

# Grade 10 Mathematics

## Units of Study

<b>UNIT 1:</b>	<b>Exploring Patterns and Generalising Solutions</b>	<b>Start:</b> August	<b>Duration:</b> 7 weeks
<ul style="list-style-type: none"> <li>• <b>Concepts:</b> Relationship, Change, System.</li> <li>• <b>Subject Specific Skills:</b> Linear and quadratic sequences, arithmetic and geometric sequences, exponential functions, translations</li> <li>• <b>Learning Experiences:</b> In this unit, students will begin to understand how graphs of functions can be transformed in a variety of ways, how these mathematical transformations change and have implications on real-life models.</li> </ul>			
<b>UNIT 2:</b>	<b>Modelling Functions</b>	<b>Start:</b> October	<b>Duration:</b> 9 weeks
<ul style="list-style-type: none"> <li>• <b>Concepts:</b> Form, Equivalence, Pattern, Space</li> <li>• <b>Subject Specific Skills:</b> Factorising quadratics, standard/vertex/intercept forms, modelling, solving quadratic equations, translations.</li> <li>• <b>Learning Experiences:</b> In this unit students will explore the concept of patterns by looking at equivalent forms of quadratic expressions. The students will analyze the representation of these quadratics in a given space.</li> </ul>			
<b>UNIT 3:</b>	<b>Time To Take A Chance (Probability)</b>	<b>Start:</b> December	<b>Duration:</b> 7 Weeks
<ul style="list-style-type: none"> <li>• <b>Concepts:</b> Logic, Representation, System</li> <li>• <b>Subject Specific Skills:</b> Sample space, tree diagrams, Venn diagrams, 2-way tables, randomness, independence</li> <li>• <b>Learning Experiences:</b> In this unit, students will use their knowledge of representing different sample spaces to develop axiomatic probability systems. After introducing probability systems they should be able to determine outcomes based on their knowledge and consequently make good choices when faced with lifestyle decisions.</li> </ul>			
<b>UNIT 4:</b>	<b>Circle Up!</b>	<b>Start:</b> March	<b>Duration:</b> 3 weeks
<ul style="list-style-type: none"> <li>• <b>Concepts:</b> Geometry</li> <li>• <b>Subject Specific Skills:</b> Algebraic manipulation, triangle properties, circle geometry theorems</li> <li>• <b>Learning Experiences:</b> In this unit, students will use properties of triangles and circles to solve for unknown values. They will explore the concept of writing geometric proofs.</li> </ul>			
<b>UNIT 5:</b>	<b>Modelling Periodic Movement</b>	<b>Start:</b> April	<b>Duration:</b> 5 weeks
<ul style="list-style-type: none"> <li>• <b>Concepts:</b> Relationships, Measurement, Models</li> <li>• <b>Subject Specific Skills:</b> Trigonometric ratios, angles of elevation and depression, graphing sine and cosine functions</li> <li>• <b>Learning Experiences:</b> In this unit, students will use right-angle trigonometry to solve for lines and angles in triangles. They will transform trigonometric functions to extend their knowledge of measurement.</li> </ul>			

# Grade 10 Mathematics

## Unit 1: Exploring patterns and generalizing solutions

**Start:** August

**Duration:** 7 weeks

**LEARNING EXPERIENCES:** In this unit the students will explore the concepts of form, equivalence and models by looking at equivalence transformations to solve systems of linear equations, creating mathematical models to solve real-life problems, and interpreting the solution in order to make applicable decisions.

**KEY CONCEPT:** Form

**Related Concepts / Subject Specific:** Generalisation, Pattern

**STATEMENT OF INQUIRY:**

Using different forms to generalize and justify patterns can help improve products, processes and solutions

**INQUIRY QUESTIONS:**

**Factual:**

What is generalization?

**Conceptual:**

Can all patterns be generalized?

**Debatable:**

To what extent do models have limitations?

**OBJECTIVES AND ASSESSMENT CRITERIA:**

**A: Knowing and understanding**

Select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations, apply the selected mathematics successfully when solving these problems, and generally solve these problems correctly in a variety of contexts.

**B: Investigating patterns**

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.

**C: Communicating**

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.

**D: Applying mathematics in real-life situations**

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; justify the degree of accuracy of a solution; and justify whether a solution makes sense in the context of the authentic real-life situation.

**ATLs:**

Thinking. Critical Thinking Skills: Analysing and evaluating issues and ideas

### RESOURCES / LITERATURE OPTIONS:

- MYP Mathematics 4-5 : Oxford University Press
- Transum
- Geogebra/Desmos

### SUMMATIVE ASSESSMENT TASKS:

1. Criteria B/C: Investigating patterns - Students will work on some examples, organize the results using tables, identify rules and test them. Students should be able to identify linear, quadratic and exponential models.
2. Criteria A: Knowing and understanding- students will be assessed on basic concepts of sequences and series (arithmetic and geometric) as well as how to apply these concepts to solve real life applications questions.

# Grade 10 Mathematics

## Unit 2: Modeling Quadratic Functions

**Start:** October

**Duration:** 9 weeks

**LEARNING EXPERIENCES:** In this unit students will explore the concept of patterns by looking at equivalent forms of quadratic expressions. The students will analyze the representation of these quadratics in a given space.

**KEY CONCEPT:** Form

**Related Concepts / Subject Specific:** Model, Representation

**STATEMENT OF INQUIRY:**

Using a model to represent a structure can improve decision making.

**INQUIRY QUESTIONS:**

**Factual:**

How many solutions can a quadratic equation have?

**Conceptual:**

What is the representation of a quadratic function?

**Debatable:**

Do systems, models and methods solve problems or create them?

**OBJECTIVES AND ASSESSMENT CRITERIA:**

**A: Knowing and understanding**

Select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations, apply the selected mathematics successfully when solving these problems, and generally solve these problems correctly in a variety of contexts.

**B: Investigating patterns**

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.

**C: Communicating**

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.

**D: Applying mathematics in real-life situations**

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; justify the degree of accuracy of a solution; and justify whether a solution makes sense in the context of the authentic real-life situation.

**ATLs:**

Thinking. Critical Thinking Skills: Draw reasonable conclusions and generalizations  
Self-management. Reflection Skills: Develop new skills, techniques and strategies for effective learning

### RESOURCES / LITERATURE OPTIONS:

- MYP Mathematics 4-5 : Oxford University Press
- Transum
- Geogebra/Desmos

### SUMMATIVE ASSESSMENT TASKS:

1. Criteria C : Communication: Students will develop their skills in integrating verbal and mathematical explanations for effective communication and organization.
2. Criteria D : Applying mathematics in real-life situations: Modeling parabolic shapes in nature using quadratic models. Students will be asked to, using a given shape (figure) to determine the best quadratic model that fits the shape and explain the choice clearly and meaningfully.
3. Criteria A: Knowing and understanding - students will be able to demonstrate the knowledge of functional notation and how to solve quadratics equations using different approaches. They can apply any of these methods to solve the real life situations presented in the assessment.

# Grade 10 Mathematics

## Unit 3: Time to Take a Chance

**Start:** December

**Duration:** 7 weeks

**LEARNING EXPERIENCES:** In this unit students will use their knowledge of representing different sample spaces to develop axiomatic probability systems. They will begin by understanding the purpose and necessity for probability and how they can apply it to real-life situations. After introducing probability systems they should be able to determine outcomes based on their knowledge and consequently make good choices when faced with lifestyle decisions.

**KEY CONCEPT:** Logic

**Related Concepts / Subject Specific:** Representation, System

**STATEMENT OF INQUIRY:**

Decision making can be enhanced by using logical representation and systems.

**INQUIRY QUESTIONS:**

**Factual:**

What is probability?

**Conceptual:**

How do statistical diagrams allow calculation of probabilities?

**Debatable:**

How useful are sample spaces in solving problems?

**OBJECTIVES AND ASSESSMENT CRITERIA:**

**A: Knowing and understanding**

Select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations, apply the selected mathematics successfully when solving these problems, and generally solve these problems correctly in a variety of contexts.

**B: Investigating patterns**

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.

**C: Communicating**

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.

**D: Applying mathematics in real-life situations**

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; justify the degree of accuracy of a solution; and justify whether a solution makes sense in the context of the authentic real-life situation.

**ATLs:**

Communication: *Reading, writing and using language to gather and communicate information:* Use and interpret a range of discipline-specific terms and symbols, Understand and use mathematical notation

### RESOURCES / LITERATURE OPTIONS:

- MYP Mathematics 4-5 : Oxford University Press
- Transum
- Geogebra/Desmos

### SUMMATIVE ASSESSMENT TASKS:

1. Criteria C/D : Students will use probability in real life to identify fairness of games. Students will explore the concept of probabilities and make informed decisions which need to be consistent with findings and clearly explained.
2. Criteria A: Knowing and understanding - Students will work on problems applying concepts of probability using venn diagrams, tables, tree diagrams; events with and without replacement.

# Grade 10 Mathematics

## Unit 4: Circle Up!

**Start:** March

**Duration:** 3 weeks

**LEARNING EXPERIENCES:** In this unit, students will use properties of triangles and circles to solve for unknown values. They will explore the concept of writing geometric proofs.

**KEY CONCEPT: LOGIC**

**Related Concepts / Subject Specific:** Generalization

**STATEMENT OF INQUIRY:**

Generalizing relationships between measurements can lead to better models and methods.

**INQUIRY QUESTIONS:**

**Factual:**

What are the properties of circles?

**Conceptual:**

How are circle and triangle properties connected?

**Debatable:**

Can circle theorems be 100% proven?

**OBJECTIVES AND ASSESSMENT CRITERIA:**

**A: Knowing and understanding**

Select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations, apply the selected mathematics successfully when solving these problems, and generally solve these problems correctly in a variety of contexts.

**B: Investigating patterns**

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.

**C: Communicating**

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.

**D: Applying mathematics in real-life situations**

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; justify the degree of accuracy of a solution; and justify whether a solution makes sense in the context of the authentic real-life situation.

**ATLs:**

Thinking, Critical Thinking Skills: Draw reasonable conclusions and generalizations, Test generalizations and conclusions, Propose and evaluate a variety of solutions  
Communication: Organize and depict information logically.

### RESOURCES / LITERATURE OPTIONS:

- MYP Mathematics 4-5 : Oxford University Press
- Transum
- Geogebra/Desmos

### SUMMATIVE ASSESSMENT TASKS:

1. Criteria A: Knowing and understanding - Students will explore the relationship between circle and triangle properties using their knowledge of specific theorems to solve for unknown values.
2. Criteria B: Investigate Patterns - Students will investigate patterns in polygons using the central angle theorem. Students will organize their findings, identify, explain, and justify rules.

# Grade 10 Mathematics

## Unit 5: Modeling Periodic Movement

**Start:** April

**Duration:** 5 weeks

**LEARNING EXPERIENCES:** In this unit students will look at measurements in right-angled triangles using trigonometry; they will work on basic trigonometric functions. They will determine models that represent transformations.

<b>KEY CONCEPT: Relationships</b>	<b>Related Concepts / Subject Specific:</b> Model
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<b>STATEMENT OF INQUIRY:</b>	Generalizing relationships between measurements can lead to better models and methods.
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<b>INQUIRY QUESTIONS:</b>	
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<b>Factual:</b>	How do you find measurements of immeasurable objects?
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<b>Conceptual:</b>	How does a thorough knowledge of relationships help to find real-life measurements?
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<b>Debatable:</b>	Have scientific models and methods provided more answers or questions?
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<b>OBJECTIVES AND ASSESSMENT CRITERIA:</b>	
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<b>A: Knowing and understanding</b>	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.
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<b>B: Investigating patterns</b>	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.
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<b>C: Communicating</b>	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.
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<b>D: Applying mathematics in real-life situations</b>	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; justify the degree of accuracy of a solution, justify whether a solution makes sense in the context of the authentic real-life situation.
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<b>ATLs:</b>	Thinking, Critical Thinking Skills: Draw reasonable conclusions and generalizations, Test generalizations and conclusions, Propose and evaluate a variety of solutions Communication: Organize and depict information logically.
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### RESOURCES / LITERATURE OPTIONS:

- MYP Mathematics 4-5 : Oxford University Press
- Transum
- Geogebra/Desmos

### SUMMATIVE ASSESSMENT TASKS:

1. Criteria A: Knowing and understanding - Students will use trigonometry to solve for missing sides and angles in right and non-right angled triangles. Students will also model real-life periodic movement using transformations.

# Grade 10 Extended Mathematics

## Units of Study

UNIT 1:	Exploring patterns and generalising	Start: August	Duration: 7 weeks
<ul style="list-style-type: none"> <li>• <b>Concepts:</b> Form, generalisation, pattern.</li> <li>• <b>Subject Specific Skills:</b> Linear and quadratic sequences, arithmetic and geometric sequences, exponential functions, translations, logarithmic functions</li> <li>• <b>Learning Experiences:</b> In this unit students will begin to understand how graphs of functions can be transformed in a variety of ways, how these mathematical transformations change and have implications on real-life models. Students will also be introduced to logarithmic functions and their applications.</li> </ul>			

UNIT 2:	Modeling Functions	Start: October	Duration: 9 weeks
<ul style="list-style-type: none"> <li>• <b>Concepts:</b> Form, Equivalence, Pattern, Space</li> <li>• <b>Subject Specific Skills:</b> Factorising quadratics, standard/vertex/intercept forms of quadratics, modelling and solving quadratic equations, translations, rational functions</li> <li>• <b>Learning Experiences:</b> In this unit students will explore the concept of patterns by looking at equivalent forms of a variety of expressions. Students will select and apply appropriate mathematical models to various functions.</li> </ul>			

UNIT 3:	Time to take a chance (Probability )	Start: December	Duration: 7 weeks
<ul style="list-style-type: none"> <li>• <b>Concepts:</b> Logic, representation, system</li> <li>• <b>Subject Specific Skills:</b> Sample space, tree diagrams, venn diagrams, 2-way tables, randomness, independence, conditional probability</li> <li>• <b>Learning Experiences:</b> In this unit students will use their knowledge of representing different sample spaces to develop axiomatic probability systems. After introducing probability systems they should be able to determine outcomes based on their knowledge and consequently make good choices when faced with lifestyle decisions.</li> </ul>			

UNIT 4:	Circle Geometry	Start: February	Duration: 8 weeks
<ul style="list-style-type: none"> <li>• <b>Concepts:</b> Relationships, measurement, models</li> <li>• <b>Subject Specific Skills:</b> Trigonometric ratio and functions, angles of elevation and depression, graphing sine and cosine functions with transformations, circle geometry theorems, the unit circle.</li> <li>• <b>Learning Experiences:</b> In this unit students will use both right-angle and non-right angle trigonometry to solve for segments and angles in triangles. They will transform trigonometric functions to extend their knowledge of measurement.</li> </ul>			

# Grade 10 Mathematics Extended

## Unit 1: Exploring patterns and generalizing solutions

**Start:** August

**Duration:** 7 weeks

**LEARNING EXPERIENCES:** In this unit the students will explore the concepts of form, equivalence and models by looking at equivalence transformations to solve systems of linear equations, creating mathematical models to solve real-life problems, and interpreting the solution in order to make applicable decisions.

**KEY CONCEPT:** Form

**Related Concepts / Subject Specific:** Generalisation, Pattern

**STATEMENT OF INQUIRY:**

Using different forms to generalize and justify patterns can help improve products, processes and solutions

**INQUIRY QUESTIONS:**

**Factual:**

How can rewriting series make it easier to sum?

**Conceptual:**

What are the similarities and differences between real-life patterns that require arithmetic and geometric sequences?

**Debatable:**

What are the risk of making generalization?

**OBJECTIVES AND ASSESSMENT CRITERIA:**

**A: Knowing and understanding**

Select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations, apply the selected mathematics successfully when solving these problems, and generally solve these problems correctly in a variety of contexts.

**B: Investigating patterns**

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.

**C: Communicating**

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.

**D: Applying mathematics in real-life situations**

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; justify the degree of accuracy of a solution, justify whether a solution makes sense in the context of the authentic real-life situation.

**ATLs:**

Thinking. Critical Thinking Skills: Analysing and evaluating issues and ideas

### RESOURCES / LITERATURE OPTIONS:

- MYP Mathematics 4-5 : Oxford University Press
- MYP Mathematics 4-5 -Extended Oxford University Press
- Transum
- Geogebra/Desmos

### SUMMATIVE ASSESSMENT TASKS:

1. Criteria B/C: Investigating patterns - Students will work on some examples, organize the results using tables, identify rules and test them. Students should be able to identify models and how to express each finding.
2. Criteria A: Knowing and understanding- students will be assessed on concepts of arithmetic and geometric sequences - including applications of these concepts to solve real life situation questions.



# Grade 10 Mathematics Extended

## Unit 2: Modeling Quadratic Functions

**Start:** October

**Duration:** 9 weeks

**LEARNING EXPERIENCES:** In this unit students will explore the concept of patterns by looking at equivalent forms of quadratic expressions. The students will analyze the representation of these quadratics in a given space.

**KEY CONCEPT:** Form

**Related Concepts / Subject Specific:** Equivalence, Pattern, Space

**STATEMENT OF INQUIRY:**

Using a model to represent a structure can improve decision making.

**INQUIRY QUESTIONS:**

**Factual:**

What is a space?

**Conceptual:**

Why do we have equivalent forms?

**Debatable:**

Do systems, models and methods solve problems or create them?

**OBJECTIVES AND ASSESSMENT CRITERIA:**

**A: Knowing and understanding**

Select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations, apply the selected mathematics successfully when solving these problems, and generally solve these problems correctly in a variety of contexts.

**B: Investigating patterns**

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.

**C: Communicating**

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.

**D: Applying mathematics in real-life situations**

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; justify the degree of accuracy of a solution; and justify whether a solution makes sense in the context of the authentic real-life situation.

**ATLs:**

Thinking. Critical Thinking Skills: Draw reasonable conclusions and generalizations  
Self-management. Reflection Skills: Develop new skills, techniques and strategies for effective learning

### RESOURCES / LITERATURE OPTIONS:

- MYP Mathematics 4-5 : Oxford University Press
- MYP Mathematics 4-5 -Extended Oxford University Press
- Transum
- Geogebra/Desmos

### SUMMATIVE ASSESSMENT TASKS:

1. Criteria C : Communication
2. Criteria D : Applying mathematics in real-life situations: Modeling parabolic shapes in nature using quadratic models. Students will be asked to work with some parameters given and make informed decisions about whether the model presented makes sense. Students will be asked to clearly and critically present the results.
3. Criteria A: Knowing and understanding - students will be able to demonstrate the knowledge of functions ; focus will be given to quadratic functions solutions and transformations.

# Grade 10 Mathematics

## Unit 3: Time to take a chance

**Start:** December

**Duration:** 7 weeks

**LEARNING EXPERIENCES:** In this unit students will use their knowledge of representing different sample spaces to develop axiomatic probability systems. They will begin by understanding the purpose and necessity for probability and how they can apply it to real-life situations. After introducing probability systems they should be able to determine outcomes based on their knowledge and consequently make good choices when faced with lifestyle decisions.

**KEY CONCEPT:** Logic

**Related Concepts / Subject Specific:** Representation, System

**STATEMENT OF INQUIRY:**

Decision making can be enhanced by using logical representation and systems.

**INQUIRY QUESTIONS:**

**Factual:**

What are the different ways of representing a sample space?

**Conceptual:**

What are the advantages and disadvantages of the different probability representations?

**Debatable:**

How can real data be misleading?

**OBJECTIVES AND ASSESSMENT CRITERIA:**

**A: Knowing and understanding**

Select appropriate mathematics when solving challenging problems in both familiar and unfamiliar situations, apply the selected mathematics successfully when solving these problems, and generally solve these problems correctly in a variety of contexts.

**B: Investigating patterns**

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.

**C: Communicating**

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.

**D: Applying mathematics in real-life situations**

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; justify the degree of accuracy of a solution; and justify whether a solution makes sense in the context of the authentic real-life situation.

**ATLs:**

Communication: *Reading, writing and using language to gather and communicate information:* Use and interpret a range of discipline-specific terms and symbols, Understand and use mathematical notation

### RESOURCES / LITERATURE OPTIONS:

- MYP Mathematics 4-5 : Oxford University Press
- MYP Mathematics 4-5 -Extended Oxford University Press
- Transum
- Geogebra/Desmos

### SUMMATIVE ASSESSMENT TASKS:

1. Criteria C/D : Using probability in real life to identify fairness of some games. Students should be able to explore the concept of probabilities and make informed decisions which need to be coherent with findings and clearly explained
2. Criteria A: Knowing and understanding - students will work on problems applying concepts of probability using venn diagrams, tables, tree diagrams; events with and without replacement. Identify when events are independent.

# Grade 10 Mathematics Extended

## Unit 4: Circle Geometry

**Start:** March

**Duration:** 8 weeks

**LEARNING EXPERIENCES:** In this unit students will look at measurements in triangles (including ambiguous cases); use degree and radians indistinctly apply translations to understand all transformations. They will develop the skills to create models with periodic phenomena and identify where they occur in the real world. Most of the circle's theorems will be visited in this unit.

**KEY CONCEPT:** Relationships    **Related Concepts / Subject Specific:** Measurement, Model

**STATEMENT OF INQUIRY:** Generalizing and applying relationships between measurements in space can help define “where” and “when”.

### INQUIRY QUESTIONS:

**Factual:** How are the trigonometric functions related to the unit circle?

**Conceptual:** What is the difference between phase and horizontal shift?

**Debatable:** How do we define “where” and “when”?

### OBJECTIVES AND ASSESSMENT CRITERIA:

**A: Knowing and understanding** 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.

**B: Investigating patterns** 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.

**C: Communicating** 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.

**D: Applying mathematics in real-life situations** 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; justify the degree of accuracy of a solution, justify whether a solution makes sense in the context of the authentic real-life situation.

**ATLs:** Thinking, Critical Thinking Skills: Draw reasonable conclusions and generalizations, Test generalizations and conclusions, Propose and evaluate a variety of solutions  
Communication: Organize and depict information logically.

### RESOURCES / LITERATURE OPTIONS:

- MYP Mathematics 4-5 : Oxford University Press
- MYP Mathematics 4-5 -Extended Oxford University Press
- Transum
- Geogebra/Desmos

### SUMMATIVE ASSESSMENT TASKS:

1. Criteria A: Knowing and understanding - Students will solve triangles, areas of sector, use circle theorems, apply understanding of these theorems to solve more complex problems; graph and identify transformations of trigonometric functions.

2. Criteria B/C: Identify properties of central angles and areas of polygons. Results will be displayed, organized and conclusions must be drawn and clearly shared.