What are manipulatives?

In math classrooms today, teachers are using manipulatives to help students learn mathematics. Manipulative materials are any concrete objects that allow students to explore an idea in an active, hands-on approach. Manipulatives can be almost anything – blocks, shapes, spinners or even paper that is cut or folded.

The power of using manipulatives is that they let the student connect mathematical ideas and symbols to physical objects, thus promoting better understanding. For example, students in grade 5 must learn about decimal numbers. Students make a common mistake when comparing 0.7 and 0.56, thinking that 7 tenths is a smaller number than 56 hundredths. This is because students think that a two-digit number, such as 56 hundredths is larger than a one-digit number, 7 tenths. That "rule" works for whole numbers, but not decimals. If the students are asked to build these numbers using a manipulative such as base ten blocks, they can immediately see that 7 tenths is larger than 56 hundredths. They connect the model to the concept of the size of the numbers. With many experiences building and representing using manipulatives, students can deepen their understanding of abstract math concepts.

Manipulatives can also be tools to help students solve problems. By using physical models to represent their thinking, they can move and adapt the materials as they explore possible solutions to problems. In real life, many people use models to help solve problems, such as an architect who might construct a model of a building or an engineer who might build a prototype of a piece of equipment.

For many students, concrete materials provide support in dealing with a subject that can be difficult and confusing. Students begin learning about a concept using manipulatives and progress to recording their work with manipulatives. Students connect their constructions to the written record of symbols and numbers. Concrete materials are imperative for exploration and experimentation with math ideas as students develop meaning. We want all students to be confident mathematicians that can explain and represent their thinking accurately, effectively and efficiently.

How might I support my child with manipulatives?

- Manipulatives at home can include buttons, macaroni, pop can tabs, rocks, etc.
- When your child is working on math homework, ensure that materials are available for your child to use. Ask your child to show his thinking using manipulatives.
- Visit your child's classroom and have your child explain how he uses materials when working on math.

Alberta Education Implementation Schedule	2008-2009	2009-2010	2010-2011
Provincial	**Grades K, 1, 4, 7**	**Grades 2, 5, 8**	**Grades 3, 6, 9, 10**
Optional	Grades 2, 5, 8	Grades 3, 6, 9	

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