### HIGH SCHOOL MATHEMATICS COURSE SEQUENCES

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Alberta's Kindergarten to Grade 12 mathematics program integrates current research and developments in learning and teaching.

The mathematics programs of study were developed in collaboration with teachers, administrators, parents, business representatives, post-secondary institutions.

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The Grades 10-12 Mathematics Program was designed to be **flexible** and to support **student needs**.

Whether students plan on pursuing further studies or entering the workforce directly, the revised Mathematics Program is designed to help them develop the appropriate skills.

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The following chart shows how the courses relate to one another and what options students will have as they progress through their high school career.

Please note: **Mathematics 10C** is for students who want to take Mathematics-1, Mathematics-2, or just aren't sure yet.

**Mathematics 10-3** is for students planning to enter the majority of trades or the workforce immediately after high school.

Mathematics 10-4 and 20-4, the Knowledge and Employability courses, have not changed.

Mathematics 31 has not changed. Mathematics 30-1 is a co-requisite for Mathematics 31.

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Students must pass Grade 9 Mathematics to enrol in Mathematics 10C.

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### **MATHEMATICS-1**

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**Mathematics-1** is designed for students who plan to apply for post-secondary programs that may require **calculus** skills.

If they want to enter a post-secondary program such as **engineering**, **mathematics**, **sciences**, some **business studies**, or other programs that require advanced math skills, they should take **Mathematics-1**.

The Mathematics 30-1 is a co-requisite for **Mathematics 31** and may be required for post-secondary calculus courses.

Always check the **most up-to-date information** on post-secondary mathematics entrance requirements, which is available on the Alberta Learning Information Service (ALIS) website and directly from the institutions themselves.

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The concept of **function** in-depth, including quadratic, radical, polynomial, rational, trigonometric, exponential and logarithmic functions.

Knowledge of trigonometry will be extended to include Sine and Cosine Laws to solve any triangle.

Introduction to counting techniques involving **permutations** and **combinations**; these are the basis for the **Binomial Theorem**, which has important applications in the areas of **calculus** and **statistics**.



After completing Mathematics 20-1, students can continue on to Mathematics 30-1.

If they decide **Mathematics 30-2** is more appropriate for their future goals, they can take that course instead.

Students can also choose to take Mathematics 30-3.

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## **MATHEMATICS-2**

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**Mathematics-2** is designed for students who want to attend a university, college, or technical institute after high school, but **do not need calculus** skills.

If they want to study at the post-secondary level in fields such as **arts programs**, **civil engineering technology**, **medical technologies**, or some **apprenticeship programs**, they should take **Mathematics-2**. This sequence will fulfill **most high-school students'** needs.

Always check the **most up-to-date information** on post-secondary mathematics entrance requirements, which is available on the Alberta Learning Information Service (ALIS) website and directly from the institutions themselves.

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#### Logical reasoning techniques, including inductive and deductive reasoning.

A variety of **relations** and **functions**, both graphically and algebraically, including quadratic, radical, polynomial, rational, sinusoidal, exponential and logarithmic functions.

Knowledge of **trigonometry** will be extended to include Sine and Cosine Laws to solve any triangle.

Introduction to counting techniques involving permutations and combinations.

A **Mathematics Research Project**, involving the collection and analysis of data in a mathematical area of interest in both Mathematics 20-2 and 30-2 will be completed.

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After completing Mathematics 20-2, students can continue and complete **Mathematics 30-2**.

If they decide that the **-1 course sequence** is more appropriate for their future plans, they can **transition** by taking **Mathematics 20-1** and then **30-1**. Or, they can take Mathematics 30-1 after successfully completing **Mathematics 30-2**.

If they decide that **Mathematics 30-3** is more useful for them, they can take that course instead of Mathematics 30-2.

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# **MATHEMATICS-3**

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**Mathematics-3** is designed for students who want to learn the mathematics needed to enter **most trades** or want to **enter the workforce** after high school.

Most **apprenticeship training programs** in Alberta will recommend students successfully complete **Mathematics 30-3**. However, a small number of apprenticeship training programs may require students to complete the **-2 course sequence** in order to meet the mathematics **entrance level competencies** for those trades. Further information regarding apprenticeships can be found at <u>http://www.advancededandtech.gov.ab.ca/planning.aspx</u>.

Always check the **most up-to-date information** on post-secondary mathematics entrance requirements, which is available on the Alberta Learning Information Service (ALIS) website and directly from the institutions themselves.

www.education.alberta.ca/math

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Students will use **SI and imperial** measures and apply them in 2-D and 3-D situations.

Knowledge of **trigonometry** will be extended to include Sine and Cosine Laws to solve problems.

Learn and apply spatial, proportional and logical reasoning to solve problems.

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Explore financial topics including personal finance and basic small business operations.

ply basic statistics and probability concepts to solve problems.



If a student develops new interests or post-secondary goals, they can transition to the **-1 course sequence** or **-2 course sequence** through **Mathematics 10C**.

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No matter what a student is planning to do after high school, Alberta Education has made sure that they will have the mathematical skills and knowledge that suit them.

Should a student's plans change, there is a mathematics course that will meet their needs.

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