الخطة الفصلية منهج ريفيل

تاريخ نشر الملف على موقع المناهج: 05-01-2023 17:14:18

التواصل الاجتماعي بحسب الصف العاشر المتقدم

المزيد من الملفات بحسب الصف العاشر المتقدم والمادة رياضيات في الفصل الثاني

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Grade 10 Advanced Stream Mathematics (Reveal)
Scheme of Work, Term 2, Academic Year 2022-2023

Purpose
- to define the **required** Advanced Stream Mathematics Student Learning Outcomes to be covered during the term for this grade
- to **recommend** the pace at which the Student Learning Outcomes are to be covered. The term's content is broken down into nine teaching weeks, allowing the coverage of topics within each week to be flexible.

Assessment
- Assessment details for Term 2 will be communicated separately.

Teachers should incorporate the Standards for Mathematical Practice (SMPs) in their instruction when and where appropriate. The Standards for Mathematical Practice are

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Why are the Standards for Mathematical Practice important?
The Standards for Mathematical Practice set expectations for using mathematical language and representations to reason, solve problems, and model in preparation for careers and a wide range of college majors.

Week 1: Jan. 2 – 6, 2023

Integrated II Module 5 – Circles

Lessons	Student Learning Outcomes	Common Core State Standards
M5L1 – Circles and Circumference	• Know the precise definition of circle and find the circumferences of circles. • Find measures in intersecting circles and prove relationships between circles.	**G.GMD.1** Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. *Use dissection arguments, Cavalieri's principle, and informal limit arguments.*
M5L2 – Measuring Angles and Arcs	• Find measures of angles and arcs using the properties of circles. • Find arc lengths and convert between degrees and radians.	**G.C.2** Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.* **G.C.5** Derive, using similarity, the fact that the length of the arc intercepted by an angle is proportional the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
M5L3 – Arcs and Chords	• Solve problems using the relationships between arcs, chords, and diameters.	**G.C.2** Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

Week 2: Jan. 9 – 13, 2023

Lessons	Student Learning Outcomes	Common Core State Standards
M5L4 – Inscribed Angles	• Describe relationships between inscribed angles, and use those relationships to solve problems. • Identify relationships in inscribed polygons, and use those relationships to solve problems.	**G.C.2** Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.* **G.C.3** Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
M5L5 – Tangents	• Describe relationships between radii and tangents, and use those relationships to solve problems. • Describe relationships between central and circumscribed angles, and use those relationships to solve problems.	**G.C.4** Construct a tangent line from a point outside a given circle to the circle. **G.CO.13** Construct an equilateral triangle, a square, and a regular hexagon inscribed in a circle.
M5L6 – Tangents, Secants, and Angle Measures	• Use relationships between tangents and secants to solve problems.	**G.C.2** Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*

Week 3: Jan. 16 – 20, 2023		
Integrated II Module 7 – Probability		
Lessons	**Student Learning Outcomes**	**Common Core State Standards**
M7L1 – Sample Spaces	• Define sample spaces and describe subsets of sample spaces. • Apply the Fundamental Counting Principle to define sample spaces.	**S.CP.1** Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").
M7L2 – Probability and Counting	• Describe events as subsets of sample spaces by using intersections and unions. • Describe events as subsets of sample spaces by using complements.	**S.CP.1** Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or," "and," "not").
M7L4 – Probability with Permutations and Combinations	• Use permutations to compute probabilities. • Use combinations to compute probabilities.	**S.CP.9** Use permutations and combinations to compute probabilities of compound events and solve problems

Week 4: Jan. 23 – 27, 2023		
Lessons	**Student Learning Outcomes**	**Common Core State Standards**
M7L5 – Probability and the Multiplication Rule	• Apply the multiplication rule to situations involving independent events. • Apply the multiplication rule to situations involving dependent events.	**S.CP.2** Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities and use this characterization to determine if they are independent. **S.CP.8** Apply the general Multiplication Rule in a uniform probability model, $P(A \text{ and } B) = P(A)P(B|A) = P(B)P(A|B)$, and interpret the answer in terms of the model.
M7L6 – Probability and the Addition Rule	• Apply the addition rule to situations involving mutually exclusive events. • Apply the addition rule to situations involving events that are not mutually exclusive.	**S.CP.7** Apply the Addition Rule, $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$, and interpret the answer in terms of the model.
M7L7 – Conditional Probability	• Recognize and explain the concepts of conditional probability and independence in everyday situations.	**S.CP.3** Understand the conditional probability of A given B as $\frac{P(A \text{ and } B)}{P(B)}$, and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B. **S.CP.5** Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations

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Week 5: Jan. 30 – Feb. 3, 2023

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Lessons	Student Learning Outcomes	Common Core State Standards
M7L8 – Two-Way Frequency Tables	• Construct and interpret two-way frequency tables and use them to determine whether events are independent.	**S.CP.4** Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. **S.CP.6** Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A, and interpret the answer in terms of the model.
Integrated II Module 9 – Linear Equations, Inequalities, and Systems		
M9L4 – Solving Systems of Equations Graphically	• Solve systems of linear equations by graphing.	**A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context. **A.REI.11** Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.
M9L5 – Solving Systems of Equations Algebraically	• Solve systems of equations by using the substitution method. • Solve systems of equations by using the elimination method.	**A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.

Week 6: Feb. 6 – 10, 2023		
Lessons	**Student Learning Outcomes**	**Common Core State Standards**
M9L8 – Systems of Equations in Three Variables	• Solve systems of linear equations in three variables.	**A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.
M9L9 – Solving Absolute Value Equations and Inequalities by Graphing	• Solve absolute value equations. • Solve absolute value inequalities.	**A.CED.1** Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.*

<table>
<tr><th colspan="3" style="text-align:center">Week 7: Feb. 13 – 17, 2023</th></tr>
<tr><th colspan="3" style="text-align:center">Integrated III Module 1 – Quadratic Functions</th></tr>
<tr><th>Lessons</th><th>Student Learning Outcomes</th><th>Common Core State Standards</th></tr>
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<td>M1L1 – Graphing Quadratic Functions</td>
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Graph quadratic functions.
Find and interpret the average rate of change of quadratic functions given symbolically, in tables, and in graphs.

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<td>F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.
F.IF.6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.</td>
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<td>M1L2 – Solving Quadratic Equations by Graphing</td>
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Solve quadratic equations by graphing.

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<td>A.CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.</td>
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<td>M1L3 – Complex Numbers</td>
<td>

Perform operations with pure imaginary numbers.
Perform operations with complex numbers.

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<td>N.CN.1 Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.
N.CN.2 Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.</td>
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Week 8: Feb. 20 – 24, 2023		
Lessons	**Student Learning Outcomes**	**Common Core State Standards**
M1L4 – Solving Quadratic Equations by Factoring	• Solve quadratic equations by factoring. • Solve quadratic equations by factoring special products.	**N.CN.7** Solve quadratic equations with real coefficients that have complex solutions. **N.CN.8** Extend polynomial identities to the complex numbers. *For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.* **F.IF.8** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **F.IF.8a** Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.
M1L5 – Solving Quadratic Equations by Completing the Square	• Solve quadratic equations by using the Square Root Property. • Complete the square in quadratic expressions to solve quadratic equations. • Complete the square in a quadratic function to interpret key features of its graph.	**N.CN.7** Solve quadratic equations with real coefficients that have complex solutions. **F.IF.8** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. **F.IF.8a** Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

Week 9: Feb. 27 – March 3, 2023

Lessons	Student Learning Outcomes	Common Core State Standards
M1L6 – Using the Quadratic Formula and the Discriminant	• Solve quadratic equations by using the Quadratic Formula. • Determine the number and type of roots of a quadratic equation.	**N.CN.7** Solve quadratic equations with real coefficients that have complex solutions. **N.CN.8** Extend polynomial identities to the complex numbers. *For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.* **A.SSE.1** Interpret expressions that represent a quantity in terms of its context. **A.SSE.1b** Interpret complicated expressions by viewing one or more of their parts as a single entity.
M1L7 – Quadratic Inequalities	• Graph quadratic inequalities in two variables. • Solve quadratic inequalities in two variables by graphing.	**A.CED.1** Create equations and inequalities in one variable and use them to solve problems. *Include equations arising from linear and quadratic functions, and simple rational and exponential functions.* **A.CED.3** Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

Week 10: March 6 – 10, 2023
Week 11: March 13 – 17, 2023
Week 12: March 20 – 24, 2023

Term 2 Revision and End-of-Term Exam
Exam date to be determined by the Assessment Directorate