

# WHAT ARE STUDENT LEARNING OUTCOMES?

Learning outcomes are statements that describe what students are expected to know and be able to do in a specific subject area by the end of a course or grade.

Each general learning outcome includes specific learning outcomes. Students are expected to show that they have attained the specific learning outcomes for a particular course or grade while building on and maintaining previous outcomes.

## A Representative Sample of Mathematics Outcomes

### Grade 3

#### General Outcome

The student develops a number sense for whole numbers 0 to 1000 and explores fractions (fifths and tenths).

#### Specific Outcome (one of many)

- counts by 2s, 5s, 10s, and 100 to 1000, using random starting points.

### Grade 6

#### General Outcome

The student solves problems involving perimeter, area, surface area, volume and angle measurement.

#### Specific Outcome (one of many)

- designs and constructs rectangles of a given area, using natural numbers.

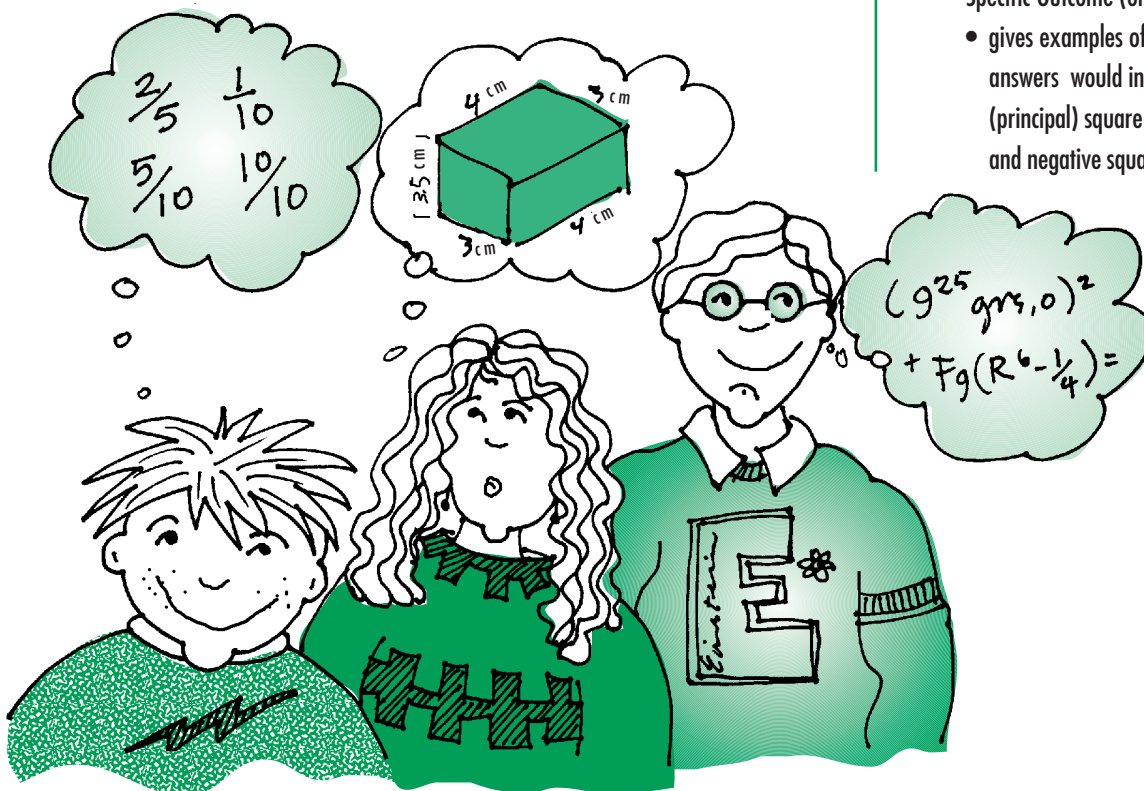
### Senior 1 (formerly Grade 9)

#### General Outcome

The student explains and illustrates the structure and the interrelationship of the sets of numbers within the rational number system and develops a number sense of powers with integral exponents and rational bases.

#### Specific Outcome (one of many)

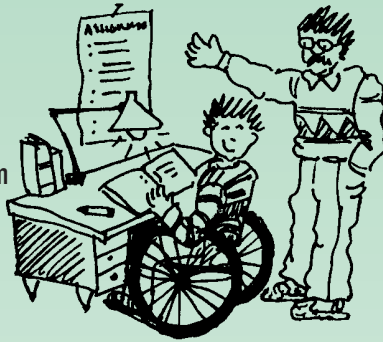
- gives examples of situations where answers would involve the positive (principal) square root, or both positive and negative square roots of a number.



# HOW CAN YOU SUPPORT YOUR CHILD IN SCHOOL?

## Numeracy learning is a shared responsibility.

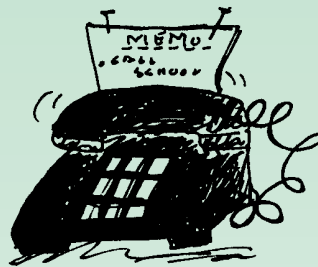
1. Work with your child to set up a study area in the home that is comfortable and away from too many distractions.



2. Be available to provide help and support if it is needed. If you are unable to help, assist your child in finding someone who can.



3. Make it a habit to talk with your child about school work. Even if you aren't familiar with the topic, you can still be an interested listener.



4. Keep in touch with your child's teacher. Stay informed about your child's progress (notes, phone calls, visits). Encourage the teacher to contact you about successes and achievements, not just problems.



5. Make sure your child has access to scraps, junk and art materials for building and making things.



6. Establish a regular study time when homework assignments, review work or reading are to be done.

Negotiate a time that is flexible enough to fit your child's extracurricular schedule.



7. Attend parent orientation nights, open houses, special events, parent-teacher interviews. Read school newsletters. Discuss all of these with your child.



8. Make sure your child has a good night's sleep, eats breakfast and gets to school on time every day.

9. Invite your child to watch or assist you whenever possible. It is an excellent way for a child to gain background experience and to develop self-confidence in trying new things.



10. Have fun with problem solving on an ongoing basis at home. Use your child's experiences and everyday situations to create and solve problems.



# WHAT WILL STUDENTS LEARN IN MATHEMATICS?

The new mathematics curriculum frameworks contain four strands - number, patterns and relations, shape and space, statistics and probability. In many mathematics classes, it was traditional practice to spend much of the time on knowledge and skills in the number strand. Students learned numbers and how to compute them by adding, subtracting, multiplying and dividing.

In the Manitoba curriculum frameworks, all four strands are of equal importance. Every student, regardless of ability, can find an area of mathematics learning in which to shine. For example, a teacher describes a student for whom number work is a real struggle, but who finds great joy in working with 3-D solids and is now the class expert on them. Students have an opportunity to work in areas of strength and also in areas where their skills need to improve.

In planning the year, teachers include content from all four strands. That way each student has an opportunity to experience success in a well-rounded mathematics education.

## The Four Strands of Mathematics

### Number

- number concept
- number operations

### Patterns and Relations

- patterns
- variables & equations
- relations & functions

### Shape and Space

- measurement
- 3-D objects and 2-D shapes
- transformations

### Statistic and Probability

- data analysis
- chance & uncertainty



# LEARNING BRIDGES

To help children achieve success in mathematics, it is important to create learning bridges. These are activities designed to help students make connections between real-life experiences and the use of concrete materials and abstract, symbolic thinking. Concrete materials are those that can be touched or handled.

Mathematics is more meaningful and much easier to understand when many connections are made between the two types of thinking (concrete and abstract). Learning bridges are essential. They are crossed back and forth many times throughout the grades. The challenge for teachers is to provide many opportunities for students to make these crucial connections.

## Bridging

**Concrete Thinking, Students' Life Experiences,  
Symbolic Experiences and New Mathematical Concepts**

## Connecting

**Concrete/Simple**

**Abstract/Complex**

active learning  
sharing  
visualizing  
reflecting  
integrating  
manipulative materials  
pictures  
graphs  
symbols  
real-world applications  
models

