

Numeracy for Secondary Students

Handbook
for Parents

 **BRITISH
COLUMBIA**
Ministry of Education


British Columbia
Association of
Mathematics Teachers

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Numeracy for Secondary Students

This handbook is about numeracy education in secondary schools in British Columbia. It answers the following questions:

- What is numeracy?
- Why is numeracy important?
- How is numeracy addressed in the BC Grades 8 to 12 mathematics curriculum?
- What are your child's secondary mathematics options?
- What should you look for in today's mathematics classrooms?
- How can you support your child?
- What if your child is having difficulty?
- Where can you get more information?

What is numeracy?

Numeracy is "...the combination of mathematical knowledge, problem solving and communication skills required by all persons to function successfully within our technological world. Numeracy is more than knowing about numbers and number operations." (British Columbia Association of Mathematics Teachers, 1998)

Numerate students can deal with numbers and measures confidently and competently. They can compute on paper, in their heads, and by using technology. They can estimate and solve problems in a variety of situations. They also understand how information is gathered by counting and measuring and how it is presented in graphs, diagrams, charts, and tables.

Why is numeracy important?

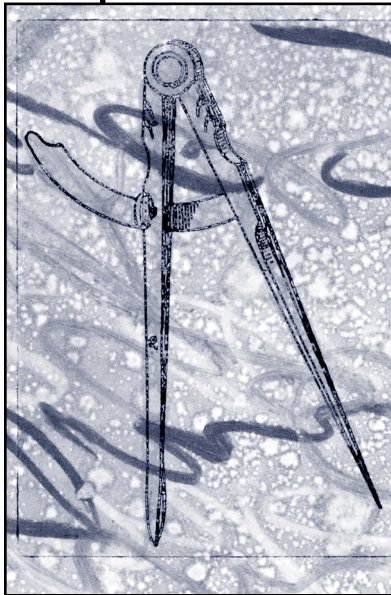
Literacy and numeracy are important foundations for all learning in school. These foundations are also important for people to function successfully as adults in today's world.

Whether we are aware of it or not, we use our numeracy skills every day at work, at home, and at leisure. For example, we:

- negotiate loans and mortgages
- adapt recipes when cooking or baking
- estimate how much to tip
- examine surveys or poll results

To be successful in school, the workplace, and community, students must become numerate. To be numerate, means that students:

- know basic number facts
- estimate values and make mental calculations
- use mathematics comfortably in their studies



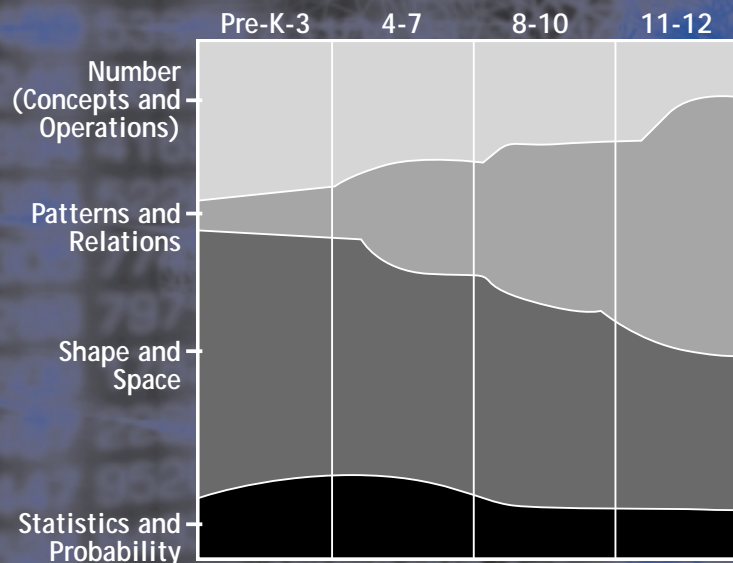
- figure out numerical information from graphs and charts
- become effective problem solvers
- use technology appropriately to solve problems

How is numeracy addressed in the BC Grades 8 to 12 mathematics curriculum?

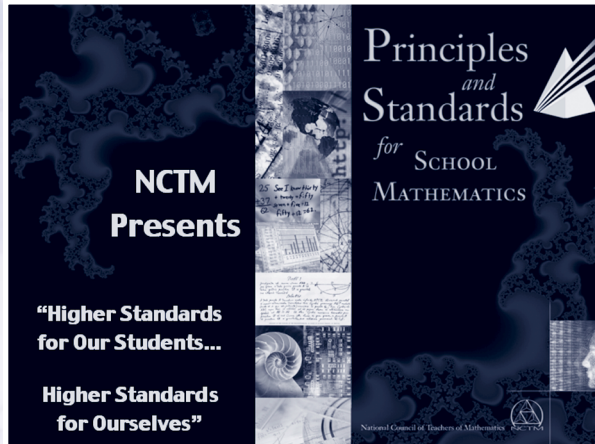
The BC mathematics curriculum is based on a set of international standards developed by the National Council of Teachers of Mathematics (NCTM).

Four important sets of mathematical ideas provide the structure for the BC mathematics curriculum:

- **Number (Concepts and Operations)** - students continue to use basic arithmetic operations and appropriate technology to solve consumer problems.
- **Patterns and Relations** - students solve different types of equations such as linear, quadratic, polynomial, exponential, logarithmic.
- **Shape and Space** - students use geometry, scale diagrams and measuring devices to solve problems.
- **Statistics and Probability** - students use probability and statistics to solve problems involving data samples.



This chart shows the amount of time spent on each of the sets of mathematical ideas at various grades.



The curriculum supports the following processes that foster numeracy:

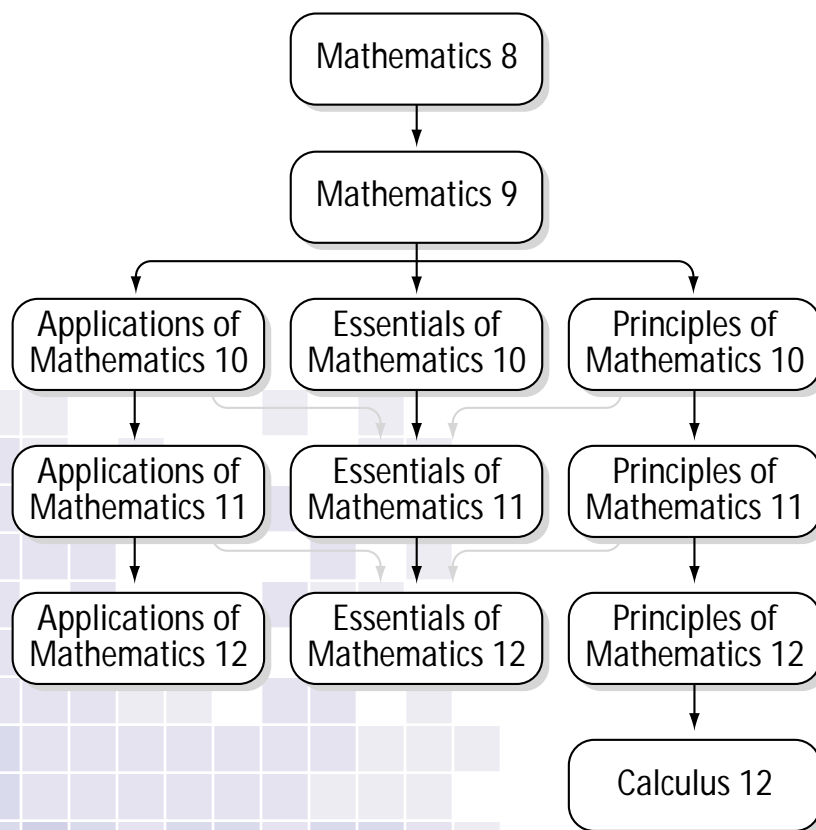
- developing positive attitudes
- estimating and doing mental mathematics
- problem solving
- communicating mathematically
- connecting and applying mathematical ideas
- reasoning mathematically
- using technology

BC Secondary Mathematics Course Structure

Graduation Requirement

Successful completion of the Grade 11 mathematics course in any of the three pathways satisfies the provincial graduation requirement.

What are your child's
secondary mathematics options?





Mathematics 8 and 9

These courses:

- identify the learning outcomes considered vital to the development of numeracy (these learning outcomes are essential for all students to learn and provide a guide for teachers when students are having difficulty)
- prepare students for any of the pathways in grades 10 to 12

After successful completion of Mathematics 8 and 9, students choose among three provincially developed mathematics pathways.

Applications of Mathematics 10 to 12

This pathway:

- enables your child to learn mathematics necessary for success in their daily lives and future careers
- prepares students for entrance into some university degree, certificate, diploma, continuing education, trades and technical programs, none of which require calculus

Essentials of Mathematics 10 to 12

This pathway:

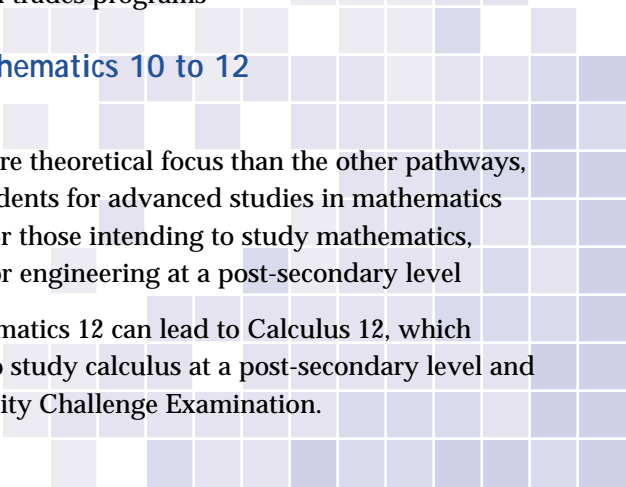
- provides students with skills necessary to be informed citizens
- prepares them to become confident in using mathematics in the workplace and prepares them for a limited number of vocational and trades programs

Principles of Mathematics 10 to 12

This pathway:

- provides a more theoretical focus than the other pathways, to prepare students for advanced studies in mathematics
- is necessary for those intending to study mathematics, science, and/or engineering at a post-secondary level

Principles of Mathematics 12 can lead to Calculus 12, which prepares students to study calculus at a post-secondary level and to write the University Challenge Examination.



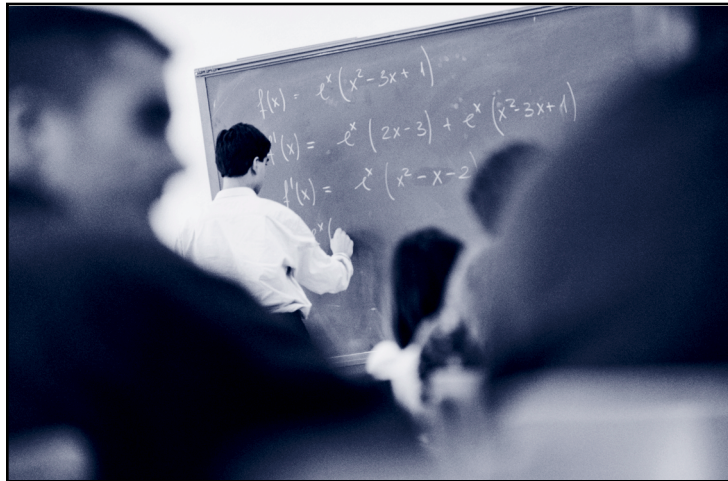
What should you look for in today's mathematics classrooms?

Teachers help students successfully complete the entire mathematics curriculum by using a variety of methods and learning resources and by adjusting the amount of time for instruction.

Today's mathematics classrooms differ from what you may have experienced. Today's classrooms tend to:

- use a variety of teaching and assessment strategies to respond to the learning needs of individual students
- promote co-operation through having students participate actively in groups
- encourage students to talk about mathematics with confidence
- support a problem-solving approach to encourage logical and creative thinking
- promote the appropriate use of calculators and computers as tools for learning mathematics





How can you support your child?

When the home and school work together, young people have increased opportunities to gain the numeracy skills necessary for success in school and beyond. Here are some suggestions for you to help your child meet with success in mathematics:

- Share a positive attitude towards mathematics.
- Meet with the mathematics teacher to see if your child is actively involved in mathematics.
- Make sure that your child is challenged and encourage his or her interest and pursuit of mathematics.
- Provide a quiet study area for your child.
- Encourage your child to keep a regular study schedule.
- Help your child see that mathematics is very much a part of everyday life and that many jobs require mathematics.
- Encourage your child to use calculators and computers appropriately.

What if your child is having difficulty?

Begin by talking with your child's teacher, counsellor, or the school administrator to discuss the issues. Ask questions such as:

- What are the mathematics and numeracy skills that my child is expected to learn?
- What is the difficulty my child is having?
- Is my child in the appropriate program? Should my child be assessed to see if he or she has special learning needs which may result in the development of an Individualized Education Plan?
- What additional help is available in the school?
- What can be done at home to help?

Work out a plan that considers how your child learns, his or her personal and career goals, and the kind of support needed at home and at school.

Individualized Education Plan (IEP)

A small number of students require an Individualized Education Plan (IEP).

An IEP is a written plan, developed for a student, which describes how the school will support the student's learning. It lists the adaptations, modifications and/or support services to be provided. It serves as a tool for collaboration among the school, the parents, the student (where appropriate), and, as necessary, school district personnel, other ministries and/or community agencies. If your son or daughter has an IEP, you should check with the school to see if he or she will be eligible to graduate with a dogwood certificate.



Where can you get more information?

Your Child's School

The first place to check for information should always be the school. Your child's mathematics teacher and the counsellor can be excellent sources of information.

Print Resources

Print resources are available from:

Government Publications Services

563 Superior Street, Victoria, B.C.

V8W 9V7

Toll Free: 1-800-663-6105

Web site: www.publications.gov.bc.ca



Internet

You can get information about numeracy and the mathematics curriculum on the Internet.

For publications developed especially for parents, use the following web sites:

- Programs and services for parents:
www.bced.gov.bc.ca/parent_ps.htm
- Publications for parents:
www.bced.gov.bc.ca/pubsparents.htm
- Curriculum Handbook:
www.bced.gov.bc.ca/parentguide/
- Better Learning: www.bced.gov.bc.ca/betterlearning/
- Foundation Skills Assessment (FSA):
www.bced.gov.bc.ca/assessment/fsa/

For information about the mathematics curriculum, use the Ministry of Education's Curriculum Branch web site, at www.bced.gov.bc.ca/irp/irp.htm

For information about career planning, including mathematics prerequisites for BC post-secondary institutions, use these web sites:

- www.bccat/homepage.html
- www.openingdoorsbc.com
- www.bced.gov.bc.ca/careers/planning/
- www.bcopportunities.com/

For general information on mathematics education, contact either the British Columbia Association of Mathematics Teachers (BCAMT) at www.bctf/bcamt/ or the National Council of Teachers of Mathematics (NCTM) at www.nctm.org and click on Family Corner.

