



SUBJECT: Foundations of Math 11

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BIG IDEAS:

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| Logical reasoning helps us discover and describe mathematical truths. | Similar shapes and objects have proportional relationships that can be described, measured, and compared. | Optimization informs the decision-making process in situations involving extreme values. | Statistical analysis allows us to notice, wonder about, and answer questions about variation . |
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Curricular Competencies: *Students are expected to do the following*

Reasoning and Modeling

- Develop thinking strategies to solve puzzles and play games
- Explore, analyze, and apply mathematical ideas using reason, technology, and other tools
- Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number
- Model with mathematics in situational contexts
- Think creatively and with curiosity and wonder when exploring problems

Understanding and solving

- Develop/demonstrate/apply mathematical understanding via play, story, inquiry, & problem solving
- Visualize to explore and illustrate mathematical concepts and relationships
- Apply flexible and strategic approaches to solve problems
- Solve problems with persistence and a positive disposition
- Engage in problem-solving experiences connected with cultural practices and perspectives

Communicating and representing

- Explain and justify mathematical ideas and decisions in many ways
- Represent mathematical ideas in concrete, pictorial, and symbolic forms
- Use mathematical vocabulary and language to contribute to discussions in the classroom
- Take risks when offering ideas in classroom discourse

Connecting and reflecting

- Reflect on mathematical thinking
- Connect mathematical concepts to each other and to other areas and personal interests
- Use mistakes as opportunities to advance learning
- Incorporate First Peoples worldviews and perspectives to make connections to mathematical concepts

CONTENT:

Students are expected to know the following:

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| <ul style="list-style-type: none">• mathematical reasoning:<ul style="list-style-type: none">— logic, conjecturing, inductive and deductive thinking, proofs, game/puzzle analysis, counter-examples | <ul style="list-style-type: none">• angle relationships:<ul style="list-style-type: none">— properties, proofs, parallel lines, triangles and other polygons, angle constructions |
| <ul style="list-style-type: none">• graphical analysis:<ul style="list-style-type: none">— using technology only | <ul style="list-style-type: none">• linear inequalities:<ul style="list-style-type: none">— graphing of the solution region— slope and intercepts— intersection points of lines |
| <ul style="list-style-type: none">• quadratic functions:<ul style="list-style-type: none">— characteristics of graphs, including end behaviour, maximum/minimum, vertex, symmetry, Intercepts | <ul style="list-style-type: none">• systems of equations:<ul style="list-style-type: none">— including linear with linear, linear with quadratic, and quadratic with quadratic |
| <ul style="list-style-type: none">• optimization:<ul style="list-style-type: none">— using feasible region to optimize objective function— maximizing profit & minimizing cost— maximizing area or volume while minimizing perimeter | <ul style="list-style-type: none">• applications:<ul style="list-style-type: none">— posing a question about an observed variation, collecting and interpreting data, and answering the question |
| <ul style="list-style-type: none">• statistics:<ul style="list-style-type: none">— measures of central tendency, standard deviation, confidence intervals, z-scores, distributions | <ul style="list-style-type: none">• scale models:<ul style="list-style-type: none">— enlargements and reductions of 2D shapes and 3D objects— comparing the properties of similar objects (length, area, volume)— square-cube law |
| <ul style="list-style-type: none">• financial literacy:<ul style="list-style-type: none">— compound interest— introduction to investments/loans with regular payments using technology— buy/lease | |

Assessment will include feedback on the following aspects of student learning

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| Class work | Class time will focus on developing reasoning & analyzing skills, communication skills, and problem-solving skills. (ie are you making an effort in class, and keeping up?) |
| Project work | Project Assignments will help students use their own creativity to apply what they have learned and communicate their understanding. |
| Portfolio | Students will keep an ongoing portfolio of their work, with reflection prompts and samples of work for a selection of assignments. |
| Quizzes | Short quizzes will help assess a student's progress in solving different types of problems with independence, and identify areas that need more practice. |
| Unit Tests | Summative assessments will be a snapshot of student learning and indicate if they are experiencing growth in their ability to recognize what to do in different situations, and apply appropriate strategies to solve problems, including some that are unfamiliar |

Grading:

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| A | 86% - 100% | The student independently demonstrates nuanced and creative thinking for most or all concepts |
| B | 73% - 85% | The student demonstrates an understanding of most concepts independently, with only a few minor errors or omissions |
| C+ | 68% - 72% | The student demonstrates a working understanding of how to apply several concepts; they may demonstrate gaps or misunderstandings in their thinking |
| C | 56% - 67% | The student demonstrates independence with some concepts and/or struggles to apply them independently |
| C- | 50% - 55% | The student struggles to demonstrate independence with only a few concepts, and demonstrates many gaps and misunderstandings in their thinking |
| F | < 50% | The student has not met a minimal learning outcome |

POLICIES AND PROCEDURES:

1) CELL PHONES IN CLASS

Students are expected to adhere to the no-phones policy established by the BC Ministry of Education. As such, if a student is struggling to manage their own behaviours with their phones, parents and counsellors may be contacted to help support the student in establishing good habits.

2) PREPARATION FOR CLASS

It is the student's responsibility to arrive for each class **on time** with their notebook, pencils, calculator, and textbook. **Good work habits**, effort, regular attendance, and completion of assignments contribute to successful achievement.

3) ABSENCES

Students should check in during tutorial time if they were absent from class. This allows the teacher to prioritize what needs to be done to catch up, and potentially, which things can be skipped. If possible, checking in ahead of time is best to prevent getting behind.

- a. Students absent for illness, medical appointments, and other emergencies **must** contact their teacher **on the day they return to school** to submit overdue assignments, schedule missed assessments, and to receive missed work.
- b. Students absent for school related activities (ex. field trips, work experience, sports trips, etc.), **must** inform their teacher of this absence **well in advance** of the activity, in order to receive specific instructions on work that will be missed and the rescheduling of missed assessments.

- c. Students absent for any other reason, including family vacations, are considered **unexcused**. Any work or assessments missed for these absences must be made up.

Students are encouraged to make use of tutorial time if they need help making sense of concepts, completing assignments, or just to get some extra practice. Retests will only be granted if students have already attended **3 tutorial sessions in a row prior to the re-write**.

Please feel free to just come and use the classroom as a quiet place to work in the morning too.

RESOURCE MATERIALS:

Foundations of Mathematics 11 (Nelson Publishing)

Locally developed supplemental packages

Direct entry scientific calculator required