



# Visualization

"Visualization is fostered through the use of concrete materials, technology and a variety of visual representations." (pg. 10)

"It is through visualization that abstract concepts can be understood concretely by the student." (pg. 10)

(The Alberta 10-12 Mathematics Programs of Study with Achievement Indicators 2008,

## Seven Mathematical Processes

- Communication
- Connections
- Mental Mathematics and Estimation
- Problem Solving
- Reasoning
- Technology
- **Visualization**

## Thoughts on Visualization

### Concrete Materials

The following are examples where manipulatives may assist in visualizing abstract concepts.

- M10C Polynomial Algebra Tiles (Polynomials Notebook Lessons)  
[C1 - Polynomial Intro Review.notebook](#)  
[C2 - Multiplying Polynomials.notebook](#)  
[C3 - Factoring Polynomials.notebook](#)  
*Algebra tiles are a life-saver for students who struggle with abstract concepts.*
- M10C Nets for Surface Area - *Allowing students to derive the surface area formulas from nets assists in their understanding of the formulas and how to use them.*
- Volume of Pyramids vs. Prisms Investigation - *Use giant geo-solids and water or sand to show how many pyramids will fit into the corresponding prism with the same base and height. Get students to guess first!*
- [M30-3 Transformations in Art](#) (Notebook Lesson) - Students loved this lesson where we identified as many transformations that we could find in various pieces of geometric art. They then created their own pieces!

### Technology

The use of images, animations and video can assist students in their visualization of concepts. See [Technology](#) for some possible uses of technology.

For more information and additional supports for implementation, visit <http://erlc.ca/resources/filter.php?theme=11&title=Mathematics>





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## Variety of Visual Representations

Graphic organizers are a great way to assist students in visualization as well as making connections.

Below is an example of a graphic organizer for slope of a line (click here to download a [blank template](#)):

