Measurement

General Outcome: *Develop spatial sense and proportional reasoning.*

Specific Outcomes

It is expected that students will:

10I.M.1. Solve problems that involve linear measurement, using
- SI and imperial units of measure
- estimation strategies
- measurement strategies

[ME, PS, V]

10I.M.2. Apply proportional reasoning to problems that involve conversions within and between SI and imperial units of measure.

[C, ME, PS, T]

10I.M.3. 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
- spheres.

[CN, PS, R, T, V]

10I.M.4. Develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles.

[C, CN, PS, R, T, V]

Algebra and Number

General Outcome: *Develop algebraic reasoning and number sense.*

Specific Outcomes

It is expected that students will:

10I.A.1. Demonstrate an understanding of factors of whole numbers by determining
- prime factors
- greatest common factor
- least common multiple
- square root
- cube root

[CN, ME, R]

10I.A.2. Demonstrate an understanding of irrational numbers by
- representing, identifying, and simplifying irrational numbers
- ordering irrational numbers

[CN, ME, R, V]

10I.A.3. Demonstrate an understanding of powers with integral and rational exponents.

[C, CN, PS, R]

10I.A.4. Demonstrate an understanding of the multiplication of polynomial expressions (limited to monomials, binomials, and trinomials), concretely, pictorially, and symbolically.

[C, CN, R, V]

10I.A.5. Demonstrate an understanding of common factors and trinomial factoring, concretely, pictorially, and symbolically.

[C, CN, R, V]

Relations and Functions

General Outcome: *Develop algebraic and graphical reasoning through the study of relations.*

Specific Outcomes

It is expected that students will:

10I.R.1. Interpret and explain the relationships among data, graphs and contexts.

[C, CN, R, T, V]

10I.R.2. Demonstrate an understanding of relations and functions.

[C, R, V]

10I.R.3. Demonstrate an understanding of slope with respect to
- rise and run
- line segments and lines
- rate of change
- parallel lines
- perpendicular lines

[PS, R, V]

10I.R.4. Describe and represent linear relations, using
- words
- ordered pairs
- tables of values
- graphs
- equations

[C, CN, R, V]

10I.R.5. Determine the characteristics of the graphs of linear relations, including the
- intercepts
- slope
- domain
- range

[CN, PS, R, T, V]

10I.R.6. Relate linear relations expressed in
- slope–intercept form ($y = mx + b$)
- general form ($Ax + By + C = 0$)
- slope–point form ($y - y_1 = m(x - x_1)$)

to their graphs.

[C, CN, R, T, V]

10I.R.7. Determine the equation of a linear relation, given
- a graph
- a point and the slope
- two points
- a point and the equation of a parallel or perpendicular line
- a scatterplot

[C, CN, PS, R, T, V]

10I.R.8. Represent a linear function, using function notation.

[CN, ME, V]

10I.R.9. Solve problems that involve systems of linear equations in two variables, graphically and algebraically.

[CN, PS, R, T, V]

10I.R.10. Solve problems that involve the distance between two points and the midpoint of a line segment.

[C, CN, PS, T, V]

Processes:
C – Communication
CN – Connections
ME – Mental Mathematics and Estimation
PS – Problem Solving
R – Reasoning
T – Technology
V – Visualization