

## **Group Curriculum Project.**

Due Date: **Nov 9 - Dec 2** in class as scheduled for your group.

(please submit electronic copy to: [mkondra@mun.ca](mailto:mkondra@mun.ca))

Each group of 4 students is working on one of the following eight **areas**: numbers and counting, measurement, plane geometry, space geometry, algebra, trigonometry, data analysis, and pre-calculus.

Before starting please review notes on lesson planning posted on Sept 14. Review the teaching resources (the textbooks currently in use) placed on reserve in CMC for the grade level of your choice (7-12).

Each group is required to submit the following **four** items: the documents review and math ideas; unit plan; lesson plan; and reflections.

- **Documents review (1 page) and most important mathematical ideas (1 page) from your area.**

For this review your main documents are current *NL Mathematics Curriculum, Program of Studies, Foundations for Atlantic Canada Math Curriculum, and NCTM Principles and Standards*. You may also look through *The Mathematics Teacher* journal and other publications and resources of your choice. You have to identify *what it supposed to be learned* in **your area** (specific outcomes, skills etc.). **Please rank the outcomes, give me top five of them and briefly explain your choice.**

I am also asking you to give about **ten mathematical statements, facts, formulas or procedures** which you believe are the most important and representative for **your area**. This may come from both reading and your experience in mathematics classes. Be prepared to **share this page with the rest of the class** on the day of your presentation.

- **Unit plan** (1 page; based on Curriculum Guides and the actual textbook currently used in the secondary math) including:
  1. unit goals and objectives;
  2. prerequisite knowledge;
  3. timeline – number of classes, sequencing of topics, days for test and assessment (see e.g. Course Information for my Math3210);
  4. learning resources (students' text, other books);
  5. tools (technology and manipulatives).
- **Lesson plan** (2 pages) with a homework assignment (2 pages).

Select a **rich learning task** from **your area**. Make sure that the task has both *elementary* and *advanced* ways to approach it, it has both *concrete* and *abstract* aspects, and that it may be connected to several ideas and outcomes.

When writing your lesson plan follow the sample given in class or found in D.J. Brahier's book (page 139-142, and Chap. 7) (This book is placed on reserve in CMC). **Be clear and concise**. Be consistent with unit goals and the list of ten mathematical items you previously identified.

Your group will give **one hour in-class presentation** on this lesson plan. The lesson must **actively engage** other students in the learning process. Include a **homework assignment**, which you will give at the end of your lesson, with your own solutions and marking schema or rubric.

- **Reflections** (1 page).

Each group will meet with me after their presentation for a **10 minutes conversation** about their teaching experience. The group will submit their **reflection paper** on our next class meeting. Report about what went well and what you would do differently next time.

*Please consult with me at least **one week prior** to your presentation to make sure that everything is on track.*

### **Tips for good math lesson.**

1. Be excited about your topic and know material well.
2. Pick a problem which is challenging enough and requires some exploration and thinking (rich learning task). Set high standards and expectations.
3. Have (an elegant) solution to your problem which is within the reach of your students.
4. Before giving the problem to the students, explain background material well. Make sure that students understand terminology and basic formulas and ideas related to the topic by asking probing questions while explaining.
5. Ask them to solve a simpler problem to “warm up”. Make sure that everyone is comfortable and agrees with its solution.
6. You may set up groups and ask students to explore the challenging problem using manipulatives and technology.
7. While students work on the problem go around, observe, make comments and focus their attention on how to organize their data and conjectures.
8. Collect responses from various groups on the blackboard. Discuss possible strategies and approaches in solving this problem.
9. Demonstrate your own solution if it was not found by any group.
10. Make conclusion and summary of the lesson’s mathematical results.
11. Give homework related to the in-class activities.

See also *example of good challenging problem and worksheets for its exploration*. (Mathematics Teacher, February 1993)