Qualities of Good and Excellent
Secondary School Mathematics Lessons

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Good Lesson

- **Pre-assessment:** Students' prior knowledge is assessed from previously taught concepts and ideas.
  Justification: Teachers must determine what level his/her students are at in order to successfully plan and execute a lesson. Failing to pre-assess decreases lesson quality, pedagogical integrity and the overall learning experience. In addition, an improved final course grade was reported with statistical significance for those students who reported doing pre-homework, as compared to students who were not assigned pre-homework.
  Sources: Implementing Pre-Homework in the Developmental Mathematics Classroom. Mireles, S.V. *et al*. Research & Teaching in Developmental Education. 29.2 (2013): 5-13.
  Assessment Measures: Pre-Tests for Successful Distance Teaching and Learning

- **Agenda**: Lesson is concisely broken down in successive order. Learning goals and success criteria are included.
  Justification: Sharing learning goals and success criteria with students is good practice for promoting student learning. Ultimately, students benefit from lesson structure, transparency and clearly outlined expectations.
  Source: Growing Success document, page 38.

- **Lesson Content:** Concepts taught within the lesson meet the Ontario Curriculum expectations.
  Justification: One of the seven fundamental principles as stated in the Ministry of Education's Growing Success Document for rich and challenging practice is that teachers use practices and procedures that are carefully planned to relate to the curriculum expectations and learning goals.
  Source: Growing Success document, page 6.

- **Lesson Delivery:** Lesson is delivered using a variety of communication techniques (i.e. visually, auditorily, or through hands-on [interactive] practice).
  Justification: The use of visual aids and hands-on activities, whenever possible, will assist students who learn best through visual and tactile methods. Numerous studies have shown that students learn mathematics better when manipulatives are used.
  Source: Mathematics accommodations for all students. Fahsl, A. Intervention in School and Clinic. 42:4 (2007) 198-203.

- **Assessment/Evaluation:** Student level of learning/competency with new material is assessed throughout or following the the lesson.
  Justification: Classroom assessments are an essential component of the teaching and learning process. Such assessments are not only a means to assign grades and determine whether students achieve objectives but have also become a learning tool.
  Source: Classroom Assessments in Mathematics: High School Students' Perceptions. Gao, M. International Journal of Business and Social Science. 3:2 (2012) 63-68.

- **Consolidation:** The concepts addressed in class are reviewed/summarized at the end of the lesson and/or in future lessons.
  Justification: Student need to first be fluent in their skills (i.e. have the concept consolidated to ensure a high understanding) in order to think more complexly and critically.
  Source: The Balanced Literacy Diet

- **Time for individual work/practice:** Students are given a chance for individual practice of new material during class time (i.e. assigned problem sets / homework).
  Justification: Students need to practice concepts taught in class in order to solidify their ideas and skills. Students of higher abilities may need less practice in comparison to students of lower abilities who are behind and need to catch up.
  Source: Are You Down or Done With Homework?

- **Excellent Classroom Management**: The teacher effectively deals with classroom disruptions to continue the flow and structure of a lesson.
  Justification: When a classroom is well-managed with procedures, there is little downtime and learning is productive. The students are motivated and on task, and the climate of the classroom is work-oriented but relaxed and pleasant. The school year flows smoothly with the teacher and the students experience success.
  Source: Managing Your Classroom for Success. Wong, H. *et. al*. Science and Children. 49 :10 (2012) 60-64.

Excellent Lesson

- **Hook**: Lesson is introduced via a highly engaging and appropriate activity that "hooks" or draws students into the lesson.
  Justification: Students capture what's interesting and engaging about the material right from the start via a brief story, riddle, picture, analogy, demo, experiment etc. Students are then eager, inspired, interested and willing to begin the learning process.
  Source: The Complete Teach Like a Champion, Interactive Edition. Lemov, D. 1st edition published by Jossey-Bass Teacher.

- **Effective use of humour**: During lesson delivery, the teacher appropriately and effectively uses humour in the classroom.
  Justification: There are many benefits connected to the use of humour in the classroom. Through humour, the teacher captures and retains students' attention, reduces stress and/or anxiety, increases student self-esteem and builds classroom culture and morale. Humour can also promote a sense of acceptance in the classroom by promoting positive relationships among the students and teacher.
  Source: Using Humor in the Classroom. Ivy, L. The Education Digest. 79.2 (2013): 54-57.

- **High student engagement**: Student attention is obtained and maintained throughout the entirety of the lesson.
  Justification: Research links higher levels of engagement in school with improved performance. Researchers have found student engagement a robust predictor of student achievement and behavior in school, regardless of socioeconomic status. Students engaged in school are more likely to earn higher grades and test scores, and have lower dropout rates. In contrast, student with low levels of engagement are at risk of long-term adverse consequences, including disruptive behavior in class, absenteeism, and dropping out of school.
  Source: Engagement in the classroom: A pathway to student achievement. Chamberlain, J. Pacific Lutheran University, ProQuest, UMI Dissertations Publishing, 2005.

- **Effective use of technology**: The teacher takes advantage of technology-based resources that benefit and encourage student learning.
  Justification: The use of effective technology is the classroom has been shown to enrich students' understanding of mathematics.
  Source: Reflections on a technology-rich mathematics classroom. Hodges, T.E., Conner, E. The Mathematics Teacher. 104: 6 (2011) 432-438.