



North Vancouver Online Learning

Course Plan: Workplace mathematics 11

Teacher Name: Dr. Maynard Milks
Contact information: mmilks@sd44.ca

COURSE DESCRIPTION:

Mathematics Workplace 11 is one of the BC Provincial Mathematics 11 courses, offered in an online setting. The course follows the BC Provincial curriculum and satisfies the requirements for graduation. There is no Provincial Exam required for this course. This course is designed to provide students with the mathematical understandings and critical-thinking skills identified for entry into the majority of trades and for direct entry into the work force.

For the complete Ministry curriculum document for **Workplace mathematics 11** please go to <https://curriculum.gov.bc.ca/curriculum/mathematics/11/workplace-mathematics>

BIG IDEAS:

Proportional reasoning is used to make sense of **multiplicative** relationships.

Mathematics informs financial **decision making**.

3D objects are often represented and described in 2D space.

Flexibility with number builds meaning, **understanding**, and confidence.

Representing and analyzing data allows us to **notice and wonder** about relationships.

CORE COMPETENCIES:

A Core Competency is a skill that all learners need to have to be successful in all aspects of their life. There are 3 core competencies: Communication (Communicating & Collaborating), Thinking (Critical Thinking, Creative and Reflective Thinking), Personal (Personal Awareness and Responsibility, Social Awareness and Responsibility and Positive Personal and Cultural Identity).



COURSE EXPECTATIONS:

- The self-paced nature of this course requires that students manage their time effectively to complete the course by the deadline (typically a year from the date of registration). Successful students make a weekly schedule to plan out the completion of the course.
- Students must read all the information and attempt all activities in the course to be successful in the course.
- Students must take care that their communication with the teacher and with other students through email or in person, is course related, clear and respectful.
- Students must take care that their work is their own and not plagiarized from any other source. This includes previous work submitted for another course, other people's assignments, Web or other resources etc.

LEARNING STANDARDS: Curricular Competencies

Students are expected to know the following:

Reasoning and modelling

- 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, and apply conceptual understanding of mathematical ideas through play, story, **inquiry**, and 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 place, story, cultural practices, and perspectives relevant to local First Peoples communities, the local community, and other cultures. Consider social, ethical, and environmental implications of the findings from their own and others' investigations.
- Critically analyze the validity of information in secondary sources and evaluate the approaches used to solve problems.

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** with each other, other areas, and personal interests
- Use **mistakes as opportunities to advance learning**
- **Incorporate** First Peoples worldviews, perspectives, **knowledge**, and **practices** to make connections with mathematical concepts

Introduction Assignment

The Assignment **will cover the following Learning Outcomes (Curricular Competencies)**

- Solve problems with **persistence and a positive disposition**
- Apply **flexible and strategic approaches** to solve problems

These are 2 of the 10 learning outcomes in the course curriculum, which comprises 20% of the course Learning Outcomes/Activities. (2/10 = 20%)

LEARNING STANDARDS: Course Content

Students are expected to know the following:

- **financial literacy:** personal investments, loans, and budgeting
- **rate of change**
- how probability and statistics are used in different **contexts**
- **interpreting graphs** in society
- **3D objects:** angles, views, and scale diagrams

UNIT OVERVIEWS AND LEARNING ACTIVITIES:

Unit 1: Fractions

Unit 1 is broken down into four sections: (1) multiply fractions; (2) divide fractions; (3) add and subtract fractions; and (4) BEDMAS with fractions.

Big Idea: Flexibility with number builds meaning, understanding, and confidence.

Core Competency: *Thinking.*

First Peoples Principle of Learning: Learning requires patience.

Unit 2: Measurements

Unit 2 is broken down into five sections: (1) measurements units; (2) metric conversions; (3) other conversions; (4) rates; and (5) applications.

Big Idea: Flexibility with number builds meaning, understanding, and confidence.

Core Competency: *Thinking.*

First Peoples Principle of Learning: Learning requires patience.

Unit 3: Geometry

Unit 3 is broken down into five sections: (1) ratios; (2) equivalent ratios; (3) scale diagrams; (4) similar triangles; and (5) 3D objects.

Big Idea: Proportional reasoning is used to make sense of multiplicative relationships.

Core Competency: *Thinking.*

First Peoples Principle of Learning: Learning requires patience.

Unit 4: Trigonometry

Unit 4 is broken down into five sections: (1) angles; (2) trigonometry; (3) solving for a side; (4) solving for an angle; and (5) advanced trigonometry.

Big Idea: Flexibility with number builds meaning, understanding, and confidence.

Core Competency: *Thinking.*

First Peoples Principle of Learning: Learning requires patience.

Unit 5: Graphing and tables

Unit 5 is broken down into four sections: (1) types of graphs; (2) drawing and interpreting graphs; (3) cartesian coordinates; and (4) rate of change.

Big Idea: Representing and analyzing data allows us to notice and wonder about relationships.

Core Competency: *Thinking.*

First Peoples Principle of Learning: Learning requires patience.

Unit 6: Data analysis

Unit 6 is broken down into four sections: (1) probability; (2) theoretical probability; (3) experimental probability; (4) multiple events; (5) data collection.

Big Idea: Representing and analyzing data allows us to notice and wonder about relationships.

Core Competency: *Thinking.*

First Peoples Principle of Learning: Learning requires patience.

Unit 7: Data analysis

Unit 7 is broken down into five sections: (1) banking basics; (2) percentages; (3) simple interest; (4) borrowing money; and (5) making a budget.

Big Idea: Mathematics informs financial decision making.

Core Competency: *Thinking.*

First Peoples Principle of Learning: Learning requires patience.

STUDENT LEARNING ACTIVITIES AND STRATEGIES:

- Course readings
- Quizzes
- Interactive activities
- Reflective writing
- Assignments may include:
 - Essay/multi-paragraph writing
 - Paragraph writing
 - Verbal speeches/marketing ideas
 - Projects using a variety of technology
 - Podcasts, digital recordings
 - Presentations using a variety of tools (PowerPoint, Prezi etc)

ASSESSMENT:

The course will include many formative assessment opportunities where students will receive teacher feedback and have the opportunity to incorporate self-reflection and self-assessment tools. The formative tasks are designed to help students correct, hone, and improve on their work before being assessed. After each full submission of work, the teacher will provide feedback based on criteria and performance standards that can then be incorporated into the final summative assignment.

Summative assessment will take place after extensive formative assessment and be used on final performance tasks and tests throughout each unit. This course will be using specific rubrics for different tasks and students will have access to these rubrics before submission of the assignments. The North Vancouver Curriculum Hub Principles of Assessment - <http://nvsc44curriculumhub.ca/assessment/>

Formative:

- Teacher – student conferences (online or in person) to discuss drafts and progress.
- Online quizzes to check for completion and understanding of lessons.

Summative:

- Assignments and projects – written feedback, rubric assessment, and grade.
- Final performance task – written feedback, rubric assessment, and grade.
- Tests to check for comprehension, analysis, and synthesis of course learning.

EVALUATION:

Based on performance standards and criteria as outlined in each assignment:

Evaluation	Percentage of Final Mark
Learning Guides	10
Practice Quizzes	10
Homework	15
Unit Tests	45
Final Exam	20
<i>Course Total</i>	100

RESOURCES:

Resources for readings and assignments are listed in the instructions of each lesson. These include websites maintained by government and non-profit organizations, as well as individuals. Students need access to a computer with Internet capabilities. Throughout the course, students will have the choice to engage with a variety of applications and online digital tools. The Online Learning Centre at Mountainside School is available for students who do not have computer access at home or who would like to meet with the teacher for academic and tech support.