Mathematics Specific Learning Outcomes **GRADE 8**

[C] Communication	**[PS]** Problem Solving	
[CN] Connections	**[R]** Reasoning Estimation	
[ME] Mental Mathematics and Estimation	**[T]** Technology	
	[V] Visualization	

NUMBER

General Outcome
Develop number sense.

8.N.1. Demonstrate an understanding of perfect squares and square roots, concretely, pictorially, and symbolically (limited to whole numbers).
[C, CN, R, V]

8.N.2. Determine the approximate square root of whole numbers that are not perfect squares (limited to whole numbers).
[C, CN, ME, R, T]

8.N.3. Demonstrate an understanding of percents greater than or equal to 0%.
[CN, PS, R, V]

8.N.4. Demonstrate an understanding of ratio and rate.
[C, CN, V]

8.N.5. Solve problems that involve rates, ratios, and proportional reasoning.
[C, CN, PS, R]

8.N.6. Demonstrate an understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically.
[C, CN, ME, PS]

8.N.7. Demonstrate an understanding of multiplication and division of integers, concretely, pictorially, and symbolically.
[C, CN, PS, R, V]

8.N.8. Solve problems involving positive rational numbers.
[C, CN, ME, PS, R, T, V]

PATTERNS AND RELATIONS

General Outcome
Use patterns to describe the world and solve problems.

8.PR.1. Graph and analyze two-variable linear relations.
[C, ME, PS, R, T, V]

General Outcome
Represent algebraic expressions in multiple ways.

8.PR.2. Model and solve problems using linear equations of the form
- $ax = b$
- $\frac{x}{a} = b, a \neq 0$
- $ax + b = c$
- $\frac{x}{a} + b = c, a \neq 0$
- $a(x + b) = c$

concretely, pictorially, and symbolically, where a, b, and c are integers.
[C, CN, PS, V]

SHAPE AND SPACE

General Outcome
Use direct or indirect measurement to solve problems.

8.SS.1. Develop and apply the Pythagorean theorem to solve problems.
[CN, PS, R, T, V]

8.SS.2. Draw and construct nets for 3-D objects.
[C, CN, PS, V]

8.SS.3. Determine the surface area of
- right rectangular prisms
- right triangular prisms
- right cylinders
to solve problems.
[C, CN, PS, R, V]

8.SS.4. Develop and apply formulas for determining the volume of right prisms and right cylinders.
[C, CN, PS, R, V]

General Outcome
Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.

8.SS.5. Draw and interpret top, front, and side views of 3-D objects composed of right rectangular prisms.
[C, CN, R, T, V]

General Outcome
Describe and analyze position and motion of objects and shapes.

8.SS.6. Demonstrate an understanding of tessellation by
- explaining the properties of shapes that make tessellating possible
- creating tessellations
- identifying tessellations in the environment
[C, CN, PS, T, V]

STATISTICS AND PROBABILITY

General Outcome
Collect, display, and analyze data to solve problems.

8.SP.1. Critique ways in which data are presented.
[C, R, T, V]

General Outcome
Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.

8.SP.2. Solve problems involving the probability of independent events.
[C, CN, PS, T]