MathLinks 9: Rationalization of the Chapter Order

With a few exceptions, teachers using *MathLinks 9* can choose any order for their Grade 9 mathematics program. In the design, however, certain chapters are intended to be used before other chapters. These include:

- Chapter 2 Rational Numbers before Chapter 3 Powers and Exponents
- Chapter 5 Introduction to Polynomials before Chapter 7 Multiplying and Dividing Polynomials
- Chapter 6 Linear Relations before Chapter 8 Solving Linear Equations and Chapter 9 Linear Inequalities

The development of the chapter order in this student resource draws upon current educational, psychological, and brain-based learning research. In the *WNCP Mathematics Research Project: Final Report* (McAskill et al, 2004), it was noted that the research on learning theories addresses ten common student needs:

1. The need for meaning
2. The need for structure
3. The need for repetitive action
4. The need for difficulty
5. The need for significance and relevance
6. The need for social interaction
7. The need for verbal-symbolic interaction
8. The need for a well-defined discourse
9. The need for belonging
10. The need for balance (Sfard, 2003)

This sequence attempts to address these needs by supporting connections within mathematics and providing opportunities for spiral reinforcement of concepts from one chapter to the next.

Since students exhibit more than one learning style, the arrangement of chapters in this student resource provides as much variety as possible. This variety is most evident in the way that chapters alternate between those that are:

1. visual and symbolic
2**.** geometric and numeric
3. easier to motivate and more abstract

Chapter 1 Symmetry and Surface Area was placed first in the sequence of chapters for two reasons. First, it connects to the last chapter in the *MathLinks 8*, Chapter 12 Tessellations. It was also thought to be a chapter that required limited prior knowledge and for this reason should allow students to have success early in Grade 9.

Chapter 2 Rational Numbers includes concepts and processes necessary for many of the chapters that follow. For this reason, Rational Numbers were introduced near the beginning of the student resource.