

COURSE OUTLINE – MYP YEAR 5 APPRENTICESHIP & WORKPLACE MATHEMATICS



Course Overview:

Mathematics is increasingly important in our technological society. Students today require the ability to reason and communicate to solve problems. Development of these skills helps students become numerate. This course emphasizes the development of the knowledge, skills, and attitudes relevant to the development of numeracy. It also promotes the development of positive attitudes, problem solving, communication, applications, reasoning, and the use of technology.

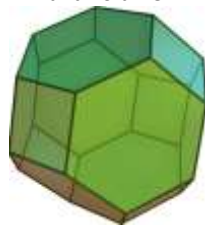
Learning:

Through engaging with this course, students should UNDERSTAND...

Proportional reasoning is used to make sense of multiplicative relationships.



3D objects can be examined mathematically by measuring directly and indirectly length, surface area, and volume.



Flexibility with number builds meaning, understanding, and confidence.



Representing and analyzing data allows us to notice and wonder about relationships.



Through engaging with this course, students will KNOW...

Statement of Inquiry	Concepts	Unit Title/Topic
Understanding relationships justifies decisions about worth, fairness and being equitable.	Relationships	Working with Money
Being financially literate helps to understand how the world and economies work.	Relationships, Systems	Earning an Income
Understanding different forms of measurement helps us understand the world around us.	Form, Measurement	Measurement Part 1
Understanding form and shape enhances spatial awareness	Form, Equivalence	Measurement Part 2
Relationships exist between lines and angles. There are set rules and patterns to follow when looking at them.	Measurement, Pattern	Right Angle Triangles
Using logic and models can we determine whether games are fair?	Logic, Model	Experimental Probability

Through engaging with this course, students will DO...

CURRICULAR COMPETENCIES CATEGORIES	EXAMPLES
Reasoning and analyzing	Develop thinking strategies to solve puzzles and play games. Estimate reasonably and demonstrate fluent, flexible, and strategic thinking about number.
Understanding and solving	Visualize to explore and illustrate mathematical concepts and relationships. Solve problems with persistence and a positive disposition.
Communicating and representing	Take risks when offering ideas in classroom discourse. Represent mathematical ideas in concrete, pictorial, and symbolic form.
Connecting and reflecting	Use mistakes as opportunities to advance learning. Reflect on mathematical thinking.

Through this course, students will develop the following Approaches to Learning skills...

Below are some examples of how we develop ATL skills in Math:

Category Skill indicator	Examples
Thinking skills	Think creatively to solve word problems.
Social skills	Empathize with and encourage classmates.
Communication skills	Receive feedback positively and with a desire to grow.
Self-management skills	Meet homework deadlines and manage your equipment.
Research skills	Make informed choices by learning how the media misrepresents data.

Assessment:

Throughout this course, students will demonstrate their learning...

The MYP Mathematics course will focus on developing skills related to 4 criteria based objectives.	Formative assessment is assessment <i>as</i> learning, or assessment <i>for</i> learning. Formative assessments could include;	Summative assessment is assessment <i>of</i> learning. Summative assessments could include;
A: Knowing and Understanding	Homework assignments.	Tests, quizzes, unit exams.
B: Investigating Patterns	Working with extending number patterns during class activities.	Tests, and quizzes.
C: Communicating	Demonstrating proper method on assignments.	Demonstrating proper method on Unit Test.
D: Applying Mathematics in Real Life Contexts	Sloth Math Project	Pythagorean Snail Project

Academic Honesty and Personal Integrity

The faculty at Carson Graham expects our students to complete academic and nonacademic work that is authentic and respectful of intellectual property. All students are expected to adhere to the school's Policy for Academic Integrity. Ignorance of the standards related to academic honesty and student integrity is not an excuse for dishonesty, plagiarism and malpractice. You are expected to familiarize yourself with the policy.

<https://www.sd44.ca/school/carson/About/schoolpolicies/Documents/Carson%20Graham%20Academic%20Honesty%20Policy%20reviewed%20December%202018.pdf>

Grade Descriptors:

Grade 7

Produces high-quality work that frequently uses mathematics insightfully. Communicates comprehensive, nuanced understanding of concepts and contexts demonstrating proficient application of mathematical techniques and terminology. Consistently demonstrates sophisticated analytical thinking and logical processes when problem-solving and investigating. Frequently transfers mathematical knowledge and applies skills, with independence and expertise, in a variety of complex classroom and real-world situations.

Grade 6

Produces high-quality, occasionally insightful mathematical work. Communicates extensive understanding of concepts and contexts demonstrating proficient application of mathematical techniques and terminology. Demonstrates analytical thinking and logical processes, frequently with sophistication when problem-solving and investigating. Transfers mathematical knowledge and applies skills, often with independence, in a variety of familiar and unfamiliar classroom and real-world situations.

Grade 5

Produces generally high-quality mathematical work. Communicates good understanding of concepts and contexts demonstrating proficient application of mathematical techniques and terminology. Demonstrates analytical thinking and logical processes, sometimes with sophistication, when problem-solving and investigating. Usually transfers mathematical knowledge and applies skills, with some independence, in familiar classroom and real-world situations.

Grade 4

Produces good-quality mathematical work. Communicates basic understanding of most concepts and contexts with evidence of appropriate application of mathematical techniques and terminology, with few misunderstandings and minor gaps. Often demonstrates analytical thinking when problem-solving and investigating. Transfers some mathematical knowledge and applies skills in familiar classroom situations, but requires support in unfamiliar situations.

Grade 3

Produces mathematical work of an acceptable quality. Communicates basic understanding of many concepts and contexts with occasional evidence of appropriate application of mathematical techniques and terminology, with occasional significant misunderstandings or gaps. Begins to demonstrate some analytical thinking when problem-solving and investigating. Begins to transfer mathematical knowledge and apply skills, requiring support even in familiar classroom situations.

Grade 2

Produces mathematical work of limited quality. Communicates limited understanding of some concepts and contexts. Demonstrates limited evidence of mathematical thinking. Limited evidence of transfer of mathematical knowledge and application of skills.

Grade 1

Produces work of a very limited quality. Conveys many significant misunderstandings or lacks understanding of most concepts and contexts. Very rarely demonstrates evidence of mathematical thinking. Very inflexible, rarely shows evidence of knowledge or skills.

Assessment Rubrics:

Grade 10

Criterion A: Knowing and understanding

At the end of year 5, students should be able to:

- i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations
- ii. apply the selected mathematics successfully when solving problems
- iii. solve problems correctly in a variety of contexts.

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student is able to: <ul style="list-style-type: none"> • select appropriate mathematics when solving simple problems in familiar situations • apply the selected mathematics successfully when solving these problems • generally solve these problems correctly in a variety of contexts.
3-4	The student is able to: <ul style="list-style-type: none"> • select appropriate mathematics when solving more complex problems in familiar situations • apply the selected mathematics successfully when solving these problems • generally solve these problems correctly in a variety of contexts.
5-6	The student is able to: <ul style="list-style-type: none"> • select appropriate mathematics when solving challenging problems in familiar situations • apply the selected mathematics successfully when solving these problems • generally solve these problems correctly in a variety of contexts.
7-8	The student is able to: <ul style="list-style-type: none"> • select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations • apply the selected mathematics successfully when solving these problems • generally solve these problems correctly in a variety of contexts.

Criterion B: Investigating patterns

At the end of year 5, students should be able to:

- i. select and apply mathematical problem-solving techniques to discover complex patterns
- ii. describe patterns as relationships and/or general rules consistent with findings
- iii. verify and justify and/or general rules.

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student is able to: <ul style="list-style-type: none"> • apply, with teacher support, mathematical problem-solving techniques to discover simple patterns • state predictions consistent with patterns.
3-4	The student is able to: <ul style="list-style-type: none"> • apply mathematical problem-solving techniques to discover simple patterns • suggest relationships and/or general rules consistent with findings.
5-6	The student is able to: <ul style="list-style-type: none"> • select and apply mathematical problem-solving techniques to discover complex patterns • describe patterns as relationships and/or general rules consistent with findings • verify these relationships and/or general rules.
7-8	The student is able to: <ul style="list-style-type: none"> • select and apply mathematical problem-solving techniques to discover complex patterns • describe patterns as relationships and/or general rules consistent with correct findings • verify and justify these relationships and/or general rules.

Criterion C: Communicating

At the end of year 3, students should be able to:

- use appropriate mathematical language (notation, symbols, and terminology) in both oral and written explanations
- use appropriate forms of mathematical representation to present information
- move between different forms of mathematical representation
- communicate complete, coherent and concise mathematical lines of reasoning
- organize information using a logical structure.

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student is able to: <ul style="list-style-type: none"> use limited mathematical language use limited forms of mathematical representation to present information communicate through lines of reasoning that are difficult to interpret.
3-4	The student is able to: <ul style="list-style-type: none"> use some appropriate mathematical language use appropriate forms of mathematical representation to present information adequately communicate through lines of reasoning that are able to be understood adequately organize information using a logical structure.
5-6	The student is able to: <ul style="list-style-type: none"> usually use appropriate mathematical language usually use appropriate forms of mathematical representation to present information correctly move between different forms of mathematical representation with some success communicate through lines of reasoning that are not always complete and coherent present work that is usually organized using a logical structure.
7-8	The student is able to: <ul style="list-style-type: none"> consistently use appropriate mathematical language use appropriate forms of mathematical representation to consistently present information correctly move effectively between different forms of mathematical representation communicate through lines of reasoning that are complete and coherent present work that is consistently organized using a logical structure.

Criterion D: Applying Mathematics in real life contexts

At the end of year 3, students should be able to:

- identify relevant elements of authentic real-life situations
- select appropriate mathematical strategies when solving authentic real-life situations
- apply the selected mathematical strategies successfully to reach a solution
- explain the degree of accuracy of a solution
- explain whether a solution makes sense in the context of the authentic real-life situation.

Achievement level	Level descriptor
0	The student does not reach a standard described by any of the descriptors below.
1-2	The student is able to: <ul style="list-style-type: none"> identify some of the elements of the authentic real-life situation apply mathematical strategies to find a solution to the authentic real-life situation, with limited success.
3-4	The student is able to: <ul style="list-style-type: none"> identify the relevant elements of the authentic real-life situation select, with some success, adequate mathematical strategies to model the authentic real-life situation apply mathematical strategies to reach a solution to the authentic real-life situation describe whether the solution makes sense in the context of the authentic real-life situation.
5-6	The student is able to: <ul style="list-style-type: none"> identify the relevant elements of the authentic real-life situation select adequate mathematical strategies to model the authentic real-life situation apply the selected mathematical strategies to reach a valid solution to the authentic real-life situation describe the degree of accuracy of the solution discuss whether the solution makes sense in the context of the authentic real-life situation.
7-8	The student is able to: <ul style="list-style-type: none"> identify the relevant elements of the authentic real-life situation select appropriate mathematical strategies to model the authentic real-life situation apply the selected mathematical strategies to reach a correct solution to the authentic real-life situation explain the degree of accuracy of the solution explain whether the solution makes sense in the context of the authentic real-life situation.