Mathematics 10

Foundational Outcomes

NOVA SCOTIA
NOUVELLE-ÉCOSSE

2020–2021

Outcomes Framework <u>Mathematics 10</u> (2020-2021)

In September 2020, teachers will be working hard to create a space that is safe and welcoming for all learners no matter the location of their "classroom". The first weeks will still be a time to establish a sense of community, engage learners in rich interactive experiences to promote critical thinking and create opportunities for collaboration and discussion. This is an opportune time to develop a culture and a climate for mathematics learning, conducive to collaboration, risk taking and inquiry.

The **Foundational Outcomes** identified in this document represent outcomes determined to be relevant for future learning in mathematics. Decisions about foundational outcomes were made in consultation with teachers, provincial mathematics team, Board and Regional Centre staff. The foundational outcomes are meant to guide teachers in making decisions about creating learning experiences that will prepare and engage their learners in a responsive way. However, a teacher's professional judgment remains the most important guide to effectively responding to the needs of their learners.

Colour coding has been used to identify outcomes and indicators as foundational (**green**), optional (**orange**) or non-foundational (**red**) for the 2020-2021 school year.

M01 Students will be expected to solve problems that involve linear measurement, using SI and imperial units of measure, estimation strategies, and measurement strategies. **Performance Indicators: all indicators**
M02 Students will be expected to apply proportional reasoning to problems that involve conversions between SI and imperial units of measure. **Performance Indicators: all indicators**
M03 Students will be expected to solve problems, using SI and imperial units, that involve the surface area and volume of 3-D objects, including right cones, right cylinders, right prisms, right pyramids, and spheres. **Performance Indicators: all indicators**
M04 Students will be expected to develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles. **Performance Indicators: all indicators**
AN01 Students will be expected to demonstrate an understanding of factors of whole numbers by determining the prime factors, greatest common factor, least common multiple, square root, and cube root.

Performance Indicators: all indicators

AN02 Students will be expected to demonstrate an understanding of irrational numbers by representing, identifying, simplifying, and ordering irrational numbers. (Focus on simplifying radicals).
Performance Indicators: all indicators

AN03 Students will be expected to demonstrate an understanding of powers with integral and rational exponents.
Performance Indicators: all indicators

AN04 Students will be expected to demonstrate an understanding of the multiplication of polynomial expressions (limited to monomials, binomials, and trinomials), concretely, pictorially, and symbolically.
Performance Indicators: all indicators

AN05 Students will be expected to demonstrate an understanding of common factors and trinomial factoring, concretely, pictorially, and symbolically.
Performance Indicators: all indicators

RF01 Students will be expected to interpret and explain the relationships among data, graphs, and situations.
Performance Indicators: all indicators

RF02 Students will be expected to demonstrate an understanding of relations and functions.
Performance Indicators: all indicators

RF03 Students will be expected to demonstrate an understanding of slope with respect to rise and run, line segments and lines, rate of change, parallel lines, and perpendicular lines.
Performance Indicators: all indicators

RF04 Students will be expected to describe and represent linear relations, using words, ordered pairs, tables of values, graphs, and equations.
Performance Indicators: all indicators

RF05 Students will be expected to determine the characteristics of the graphs of linear relations, including the intercepts, slope, domain, and range.
Performance Indicators: all indicators

RF06 Students will be expected to relate linear relations to their graphs, expressed in:
slope-intercept form (y = mx + b)
general form (Ax + By + C = 0)
slope-point form (y – y1) = m(x – x1)

Performance Indicators:
- RF06.01 Express a linear relation in different forms, and compare the graphs.
- RF06.02 Rewrite a linear relation in either slope-intercept or general form.
- RF06.03 Generalize and explain strategies for graphing a linear relation in slope-intercept, general, or slope-point form.
- RF06.04 Graph, with and without technology, a linear relation given in slope-intercept, general, or slope-point form, and explain the strategy used to create the graph.
- RF06.05 Identify equivalent linear relations from a set of linear relations.
- RF06.06 Match a set of linear relations to their graphs

RF07 Students will be expected to determine the equation of a linear relation to solve problems, given a graph, a point and the slope, two points, and a point and the equation of a parallel or perpendicular line.

Performance Indicators:
- RF07.01 Determine the slope and y-intercept of a given linear relation from its graph, and write the equation in the form y = mx + b.
- RF07.02 Write the equation of a linear relation, given its slope and the coordinates of a point on the line, and explain the reasoning.
- RF07.03 Write the equation of a linear relation, given the coordinates of two points on the line, and explain the reasoning.
- RF07.04 Write the equation of a linear relation, given the coordinates of a point on the line and the equation of a parallel or perpendicular line, and explain the reasoning.
- RF07.05 Graph linear data generated from a context, and write the equation of the resulting line.
- RF07.06 Determine the equation of the line of best fit from a scatterplot using technology and determine the correlation.
- RF07.07 Solve a problem, using the equation of a linear relation.

RF08 Students will be expected to solve problems that involve the distance between two points and the midpoint of a line segment.

Performance Indicators: all indicators

RF09 Students will be expected to represent a linear function, using function notation.

Performance Indicators: all indicators

RF10 Students will be expected to solve problems that involve systems of linear equations in two variables, graphically and algebraically.

Performance Indicators: all indicators

FM01 Students will be expected to solve problems that involve unit pricing and currency exchange, using proportional reasoning

Performance Indicators: all indicators

FM02 Students will be expected to demonstrate an understanding of income to calculate gross pay and net pay, including wages, salary, contracts, commissions, and piecework.

Performance Indicators: all indicators

FM03 Students will be expected to investigate personal budgets

Performance Indicators: all indicators

FM04 Students will be expected to explore and give a presentation on an area of interest that involves financial mathematics.

Performance Indicators: all indicators