

**WQSB Suggested Guidelines for Entry into
Cycle II Years 2 and 3 Mathematics Options**

In Cycle II Years 2 and 3 Secondary, there are three mathematics options (appendix A) offered to students. Choice of an option must correspond as best as possible with the student's aspirations for the future, their fields of interest, their aptitudes in mathematics, their desire to learn mathematics, and their overall commitment to learning. **Students selecting the Technical and Science or Science Mathematics options must realize the intensity and high expectations that will be expected of them in these programs that are focused on a science/mathematics oriented approaches.** It should be noted that CEGEPs consider both the *Technical and Science* and *Science* Mathematic courses to be equal for entry into certain programs. Although **by law students have a right to choose any Mathematics option**, the following recommendations are put forward to help students and parents make an informed decision.

1. Entry to the Cultural, Social, and Technical Mathematics option in Cycle II, Year 2 Secondary (Secondary IV) is granted to a student who has clearly demonstrated an overall average competency level 3 (60%) (appendix B) on the end of year competency report in the Mathematics 306 program.
2. Entry to the Cultural, Social, and Technical Mathematics option in Cycle II, Year 3 secondary (Secondary V) is available to a student who has clearly demonstrated an overall average competency level 3 (60%) on the end of year competency report in any of the Cycle 2, Year 2 Secondary (Secondary IV) Mathematics options.
3. Entry to the Technical and Scientific Mathematics or Science Mathematics options in Cycle II, Year 2 Secondary (Secondary IV) is recommended to a student who has clearly demonstrated a competency level 4 (76%) in solving situational problems, mathematical reasoning, and communication in the Mathematics 306 program as indicated on the end of year competency report (June).
4. Entry to the Technical and Scientific Mathematics or Science Mathematics options in Cycle II, Year 3 secondary (Secondary V) is recommended to a student who has clearly demonstrated an overall average competency level 3 (60%) in the Cycle II, Year 2 Secondary (Secondary IV) Technical and Scientific Mathematics or Science Mathematics options, as indicated on the end of year competency report.

The choice of options should always be considered seriously. To graduate from high school students must pass a cycle II year 2 mathematics course. Students selecting the Science Mathematics option are reminded they will not be allowed to write the Technical and Scientific or the Cultural, Social, and Technical Mathematics final June examinations if they fail the Science Mathematics final June examination. If they fail Science Mathematics, they will have to repeat that level mathematics prior to graduation.

Appendix A

In secondary 4 and 5, there are three mathematics options offered to students. Choice of an option must correspond as best as possible with the student's aspirations for the future, their fields of interest and their aptitudes in mathematics.

CULTURAL, SOCIAL AND TECHNICAL OPTION

Who is this for? Students who operate concretely and who want to acquire mathematical tools in order to:

- Design objects and activities, develop projects or participate in making them or carrying them out,
- Debate social causes,
- Develop an entrepreneurial spirit, learn to manage personal finances,
- Become an autonomous and engaged citizen,
- Be prepared for studies in the arts, communications, the humanities and the social sciences.

TECHNICAL AND SCIENTIFIC OPTION

Who is this for? Students who want to acquire mathematical tools in order to:

- Explore situations that sometimes involve both manual and intellectual types of work,
- Work on case studies in a number of different contexts (including both economic and scientific contexts),
- Familiarize themselves with various instruments (their design, operation and use) related to trades,
- Identify errors and anomalies in processes or solutions, and provide appropriate corrective action,
- Be equipped to work effectively in technical fields related to nutrition, biology, physics, business administration, the fine arts, graphic arts, as well as pre-university programs in natural and other sciences.

SCIENCE OPTION

Who is this for? Students who can think theoretically and who want to acquire mathematical tools in order to:

- Delve into subject matter geared mainly towards the field of science,
- Understand the origins of different phenomena, and how they work,
- Develop their use of abstract thinking,
- Focus on the properties of mathematical objects,
- Find, develop, and analyse models within the context of experiments mainly related to different scientific fields,
- Familiarizing themselves with certain research procedures,
- Acquire an academic background that specifically enables them to pursue their studies in the hard sciences or perhaps specialize in research

Appendix B

There are three Math competencies evaluated on levels of competency. These levels correspond to a percentage mark which appears on a student's report card.

The three Math competencies are:

1. Solve a situational problem:

A mathematics problem is considered a situational problem if it meets one of the following conditions:

- The situation has not previously been presented in the learning process.
- Finding a satisfactory solution involves using a new combination of rules or principles that the student may or may not have previously learned.
- The solution, or the way in which it is to be presented, has not been encountered before.

Solving situational problems is one of the cornerstones of mathematical activity, and it involves using a heuristic approach (i.e. an approach centred on exploration and discovery). This approach makes it possible to construct mathematical objects, to give them meaning, to draw upon what one already knows, to develop strategies and to adopt a range of attitudes associated with self-confidence and autonomy.

Solving a situational problem is therefore a complex competency and in using it, students call upon their reasoning skills and develop creative intuition. This competency equips students to deal with novelty and to meet challenges that are within their reach. Solving a situational problem is a dynamic process that involves constantly going back and forth among the problem-solving stages and calls for the ability to anticipate, use discernment and exercise critical judgment. In developing and using this competency, students must decode the elements that can be processed mathematically, represent the situational problem by using a mathematical model, work out a mathematical solution, validate this solution and share the information related to the situational problem and the proposed solution. To do this, they must rely on their knowledge, imagination and sense of curiosity.

March 8, 2009

2. Uses mathematical reasoning:

Using mathematical reasoning is an intellectual activity that entails a particular way of approaching a situation. It involves making conjectures and assessing, justifying or refuting a proposition by applying an organized body of mathematical knowledge. When students use mathematical reasoning, they examine a situation, determine how they will deal with it and organize their thinking by using inductive and deductive approaches, among others. This competency is essential to a range of mathematical activities.

In developing and exercising this competency, students must make conjectures, construct and use networks of mathematical concepts and processes, and validate these conjectures by drawing up proofs. Their thinking draws on different types of reasoning that shape their critical judgment and develop their ability to conceptualize as well as their willingness to understand and to justify.

3. Communicates using mathematical language:

Communicating by using mathematical language involves learning how to use the constituent elements of this language and to coordinate them appropriately in order to interpret, produce and convey messages. In developing this competency, students will not only focus on the usual characteristics of a sound message (e.g. clarity and concision), but also learn to appreciate the importance of precision and rigour.

Using this competency gives students the opportunity to increase their understanding of mathematical concepts and processes and to consolidate their learning, since they must clarify their thoughts through the very means they use to express them. In developing this competency, students are required to perform the following set of synergistically related actions: interpreting, producing and conveying mathematical messages; and making adjustments in communicating a mathematical message.

March 8, 2009

WQSB Report Card
 Descriptive Legend – levels of competency development

Status of competency		Descriptor of status	% Grade
5+	Exceeds all the requirements The student surpasses the expectations for the term and is making excellent progress	Exceeds all expectations of the learning activities with ease	100%
5		Exceeds all expectations of the learning activities	93%
4+	Meets all the requirements The student clearly meets the expectations for the term and is making good progress	Meets all expectations of the learning activities with ease	85%
4		Meets all expectations of the learning activities	76%
3+	Meets many of the requirements The student is meeting many expectations for the term and is making satisfactory progress	Meets most of the expectations of the learning activities	68%
3		Meets basic expectations of the learning activities	60%
2+	Meets few of the requirements The student does not meet the expectations for the term and is experiencing difficulty	Meets few of the expectations of the learning activities	52%
2		Meets very few of the expectations of the learning activities and requires support	44%
1	Does not meet the requirements The student does not meet any expectations for the term and is experiencing great difficulty	Does not meet any of the expectations of the learning activities even with support	35%
NE		Not evaluated at this time	NE