

Competencies in Math 15-3

Submitted By:
Red Deer Public School District No. 104

Submitted On:
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Board Motion

Motion Conclusion

Motion Date

Motion Number

Motions

Course Basic Information

Course Name	Competencies in Math 15
Credit Number	3
Hours of Instruction	62.50 hrs
Implementation Dates	9/1/2014 - 8/31/2018
Proposal Type	New
Development Type	Developed
Designed Grade Level	Grade 10 Grade 11 Grade 12

<p>Course Description</p>	<p>This 3 or 5 credit course aims to build confidence in students by addressing cross-curricular competencies in the context of mathematics. The course will provide learning opportunities that will develop student competency in knowing how to learn, thinking critically, applying multiple literacies, identifying and solving complex problems, and demonstrating good communication skills. 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.</p>
<p>Course Prerequisite</p>	

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.

Rationale

Inspiring Education has outlined the skills and attributes we expect students to possess as they graduate from high school.

We want students to be numerate, have good communications skills, be critical thinkers and problem solvers. The study of mathematics plays a pivotal role in developing these skills, and as such it is important that students experience success in a high school math program that best supports their aspirations in high school and beyond. However, the study of mathematics is not a positive experience for all students. 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 that is often lacking is time as the rate at which the content is covered may not allow for mastery learning of important skills.

This course aims to give these students an opportunity to be successful in mathematics and have them reach their their full potential as engaged learners by providing them with additional strategies, resources and time.

Learner Outcomes

In general, the goal of this course is to enhance the numeracy and literacy skills of students. Student will use numeracy willingly and confidently in their everyday lives and will be able to communicate effectively using the language of mathematics.

Specifically, the aims of the Competencies in Mathematics Course are to enable students to:

- 1) Enjoy mathematics, and develop an appreciation for the role of mathematics their everyday lives
- 2) Communicate clearly and confidently using the language of mathematics
- 3) Develop logical, critical and creative thinking
- 4) Develop patience and persistence in problem solving
- 5) Demonstrate fluency with mental math and estimation
- 6) Appreciate the role of technology in creating deeper mathematical understanding
- 7) Appreciate the contribution of mathematics to other disciplines

General Outcomes

- 1 Students will communicate mathematical ideas in a variety of ways and contexts, and begin to view mathematics as useful and relevant by making connections to other disciplines.**
- 2 Students will gain knowledge, understanding, and skills through study and interaction with others.**
- 3 Students will identify and solve complex problems.**
- 4 Students will be able to think critically and use mathematical reasoning to make sense of mathematics.**
- 5 Students will select and apply multiple literacies to solve problems and to enhance learning.**

Specific Learner Outcomes

1 Students will communicate mathematical ideas in a variety of ways and contexts, and begin to view mathematics as useful and relevant by making connections to other disciplines.	15-3 15-5
1.1 Communicate effectively using the language of mathematics.	X X
1.2 Apply language, knowledge, and strategies to build common understandings across disciplines.	X X
2 Students will gain knowledge, understanding, and skills through study and interaction with others.	15-3 15-5
2.1 Implement and refine strategies to maximize learning in a variety of authentic learning situations.	X X
2.2 Apply knowledge of patterns, number, shape, space, statistics and probability to help me observe, investigate and interact with the world.	X X
2.3 Apply efficient and mental calculation strategies intuitively when solving complex problems.	X X
3 Students will identify and solve complex problems.	15-3 15-5
3.1 Establish clear criteria to solve problems.	X X
3.2 Develop and apply problem solving strategies to generate possible solutions using a variety of techniques, strategies, and processes.	X X
3.3 Develop the best possible solution by evaluating the validity of alternate solutions.	X X
4 Students will be able to think critically and use mathematical reasoning to make sense of mathematics.	15-3 15-5
4.1 Express generalizations about numbers, quantities, and relations and functions when analyzing data.	X X

4.2 Analyze patterns effectively to identify rules and trends and make predictions.	X	X
4.3 Evaluate reasoning and strategies used in the problem solving process.	X	X

5 Students will select and apply multiple literacies to solve problems and to enhance learning.	15-3	15-5
5.1 Demonstrate effective use of technology as a problem solving tool.	X	X
5.2 Simplify complex problems through the use of technology.	X	X
5.3 Integrate multiple literacies in the problem solving process.	X	X
5.4 Demonstrate the use of concrete materials, technology, and visual representations to solve problems.	X	X

Facilities or Equipment

Facility

This course does not require any special facilities or spaces.

Equipment

This course does not require any special equipment, although access to a graphing calculators, manipulatives and the internet is strongly recommended.

Learning Resources

As this is a new course, a ready made resource is currently not available. As such, a variety of resources will be developed by the teacher(s) of the course. This will include a wide range of assignments and projects (which will require the use of technology and/or manipulatives) as well as assessment materials.

Others

Identification of Controversial or Sensitive Course Content

There are no sensitive or controversial issues expected within this course.

Identification of Safety Components

General safety concerns associated with a classroom setting.

Significant Overlap with Provincial Curriculum

There is no significant overlap with provincial programs of study. The course is designed to enhance communication, critical thinking and problem solving skills to prepare students for success in future mathematics courses.

Assessment

Formative assessment may be determined by incorporating a daily journal and will include teacher/student discussions in regards to strengths, weaknesses and areas of improvement in critical thinking, problem solving and communication.

Summative assessment will include completion of daily assignments, quizzes and unit exams that focus on what the course objectives. Project based activities may be used for either formative or summative assessments.

Course Evaluation and Monitoring

This course will be monitored annually by the High School Math Department Leader, in collaboration with the school principal and the Assistant Superintendent for Learning Services.

Appendix I

Appendix II

Table of Contents

Board Motion	2
Course Basic Information	3
Philosophy	5
Rationale	6
Learner Outcomes	7
General Outcomes	7
Specific Learner Outcor	8
Facilities or Equipment	9
Facility	9
Equipment	9
Learning Resources	10
Others	10
Identification of Controversial or Sensitive Course Components	10
Identification of Safety Components	10
Significant Overlap with Provincial Curriculum	10
Assessment	10
Appendix I	11
Appendix II	11