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 I
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 *as* learning, or assessment *for* learning. **Formative assessments could include;**	Summative assessment is assessment *of* 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

Assessment Rubrics:

Criterion A: Knowing and understanding

Achievement level	Proficiency Scale	Level descriptor
0		The student **does not** reach a standard described by any of the descriptors below.
1-2	Emerging	The student is able to: • **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	Developing	The student is able to: • **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	Proficient	The student is able to: • **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	Extending	The student is able to: • **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

Achievement level	Proficiency Scale	Level descriptor
0		The student **does not** reach a standard described by any of the descriptors below.
1-2	Emerging	The student is able to: • **apply**, **with teacher support**, mathematical problem-solving techniques to discover **simple patterns** • **state predictions** consistent with patterns.
3-4	Developing	The student is able to: • **apply** mathematical problem-solving techniques to discover **simple patterns** • **suggest general rules** consistent with **findings**.
5-6	Proficient	The student is able to: • **select** and **apply** mathematical problem-solving techniques to discover **complex patterns** • **describe patterns** as general rules consistent with **findings** • **verify** the validity of these general rules.
7-8	Extending	The student is able to: • **select** and **apply** mathematical problem-solving techniques to discover **complex patterns** • **describe patterns** as general rules consistent with **correct findings** • **prove, or verify** and **justify** these general rules.

Criterion C: Communicating

Achievement level	Proficiency Scale	Level descriptor
0		The student does not reach a standard described by any of the descriptors below.
1-2	Emerging	The student is able to: • **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	Developing	The student is able to: • **use** some appropriate mathematical language • **use** appropriate forms of mathematical representation to present information adequately • **communicate** through lines of reasoning that are complete • adequately **organize** information using a logical structure.
5-6	Proficient	The student is able to: • usually **use** appropriate mathematical language • usually **use** different forms of mathematical representation to present information correctly • usually move between different forms of mathematical representation • **communicate** through lines of reasoning that are complete and coherent • **present** work that is usually organized using a logical structure.
7-8	Extending	The student is able to: • 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, coherent, and concise • **present** work that is consistently organized using a logical structure.

Criterion D: Applying Mathematics in real life contexts

Achievement level	Proficiency Scale	Level descriptor
0		The student does not reach a standard described by any of the descriptors below.
1-2	Emerging	The student is able to: • **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	Developing	The student is able to: • **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	Proficient	The student is able to: • **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 • **explain** the degree of accuracy of the solution • **explain** whether the solution makes sense in the context of the authentic real-life situation.
7-8	Extending	The student is able to: • **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 • **justify** the degree of accuracy of the solution • **justify** whether the solution makes sense in the context of the authentic real-life situation.

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.

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