area of composite two-dimensional shapes **Geometry** ● Classify triangles and quadrilaterals by geometric properties ● Represent equal angles and lengths using mathematical notation ● Construct related lines (parallel, perpendicular, intersecting at various angles) ● Construct angle bisectors and perpendicular bisectors **Data Management** ● Collecting, organizing, and recording data ● Charts, tables, graphs ● Mean, median, mode, central tendencies and outliers ● Collect and organize discrete or continuous data ● Identify bias in collection methods, & misleading graphs **Number Sense** ● Compare and order numbers, including integers ● Adding, subtracting integers	**Algebra** ● Linear growing patterns ● Pattern rules ● Variables, algebraic expressions, algebraic equations ● Constant rates – tables of values and graphs **Number Sense** ● Adding and subtracting fractions ● Multiplication and division by whole numbers ● Converting fractions to decimals, multiplying and dividing decimals ● Order of operations with decimals ● Percent, ratio and rate **Probability and Data Management** ● Circle graphs ● Probability **Geometry** ● Cartesian plane (4 quadrants) ● Transformations, particularly dilatations ● Designs, tiling a plane **Number Sense** ● Ratio ● Rate

Grade 7 Science

Term 1 (including Progress Report)	Term 2
Term 1 Introduction and Safety **<u>Form and Function</u>** ● Classification of structures ● Forces that can act on structures ● Stabilizing structures ● Elements of design ● Determining consumer need ● Lifespans of common structures **<u>Pure Substances and Mixtures</u>** ● Classification of matter by composition ● The Particle Theory of Matter ● Concentration and solubility ● Factors affecting solubility ● Separating solutions and mechanical mixtures ● Effects of the use and disposal of pure substances and mixtures on the environment	**<u>Heat in the Environment</u>** ● Energy transformations ● Changes of state ● Heat transfer ● How heat affects air, water and land ● Energy transformations and heat pollution ● Heat, gases and the atmosphere ● Managing heat Issues **<u>Interactions in the Environment</u>** ● Biotic and abiotic elements ● The roles of producers and consumers ● Transfer of energy in ecosystems ● Cycling matter ● Interactions and changes in ecosystems ● The environmental impact of humans ● Sustainable human communities

Note: Modifications and accommodations will be made to the curriculum outline as outlined in a student's IEP.