North Vancouver Online Learning

Course Plan: Workplace Mathematics 10
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COURSE DESCRIPTION:

Workplace Mathematics 10 is one of the BC Provincial Mathematics 10 courses, offered in an online setting. This course follows the BC Provincial curriculum and satisfies the requirements for a math 10 credit towards graduation. This course does not have a pre-requisite and is not part of a pathway. For the complete Ministry Curriculum Math document, go to:

https://curriculum.gov.bc.ca/curriculum/mathematics/10/workplace-mathematics

BIG IDEAS:

The Big Ideas consist of generalizations and principles and the key concepts important in an area of learning. They reflect the "Understand" component of the Know-Do-Understand model of learning. The big ideas represent what students will understand at the completion of the curriculum for their grade. They are intended to endure beyond a single grade and contribute to future understanding. Students will explore and understand the following five Big Ideas throughout the Workplace Math 10 course:

Proportional reasoning is used to make sense of **multiplicative** relationships.
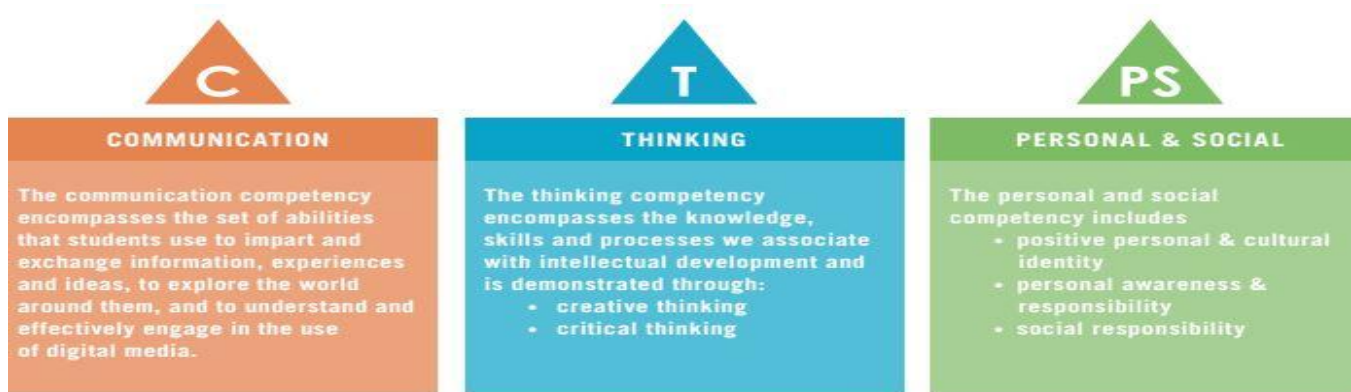
3D objects can be examined mathematically by **measuring** directly and indirectly length, surface area, and volume.

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 Thinking), and Personal & Social (Positive Personal & Cultural Identity, Personal Awareness & Responsibility, and Social Responsibility).

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COMMUNICATION

The communication competency encompasses the set of abilities that students use to impart and exchange information, experiences and ideas, to explore the world around them, and to understand and effectively engage in the use of digital media.

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THINKING

The thinking competency encompasses the knowledge, skills and processes we associate with intellectual development and is demonstrated through:
- creative thinking
- critical thinking

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PERSONAL & SOCIAL

The personal and social competency includes
- positive personal & cultural identity
- personal awareness & responsibility
- social responsibility

COURSE EXPECTATIONS:

- The self-paced nature of the course demands that students manage their time effectively to complete the course by the deadline (June 1st or as determined by your program requirements). Successful students should engage in coursework for at least one hour each day.

- Students must successfully attempt all activities in the course in order to receive a passing grade, including unit quizzes, unit assignments, unit tests, performance tasks, reflections, grasp tasks/projects, and the portfolio.

- Students must pass a minimum of half of the Unit Tests in order to receive a passing grade in this course.

- The course material is run in Moodle, which is an interactive Learning Module System. This course teaches the material through interactive video lessons with complete detailed explanations to the content. Each lesson includes a note taking supplement, practice homework, and video solutions to the practice assignments. All content, quizzes, review materials, assignments and additional studying resources are found in the course in Moodle.

- Students should take care that their communication with the instructor and with other students, through email, Moodle-messaging, and/or forums, is course related, clear in message and respectful in tone.

- This course is mainly to be completed by distance, although unit tests must be completed under the supervision of a Online Learning Teacher. Unit Tests must be completed at either the Mountainside or other North Vancouver District High School OL center. Assignments and online quizzes may be completed at home.

- **Course work must be original; students are expected to complete their own work on an individual basis unless otherwise stated by the teacher. Any student who plagiarizes the work of another or does not do the work themselves, either in test situations or on major assignments, will face disciplinary action. This may range from receiving a zero on an assignment or test to disciplinary action by the administration**.

LEARNING STANDARDS: Curricular Competencies

Students are expected to be able to do 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 mathematical understanding 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

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

The Student Substantive Activities will cover the following **Learning Outcomes (Curricular Competencies).**

- Use mistakes as opportunities to advance learning
- Explore, analyze, and use mathematical ideas using reason, technology, and other tools
- Apply **flexible and strategic approaches** to **solve problems**

These are 3 of the 18 learning outcomes in the course curriculum, which comprises 16% of the course Learning Outcomes/Activities. (3/18 =16%)

LEARNING STANDARDS: Course Content

Students are expected to know the following:

- create, interpret, and critique graphs
- primary trigonometric ratios
- metric and imperial measurement and conversions
- surface area and volume
- central tendency
- experimental probability
- financial literacy: gross and net pay

UNIT OVERVIEWS:

Unit 1: Probability

Big Idea(s): *Representing and analyzing data allows us to notice and wonder about relationships.*
Core Competency Focus: *Thinking, Communiation, Personal/Social*
First Peoples Principle of Learning: *Learning involves patience and time.*

Unit Overview: The Probability unit will focus on simulations through playing and creating games and connecting these activities to theoretical probability where possible. Students will understand the difference between experimental and theoretical probability.

Unit 2: Graphs

Big Idea(s): *Representing and analyzing data allows us to notice and wonder about relationships.*
Core Competency Focus: *Thinking, Communication*
First Peoples Principle of Learning: *Learning involves patience and time.*

Unit Overview: During the Graphing unit, students will focus on creating, interpreting, and critiquing various graph types. Students will be exposed to a variety of formats, such as line, bar, and circle graphs, as well as histograms, pictographs, and infographics.

Unit 3: Measurement

Big Idea(s): *Proportional reasoning* is used to make sense of *multiplicative* relationships. *Flexibility* with number builds meaning, understanding, and confidence.
Core Competency Focus: *Thinking*
First Peoples Principle of Learning: *Learning involves patience and time.*

Unit Overview: The Measurement unit will focus on metric and imperial measurement and conversions, as well as on length as a means to increase computational fluency. Students will use tools and appropriate units to measure with accuracy.

Unit 4: Trigonometry

Big Idea(s): *Proportional reasoning* is used to make sense of *multiplicative* relationships. *Representing and analyzing* data allows us to notice and wonder about relationships.
Core Competency Focus: *Thinking*
First Peoples Principle of Learning: *Learning involves patience and time.*

Unit Overview: The Trigonometry unit will focus on the primary trigonometric ratios: sine, cosine, and tangent. Students will analyze various right angle triangles in order to further explore and understand the relationships between parts of the triangle and the trigonometric ratios.

Unit 5: Surface Area & Volume

Big Idea(s): *3D objects can be examined mathematically by measuring directly and indirectly length, surface area, and volume. Representing and analyzing data allows us to notice and wonder about relationships.*
Core Competency Focus: *Thinking*
First Peoples Principle of Learning: *Learning involves patience and time.*

Unit Overview: During this unit, students are expected to perform formula manipulation in onder to determine surface area or volume of shapes such as cylinders and prisms. Students will be exposed to contextualized problems involving 3D shapes.

Unit 6: Averages

Big Idea(s): *Flexibility with number builds meaning, understanding, and confidence. Representing and analyzing data allows us to notice and wonder about relationships.*
Core Competency Focus: *Thinking, Communication*
First Peoples Principle of Learning: *Learning involves patience and time.*

Unit Overview: During this unit, students will explore language and terms related to averages, such as central tendency. Students will analyze varying measures of data, as well as discuss topics such as outliers. Students are expected to perform calculations related to mean, mode, median, and range.

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Unit 7 : Financial Literacy

Big Idea(s): *Flexibility* with number builds meaning, understanding, and confidence. ***Representing and analyzing*** data allows us to notice and wonder about relationships.
Core Competency Focus: *Thinking, Personal/Social*
First Peoples Principle of Learning: *Learning involves patience and time.*

Unit Overview: The Financial Literacy unit will focus on types of income, income tax, other deductions, as well as gross and net pay. Students are expected to connect mathematical concepts to each other and to other areas and personal interest, as well as explain and justify mathematical ideas and reflect how mathematics can be used to support personal choices.

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STUDENT LEARNING ACTIVITIES AND STRATEGIES:

- online lessons
- online practice assignments
- online practice exercises
- paper-based justification of online practice exercises
- paper-based unit assignments
- online lessons quizzes
- unit tests
- portfolio – collection of notes
- online games, activities and interactions
- reflective writing
- performance tasks (grasp tasks)

ASSESSMENT:

The course will include many formative assessment opportunities where students will receive teacher feedback and also have the opportunity to incorporate self-reflection and self-assessment tools. Summative assessment will be used on individual performance tasks that are incorporated in throughout the units. After each unit test, the teacher will provide feedback based on criteria and performance standards. The North Vancouver Curriculum Hub Principles of Assessment - http://nvsd44curriculumhub.ca/assessment/

Formative
- practice homework/video solutions, self-marking of unit assignments, online lesson quizzes, review exercises – checking for completion and understanding of lessons.
- Teacher/student appointments to discuss work and progress

Summative:
- unit assignments, unit tests, performance tasks, portfolio – written feedback, rubric assessment and grade

EVALUATION:

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

Assessment	Percentage of Final Mark
Unit Assignments	14%
Unit Quizzes	10%
Unit Tests	66%
Portfolio	10%
GRASP Tasks (to be incorporated in at a later date)	0%
Final Project (to be incorporated in at a later date)	0%
Course Total	100%

RESOURCES:

The required readings and assignments are provided online for each lesson. Students must have access to a computer with internet capabilities, as well as to a functioning printer. The DL center at Mountainside is available for students who do not have computer/printer access at home or who would like to meet with the teacher for support. There is no textbook required.

NOTE: ***THERE IS NO LONGER A PROVINCIAL EXAM**. As of January 2018, all students must take a **NUMERACY EXAM** at least ONE time during grades 10 – 12. The Numeracy Exam is not necessarily based on Workplace Mathematics 10 content, but rather based on foundational math skills.