

## Cultural, Social and Technical Option in Secondary V QUESTIONS AND ANSWERS

Fall 2016

The mathematics program team of the Ministère de l'Éducation et de l'Enseignement supérieur introduced the updated Cultural, Social and Technical (CST) option in the Secondary V Mathematics program by means of information sessions held in the fall of 2016. During these sessions, the team was asked a number of questions and has compiled them below, along with the corresponding answers, for your information.

This document also provides some explanations concerning the update but does not do so in detail. Please refer to the Québec Education Program and the Progression of Learning for further information on this update.

### General questions

**1. Were the Québec Education Program (QEP) and the Progression of Learning updated and are they available on the Ministère's website?**

Yes, the English and French versions of these documents have been updated. They can be easily accessed using the following links:

- English version of the QEP:  
[http://www1.education.gouv.qc.ca/sections/programmeFormation/index\\_en.asp](http://www1.education.gouv.qc.ca/sections/programmeFormation/index_en.asp)
- French version of the QEP:  
<http://www1.education.gouv.qc.ca/sections/programmeFormation/>
- English version of the Progression of Learning:  
[http://www1.education.gouv.qc.ca/progressionSecondaire/index\\_en.asp](http://www1.education.gouv.qc.ca/progressionSecondaire/index_en.asp)
- French version of the Progression of Learning:  
<http://www1.education.gouv.qc.ca/progressionSecondaire/>

**2. Has the number of hours of instruction been changed for the CST option in Secondary V?**

As indicated in the *Basic school regulation*, 100 hours per year are still allotted for the Secondary V CST option, for a total of 4 credits.

**3. Will there be a complementary examination or an examination for certification in Secondary V?**

The examination for certification for all the mathematics options, including CST, will continue to be administered in Secondary IV. There will be no change in this regard.

**4. Could the number of periods allotted for the CST option be increased from 4 to 6?**

According to the *Basic school regulation*, 100 hours of instruction per year are allotted for the Secondary IV and V CST option. The number of periods per cycle must therefore correspond to the number of hours of instruction that your school has allotted for this option, since it can decide to offer more than 100 hours per year. The curriculum is established by the Minister, whereas the *Basic school regulation* is approved by government regulation. Furthermore, there is nothing to indicate that the *Basic school regulation* will be amended.

**5. Is the presentation of the update available in English?**

The PowerPoint presentation and the document entitled “Questions and Answers” are available on the RÉCIT site, on the Domaine MST page, at <http://domaine.recitmst.qc.ca/-English-documents->.

**6. Will students be allowed to use calculators with a financial mathematics module during year-end examinations?**

Since there is no examination for certification for the Secondary V CST option, it is up to the teacher, the school or the school board to determine the conditions under which year-end exams are administered.

**7. What was the reaction to the updated version of the Secondary V CST option during the consultation process?**

The teachers on the validation committees representing all regions of Québec (French and English schools, both public and private) unanimously approved all the proposed changes. The unions consulted some of their members, and the majority said they were satisfied with this update.

**8. Will there be changes to the course codes for the CST option?**

No, there will be no changes to the course codes because this is an update and not a new course.

**Questions on instructional materials****9. Will teachers be offered instructional materials?**

Yes, publishers are preparing additional materials to supplement the instructional packages available for the Secondary V CST option.

**10. When will they be ready?**

This information is unavailable at the moment.

**11. Does the ministerial budget provide for the acquisition of instructional materials?**

Yes, the 2016-2017 budget will allocate \$33 per student enrolled in the Secondary V CST option as of September 30, 2016. This amount is to be used to purchase materials approved by the Minister for the purpose of supplementing the textbooks and teaching guides.

**12. Does the budget allow for the purchase of digital materials?**

The measure provides for the purchase of materials approved by the Minister for the purpose of supplementing the textbooks and teaching guides.

**13. Does the budget also allow for the acquisition of workbooks or exercise books?**

No, the measure stipulates that the instructional materials must be approved by the Minister. Workbooks and exercise books are not approved by the Minister.

**14. Does the budget cover the cost of instructional materials for the updated Secondary IV CST option?**

No, it does not, because the updates to the Secondary IV CST option only involved removing or shifting concepts without adding any new content. The existing instructional materials can therefore still be used.

**Questions on the specific requirements for admission to college-level technical training programs****15. What are the 16 additional technical training programs that can now accept Secondary V CST students?**

The Minister responsible for Higher Education must approve and announce the changes related to specific college admission requirements. This should be announced in the fall of 2016.

**16. Which two college-level technical training programs could accept Secondary V CST students before the update?**

- *Urban and Regional Planning*
- *Hunting and Fishing Resource Development*

**17. When do you think the work on updating specific college admission requirements will be completed?**

The fall of 2015 saw the completion of an initial phase of work involving college-level technical training programs for which the mathematics prerequisites are the Secondary IV or V Technical and Scientific option or Science option. Work on updating the specific admission requirements for all the other technical training programs, including those without a specific mathematics requirement, will continue in the fall of 2016 and should be completed before the holidays.

## Questions on the addition of the cosine law

### **18. Why was the cosine law added to the Secondary V CST curriculum?**

When the checklists were analyzed and the specific requirements for admission to certain technical training programs were reviewed, it turned out that a number of these programs called for this concept. Since the Secondary IV CST option had already been updated, the decision was made to teach the cosine law in Secondary V in conjunction with equivalent figures and solids to ensure that students would be well equipped for college.

### **19. Should the trigonometry of triangles be taught again?**

It may be appropriate to review the trigonometry of triangles in teaching concepts related to equivalent figures and solids. In this regard, the cosine law will provide CST students with additional trigonometric tools for solving problems.

## Questions on the inclusion of powers and logarithms as well as financial mathematics

### **20. Why are you focusing on base 10 in calculations involving logarithms?**

Base 10 is emphasized in calculations involving logarithms because it is easy for students to use their scientific calculator. It should be noted that the properties of logarithms and logarithmic functions are not covered in the CST option.

### **21. Should we only assign financial problems when asking students to calculate the value of an exponent?**

All the contexts used when teaching the exponential function in Secondary IV can be studied once again in Secondary V.

### **22. In Secondary V, should the notation with $C_0$ and $C_n$ be used rather than the notation with $f(x) = ab^x$ , as in Secondary IV?**

Both types of notation can be used because students can review the concepts associated with exponential functions learned in Secondary IV. However, it is important to start teaching the notation used in “financial formulas” to give students a proper introduction to financial mathematics.

### **23. Should students be asked to draw graphs when working with financial situations?**

Yes, this can be explored. Students can be asked to draw curves when they are required to apply the concepts related to exponential functions learned in Secondary IV.

### **24. Can spreadsheet programs be useful in studying financial mathematics?**

In addition to calculators, spreadsheet programs can be used to solve financial problems. It may be worthwhile to show students how a spreadsheet program can be used to perform elaborate calculations and present data clearly.

**25. How far should we go in studying the calculation of interest rates (e.g. annual, biannual, quarterly)?**

The focus is on interest paid out once per period. For example, monthly interest (paid out once a month) can be examined. The idea is to avoid using the formula  $C_n = C_0 \left(1 + \frac{i}{t}\right)^{nt}$ . However, this formula could be one of the avenues of exploration to be pursued with the students.

The appendix entitled *Examples of Financial Mathematics Problems* outlines a number of typical problems that can be explored with the students.

