LOCALLY DEVELOPED COURSE OUTLINE

Competencies in Math15-3

Submitted By:

The Chinook's Edge School Division

Submitted On:

Nov. 25, 2021

Course Basic Information

Outline Number	Hours	Start Date	End Date	Development Type	Proposal Type	Grades
15-3	62.50	02/01/2022	08/31/2022	Acquired	Authorization	G10

Course Description

Competencies in Math 15 will cover topics including number sense, logical reasoning, measurement, algebra, graphical reasoning, statistics and probability.

The course will enhance numeracy skills in students, develop their critical thinking and problem solving abilities, and set them up for success in future courses in mathematics.

The 3-credit version is based on the authorized 5-credit version with permission to adapt from the developing school authority (Red Deer Public School District No. 104).

The **3-credit version** includes learning outcomes from Number Sense and a minimum of two complete additional topics (Logic and Reasoning, Measurement, Algebra, Graphical Reasoning, Statistics and Probability) from the 5-credit version. This flexibility is provided to meet the learning needs of the students.

Course Prerequisites

None

Sequence Introduction (formerly: Philosophy)

This course aims to improve student mastery of mathematical skills, concepts and ideas. Students will extend their knowledge beyond performing routine operations and will be encouraged to explore a deeper understanding of mathematical concepts through critical thinking and exploration exercises. Students will collaborate with their teacher and peers on exploring multiple ways to solve problems. As such, students will be challenged to become engaged learners, critical thinkers, and competent problem solvers.

Student Need (formerly: Rationale)

Some students struggle to make sense of mathematics as they experience gaps in previous learning and may require additional resources and strategies to fill in these gaps. While the required help is often within reach in their school environment, the one resource often lacking is time. This course aims to give these students an opportunity to be successful in mathematics and have them reach their full potential as engaged learners by providing them with additional strategies, alternate approaches, resources and time with the ultimate goal of learners enrolling in Mathematics 10 Common.

Scope and Sequence (formerly: Learner Outcomes)

The goal of this course is to enhance the numeracy skills of students. Students will use numeracy willingly and confidently in their everyday lives and will be able to communicate effectively using the language of mathematics.
Students will explore a variety of mathematical topics that will lead to an appreciation for mathematics in real-life contexts. In this course, students will discover multiple ways to solve problems and they will develop an appreciation for mathematical contributions to advancements in society.

3-credit version REQUIRED (entire topic)

- Number Sense

3-credit version REQUIRED (a minimum of two of the following topics - all outcomes)

- Logic and Reasoning
- Measurement
- Algebra
- Graphical Reasoning
- Statistics and Probability

Guiding Questions (formerly: General Outcome

1 Number Sense (Required)

2 Logic and Reasoning

3 Measurement

4 Algebra

5 Graphical Reasoning

6 Statistics and Probablity

Learning Outcomes (formerly: Specific Outcomes)

1 Number Sense (Required)	15-3
1.1 Solve problems that involve real numbers using trial and error.	X
1.2 Solve problems that involve real numbers using patterns.	X
1.3 Solve problems that involve real numbers using estimation strategies.	X
1.4 Solve problems that involve real numbers using pictorial representations.	X
1.5 Apply mental math strategies to solve problems with real numbers.	X
1.6 Explore and communicate the characteristics of a rational or irrational number and its significance in our everyday lives.	X
1.7 Explore place value, rounding, significant digits and their importance in scientific notation.	X

2 Logic and Reasoning	15-3
2.1 Solve logic puzzles using trial and error.	X
2.2 Solve logic puzzles using patterns.	X
2.3 Solve logic puzzles using graphic organizers.	X
2.4 Solve logic puzzles using process of elimination.	X
2.5 Engage in games that improve an understanding of numbers and logic.	X
2.6 Evaluate and verify reasoning strategies used in a problem solving process.	X

3 Measurement	15-3
3.1 Demonstrate an understanding of the Pythagorean Theorem by applying the formula to real life situations.	X

3.2 Demonstrate an understanding of 3 D objects and apply the relationship between surface area and volume to real life contexts.	X

4 Algebra	**15-3**
4.1 Apply problem solving strategies to generate possible solutions to a problem through identifying patterns.	X
4.2 Apply problem solving strategies to generate possible solutions to a problem through generating an equation.	X
4.3 Apply problem solving strategies to generate possible solutions to a problem through trial and error.	X
4.4 Apply problem solving strategies to generate possible solutions to a problem through drawing a picture.	X

5 Graphical Reasoning	**15-3**
5.1 Analyze circle graphs, bar graphs, double bar graphs, scatterplots, pictographs and piecewise graphs to solve problems.	X
5.2 Explore the characteristics of the coordinate plane and plot ordered pairs in all four quadrants.	X
5.3 Analyze patterns effectively to identify rules and trends to make predictions.	X
5.4 Create a graph to represent a set of data.	X

6 Statistics and Probablity	**15-3**
6.1 Explore the variety of uses for statistics in real life contexts.	X
6.2 Analyze the results of tasks involving experimental probabilities of independent and dependent events.	X

Facilities or Equipment

Facility

No specified facilities are required for this course.

Facilities:

Equipment

No special equipment is required for this course.
Graphing calculators, manipulatives, and the Internet are strongly recommended.

Learning and Teaching Resources

No specific resources are required for this course.

Sensitive or Controversial Content

No sensitive or controversial issues anticipated for this course.

Issue Management Strategy

Health and Safety

No unique health and safety risks identified for this course.

Risk Management Strategy

Statement of Overlap with Existing Programs

Provincial Courses with Overlap and/or Similarity
Math 8/9
Identified Overlap/Similarity
Pythagorean Theorem, Surface Area and Volume of 3 D Shapes
Reasoning as to Why LDC Is Necessary
Students research how the Pythagorean Theorem was developed and explore, through concrete measurements that the Pythagorean Theorem is valid for all right angled triangles. Students require more time to develop and synthesize the understanding of 3 dimensional objects and the relationship between surface area and volume.

Locally Developed Courses with Overlap and/or Similarity
ESL Introduction to Mathematics
Identified Overlap/Similarity
Algebra and Interpreting Graphs
Reasoning as to Why LDC Is Necessary
The two courses are similar in that they offer an opportunity to explore mathematical concepts in a real life context and provide multiple strategies for students to apply their acquired knowledge. Some of the outcomes for algebra and the graphing section are similar however, the algebra explored in Competencies in Mathematics extends beyond a single step process when compared to ESL Introduction to Math. In comparing the philosophies of the two courses, Competencies in Math offers scaffolded support in mathematics to all learners. ESL Introduction to Math is focused on English language acquisition for ESL Learners (LP 1 and 2) in the context of mathematics.

Student Assessment

No specific assessments are required for this course.

Course Approval Implementation and Evaluation