Senior High School Mathematics at a Glance

Alberta

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Mathematics

Alberta's mathematics program encourages students to develop mathematical reasoning and problem-solving skills and make connections between mathematics and its applications. The program also builds students' confidence in their mathematical skills and appreciation of the subject.

At the end of Mathematics 30-1 or 30-2, your teen will write a provincial diploma exam. These exams determine if students across the province are learning what they are expected to learn. For more information on diploma exams, visit Writing diploma exams.

Mathematics 10C

Mathematics 10C students determine the surface area and volume of 3-D objects and use trigonometric ratios to solve problems involving right triangles. They simplify expressions that involve powers with integral and rational exponents and simplify or factor polynomial expressions. At this level, students also analyze linear relations, solve systems of linear equations, and solve problems related to both of these sets of skills.

Mathematics 20-1

Mathematics 20-1 students investigate arithmetic and geometric patterns and use the sine and cosine laws to solve problems involving triangles. They investigate the properties of radicals and rational expressions. Mathematics 20-1 students also analyze the characteristics of absolute value functions and quadratic functions, solve quadratic equations and systems of equations in various ways, and analyze the relationship between a function and its reciprocal.

Mathematics 30-1

Mathematics 30-1 students investigate the properties of logarithms; study the characteristics and transformations of trigonometric, polynomial, exponential, and logarithmic functions by sketching and analyzing their graphs; and solve equations and problems related to these functions. Students also use basic counting principles to determine the number of permutations or combinations of the elements of a set to solve problems.

Mathematics 31

Mathematics 31 students determine the limit of a function at finite or infinite values of the independent variable. They use derivative theorems to determine the derivative of a function, either explicitly or implicitly, and use derivatives to sketch graphs of functions and solve optimization problems. They also investigate the relationship between differentiation and integration.

Mathematics 20-2

Mathematics 20-2 students use proportional reasoning to solve real-life problems involving 2-D shapes and 3-D objects. They use the properties of angles and triangles, including the sine and cosine laws, to solve problems; use reasoning to prove conjectures; use spatial reasoning to solve puzzles; and solve problems that involve radicals. They interpret statistical data, solve problems involving quadratics, and research and present a mathematical topic of their choice.

Mathematics 30-2

Mathematics 30-2 students use numerical and logical reasoning to solve puzzles, and solve real-life problems about the probability of events occurring. They solve problems algebraically involving rational equations; investigate exponential, logarithmic, polynomial, and sinusoidal functions; and research and present a mathematical topic of their choice.

Mathematics 10-3

Mathematics 10-3 students solve linear and area measurement problems of 2-D shapes and 3-D objects using SI and imperial units. They use spatial reasoning to solve puzzles; solve problems involving right triangles and

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angles; solve unit pricing, currency exchange, and income problems; and manipulate formulas to solve problems. They also use scale factors and parallel and perpendicular lines to solve problems.

Mathematics 20-3

Mathematics 20-3 students solve surface area, volume, and capacity problems. They use primary trigonometry to solve problems involving two or three right triangles, and model and draw 3-D objects and their views to scale. They use numerical reasoning to solve puzzles; create and analyze personal budgets; use proportional reasoning, unit analysis, and manipulation of formulas to solve problems; and create and interpret graphs. Students use their understanding of slope and rate of change to interpret graphs.

Mathematics 30-3

Mathematics 30-3 students investigate the limitations of measuring instruments, use trigonometry to solve problems involving triangles, and describe and illustrate properties of polygons. They investigate translations, rotations, reflections, and size changes of 2-D shapes or 3-D objects; they use logical reasoning to solve puzzles; and they solve various other problems involving financial situations, linear relations, and probability.

Mathematics 10-4

Knowledge and Employability Mathematics 10-4 students solve everyday problems involving numbers and percents; explore patterns, variables, expressions, and equations to solve problems; and solve problems involving estimation, measurement, and comparison of objects. Students use visualization and symmetry to explore objects, shapes, patterns, and designs; develop and apply a plan to collect, display, and analyze data and information; and connect mathematical ideas to their everyday lives. Students who have experienced challenges or difficulty with their skills will be provided with additional strategies for success in the Knowledge and Employability -4 course sequence.

Mathematics 20-4

Knowledge and Employability Mathematics 20-4 students solve everyday problems involving numbers and percents and decide if the processes used are reasonable. They explore patterns, variables, and expressions, and interpret variables, equations, and relationships, to solve problems in practical situations. They estimate, measure, and compare objects; read and interpret scale drawings and maps; develop and apply a plan to collect, display, and analyze information; and use probability and statistics to make predictions and decisions. In most of their studies, Mathematics 20-4 students connect mathematical ideas to their everyday lives. Students who have experienced challenges or difficulty with their skills will be provided with additional strategies for success in the Knowledge and Employability -4 course sequence.

How Your Teen Is Assessed

Your teen's learning is assessed using a variety of tools and strategies within the classroom. Ask your teen's teacher what methods they are using. The different assessment methods tell you and your teen's teacher about your teen's strengths, areas in which your teen requires support, and how well your teen is doing throughout the course. Your teen's teacher can then change or refine their teaching plans to ensure that learning activities better meet the needs of your teen. At the end of the course, your teen is assessed and their achievement is reported so that you know if they have achieved the expected learning outcomes for their grade.

At the end of certain 30-level courses, your teen will write a diploma exam. These exams determine if students across the province are learning what they are expected to learn. For more information on diploma exams, visit Diploma exams – Overview.

Resources to Help Your Teen

A variety of digital and print resources developed by publishers, Alberta Education, or Alberta teachers are

available to help students learn. Teachers may select and bring into the classroom numerous innovative and creative resources to create rich learning experiences for your teen. Visit LearnAlberta.ca to learn more about the resources your teen may encounter.

Where can I get more information?

Learn more about your child's education by visiting https://curriculum.learnalberta.ca/parents/.

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