

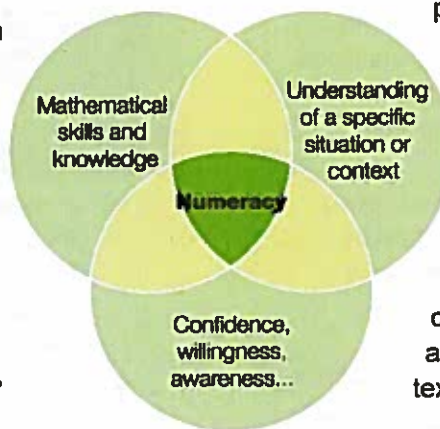
Numeracy

What is numeracy?

Alberta Education defines numeracy as the ability, confidence and willingness to engage with quantitative and spatial information to make informed decisions in all aspects of daily living.

> **Quantitative information** can be measured and expressed as an amount. It includes numbers, patterns, statistics and probability.

> **Spatial information** is the physical location of objects or people or the relationship between objects or people. It includes measures, location, direction, shape and space.



A numerate individual has the confidence and awareness to know when and how to apply quantitative and spatial understandings at home, at school, at work or in the community.

Why is numeracy so important?

Every day we are presented with quantitative or spatial information that we need to interpret and use to make sense of our world. We rely on our numeracy skills to compare costs, get to a destination, judge distances, fit objects into a limited space, interpret a chart or adapt a recipe. In school, numeracy, along with literacy, enables students to make meaning of the things they are learning in subjects like math, language arts, science and social studies.

How is numeracy different from mathematics?

Mathematics and numeracy both draw on the same body of knowledge, but they are not the same. Numeracy involves examining a particular context or situation and drawing on the relevant mathematical understandings to make an informed and personally suitable decision.

For example, choosing the most economical family cell phone plan requires an individual to perform calculations (mathematics) and accommodate the data, talk time and texting needs of each user (numeracy).



"Numeracy isn't about being able to flexibly use all of mathematics... but rather to flexibly draw on that subset of mathematics that is most useful in dealing with (life's) 'diverse contexts and situations'."

– Liljedahl & Liu, 2013



How do we use numeracy throughout our lives?

Numeracy development is a progression over time.

- Young children develop numeracy as they judge the distance needed to grasp a toy, recognize patterns and routines or learn how to manipulate shapes to complete a puzzle.
- Older children use numeracy to play board games, estimate the cost of a purchase with tax, judge how far to kick a ball or determine when to leave to arrive on time.
- Young adults make use of their numeracy skills when they interpret sports statistics, navigate their way to a destination, track cell phone data usage or budget to save up for a special purchase.
- Adults use numeracy to interpret voting statistics, choose a mortgage, assess nutritional content of food products or engage in home renovation projects.

How is numeracy learned in school?

Most of the knowledge and skills that are used for numeracy are initially learned in the mathematics classroom. Research has shown, however, that students do not automatically transfer these understandings to other areas of learning (Thornton & Hogan, 2005). Therefore, it is important that numeracy be learned, further developed and applied in each subject at all grade levels and in real life situations. The following examples show how numeracy can be developed with our current programs of study.

Liljedahl, P., & Liu, M. (2013). Numeracy. *Vector*, 2, 34–39. Retrieved from <http://www.peterliljedahl.com/wp-content/uploads/NR-Numeracy.pdf>

Thornton, S., & Hogan, J. (2005). Mathematics for everybody: Implications for the lower secondary school. In *Making Mathematics Vital: Proceedings of the Twentieth Biennial Conference of the Australian Association of Mathematics Teachers* (pp. 243–249). Adelaide, SA: The Australian Association of Mathematics Teachers. Retrieved from www.aamt.edu.au/content/download/19063/252036/file/mm-vital.pdf

Examples of numeracy across subject areas

- In Fine Arts, students:
 - represent perspective in artistic creations; and
 - use timing to play or compose music.
- In Health and Life Skills, Physical Education, and CALM, students:
 - create and track progress for a balanced personal fitness plan; and



- calculate percentage of food intake from carbohydrates, fats and proteins and compare to *Canada's Food Guide*.

- In Language Arts, students:
 - plot story events on graphs or timelines; and
 - determine the accuracy of statements based on statistics in a news report.
- In Mathematics, students:
 - calculate how much carpet would be needed for a room; and
 - determine the real life implications of a change in interest rates.
- In Science, students:
 - estimate and take measurements during experiments; and
 - use models to represent systems, scientific structures or processes.
- In Social Studies, students:
 - represent historical and current events on timelines; and



- interpret economic and demographic data, including inflation, unemployment rates, and population patterns.