Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – KINDERGARTEN PROFICIENCY DESCRIPTORS			
Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes a **personal connection** with one aspect of the problem **personal connection:** experiences and prior knowledge	Identifies a significant fact about the problem	Understands that problems have **parameters** **parameters:** factors and conditions that define the problem
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Recognizes the mathematical competencies and **content** needed to solve the problem **content:** refer to Math curriculum	Represents the mathematical problem, using concrete materials and/or pictures	Experiments with problem solving using prior knowledge
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates the **scope** of the answer **scope:** range, size, shape, time	Finds a solution, using play, concrete materials, or models	Compares their solution with those of their teacher and/or peers
Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Identifies a reasonable solution in relation to the original problem/scenario	Identifies an alternative **approach** **approach:** own approach, peer- or teacher-driven approach	Experiments with a recommended alternative approach to solve the problem
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents the problem-solving process, using numbers, pictures, and/or manipulatives	Identifies one step of their problem-solving approach	Identifies one problem-solving decision

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 1 PROFICIENCY DESCRIPTORS			
Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes **personal connections** with aspects of the problem **personal connections**: experiences and prior knowledge	Identifies a significant fact and gathers other information from the problem	Identifies a clearly defined **parameter** needed to solve the problem **parameter:** factors and conditions that define the problem
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Recognizes the mathematical competencies and **content** needed to solve the problem **content:** refer to Math curriculum	Represents the mathematical problem, using concrete materials and diagrams	Develops a straightforward plan of approach, using prior knowledge and mathematical tools and strategies
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates the **scope** of the answer **scope**: e.g., range, size, shape, time	Finds a solution, using play, concrete materials, or models	Compares their solution with those of their teacher and/or peers
Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Identifies a reasonable solution in relation to the original problem/scenario	Identifies an alternative **approach** **approach:** own approach, peer- or teacher-driven approach	Experiments with a recommended alternative approach to solve the problem
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents the problem-solving process, using words, numbers, pictures, symbols, and/or manipulatives	Outlines their problem-solving approach	Outlines one problem- solving decision

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 2 PROFICIENCY DESCRIPTORS

Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes **personal connections** to explore the problem **personal connection:** experiences and prior knowledge	Identifies and gathers most of the significant information from the presented problem to assist in solving it	Identifies some of the clearly defined **parameters** needed to solve the problem **parameters:** factors and conditions that define the problem
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Identifies the mathematical competencies and **content** needed to solve the problem **content:** refer to Math curriculum	Represents the mathematical problem, using concrete materials and diagrams	Develops a **basic** plan of approach, using **familiar** mathematical tools and/or strategies **basic:** could be one step **familiar:** previously seen or modelled such as using base-10 blocks
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably within known parameters, using **benchmarks** **benchmarks:** e.g., 25, 50, 100, distance, rhythm, pattern	Finds a solution, using mathematical tools and/or **strategies** **strategies:** e.g., play, concrete materials, models	Verifies the accuracy of their solution by comparing it with a variety of proofs/checks, including estimation
Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the reasonableness of a solution in relation to the original problem/scenario	Explores an alternative **approach** **approach:** own approach, peer- or teacher-driven approach	Selects an alternative approach to solve the problem
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents the problem-solving process, using **familiar tools** **familiar tools:** e.g., manipulatives, symbols, graphic organizers, charts	Outlines their problem-solving approach, using familiar **mathematical language** **mathematical language:** refer to Math curriculum	Describes one problem-solving decision and a supporting reason

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 3 PROFICIENCY DESCRIPTORS

Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes **personal connections** to explore the problem **personal connections:** experiences and prior knowledge	Identifies and gathers most of the significant information from the presented problem to assist in solving it	Identifies most of the clearly defined **parameters** needed to solve the problem **parameters:** factors and conditions that define the problem
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Identifies the mathematical competencies and **content** needed to solve the problem **content:** refer to Math curriculum	Represents the mathematical problem, using concrete materials, diagrams, and/or some **familiar equations** **familiar equations:** previously seen or modelled e.g., 2 digit addition	Develops a **basic** plan of approach, using familiar mathematical tools and/or strategies **basic:** could be one step
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably within identified parameters, using **benchmarks** and information from the scenario **benchmarks:** e.g., up to 1000, distance, rhythm, pattern	Finds a solution by applying familiar mathematical tools and/or **strategies** **strategies:** e.g., play, concrete materials, models	Verifies the accuracy of their solution, using familiar mathematical strategies and/or by comparing with their estimate
Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the reasonableness of a solution in relation to the original problem/scenario	Explores alternative **approaches** **approach:** own approach, peer- or teacher-driven approach	Selects an alternative approach to solve the problem
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents processes and solution by selecting and using reasonable **tools** **tools:** e.g., table, manipulative, graphic organizer, array, model	Describes their problem-solving approach, using familiar mathematical language	Describes their problem-solving decisions and supporting reasons

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 4 PROFICIENCY DESCRIPTORS			
Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes **general connections** to understand the problem in context **general connection:** personal, or to similar problems	Gathers relevant information from the presented problem to assist in solving it	Identifies all clearly defined **parameters** needed to solve the problem **parameters:** factors and conditions that define the problem
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Applies the **mathematical understanding** needed to partially translate a familiar scenario into a mathematical problem **mathematical understanding:** refer to Math curriculum	Represents the mathematical problem, using concrete materials, diagrams, and/or some **familiar** equations **familiar:** previously seen or modelled such as using an array	Develops a sequence of steps that applies familiar mathematical tools and/or strategies
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably within identified parameters, using **benchmarks** and relevant information from the scenario **benchmarks:** up to 10 000, fractions, decimals, distance, colour, rhythm, pattern	Finds a solution by applying familiar mathematical tools and/or **strategies** **strategies:** e.g., equations, play, concrete materials, models	Verifies the accuracy of their solution, using reasonable estimates and other familiar mathematical strategies
Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the reasonableness of a solution in relation to the original problem/scenario	Compares and contrasts alternative **approaches** **approaches:** own approach, peer- or teacher-driven approach	Identifies and experiments with an alternative approach to solve the problem
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents processes and solution by selecting and using reasonable **tools** **tools:** e.g., model, chart, map, table, graph, array	Describes their problem-solving approach, using familiar **mathematical language** **mathematical language:** refer to Math curriculum	Explains their problem-solving decisions and supporting reasons

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 5 PROFICIENCY DESCRIPTORS

Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes **general connections** to understand the problem in context **general connections:** personal, or to similar problems	Gathers relevant information from the presented problem to assist in solving it	Identifies all clearly defined **parameters** needed to solve the problem **parameters:** factors and conditions that define the problem
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Applies the **mathematical understanding** needed to partially translate a familiar scenario into a mathematical problem **mathematical understanding:** refer to Math curriculum	Represents the mathematical problem, using concrete materials, diagrams, and/or equations	Develops a logical sequence of steps that applies **familiar** mathematical tools and/or strategies **familiar:** previously seen or modelled such as using a calculator
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably within identified parameters, using **benchmarks** and relevant information from the scenario **benchmarks:** e.g., up to 1 000 000, fractions, decimals, distance, colour, rhythm, pattern	Finds a solution by applying familiar mathematical tools and/or **strategies** **strategies:** e.g., equations, play, concrete materials, models	Verifies the accuracy of their solution, using reasonable estimates and other familiar mathematical strategies
Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the reasonableness of a solution in relation to the original problem/scenario	Compares and contrasts alternative **approaches** **approaches:** own approach, peer- or teacher-driven approach	Identifies and experiments with an alternative approach to solve the problem
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents processes and solution by selecting and using reasonable tools **reasonable tools:** e.g., model, map, table, graph, array	Describes their problem-solving approach, using familiar mathematical language **mathematical language:** refer to Math curriculum	Explains their problem-solving decisions and supporting reasons

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 6 PROFICIENCY DESCRIPTORS			
Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes relevant connections to understand a **real-world problem** **real-world problem:** contextual, relevant, related to current learning, personally/locally/globally meaningful	Extracts relevant information from the presented problem as needed to solve it	Identifies only relevant explicit **parameters** needed to solve the problem **parameters:** factors and conditions that define the problem
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Applies the **mathematical understanding** needed to translate a familiar scenario into a mathematical problem **mathematical understanding:** refer to Math curriculum	Accurately represents the mathematical problem, using a variety of **models** **models:** e.g., concrete materials, diagrams, equations	Develops an organized and intentional sequence of steps that applies **appropriate** mathematical tools and/or strategies **appropriate:** refer to Math curriculum
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably within the context and parameters of the scenario, using **benchmarks** **benchmarks:** e.g., thousandths to billions, fractions, decimals, area, rhythm, pattern	Finds a solution, using appropriate **strategies** **strategies:** e.g., using a tool (calculator), picture, graph, equations, concrete materials, and/or models	Verifies the accuracy of their results and/or solution, using reasonable estimates and other **familiar strategies** **familiar strategies:** previously seen or modelled such as using a calculator
Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the **reasonableness** of their solution within the **context of the problem** **reasonableness:** rationality, practicality **context of the problem:** e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Describes the benefits and limitations of alternative **approaches** **approaches:** own approach, peer- or teacher-driven approach	**Refines** approach, using the benefits and limitations of alternative approaches to solving the problem **refines:** improves through small changes

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents the complete process and solution by selecting and using **appropriate tools** **appropriate tools:** e.g., model, chart, map, table, graph, array	Accurately explains their problem-solving **approach** **approach:** e.g., process: making a model; tool: manipulatives; strategy: using an equation	Presents a rationale for their problem- solving decisions and assumptions

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 7 PROFICIENCY DESCRIPTORS

Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes relevant connections to understand a **real-world problem** **real-world problem:** contextual, relevant, related to current learning, personally/locally/globally meaningful	Extracts relevant information from the presented problem as needed to solve it	Identifies only relevant explicit **parameters** needed to solve the problem **parameters:** factors and conditions that define the problem
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Applies the **mathematical understanding** needed to translate a familiar scenario into a mathematical problem **mathematical understanding:** refer to Math curriculum	Accurately represents the mathematical problem, using a variety of **models** **models:** e.g., concrete materials, diagrams, equations	Develops a logical and organized plan that applies **appropriate** mathematical tools and/or **strategies** **appropriate:** refer to Math curriculum **strategies:** e.g., using a tool (calculator), picture, graph, equation
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably within the context and parameters of the scenario, using **benchmarks** **benchmarks:** e.g., thousandths to billions, fractions, decimals, area, rhythm, pattern	Finds a solution, using appropriate **strategies** **strategies:** e.g., using a tool (calculator), picture, graph, equations, concrete materials, and/or models	Verifies the accuracy of their results and/or solution, using reasonable estimates and other **familiar strategies** **familiar:** previously seen or modelled e.g., using a tool [calculator], alternate algorithm, picture, graph
Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the **reasonableness** of their solution within the **context of the problem** **reasonableness:** rationality, practicality **context of the problem:** e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Describes the benefits and limitations of alternative **approaches** **approaches:** own approach, peer- or teacher-driven approach	**Refines** approach, using the benefits and limitations of alternative approaches to solving the problem **refines:** improves through small changes

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents the complete process and solution by selecting and using **appropriate tools** **appropriate tools:** model, chart, map, table, graph, array, equation	Accurately explains their problem-solving **approach** **approach:** e.g. process: making a model; tool: calculator; strategy: using an equation	Presents a rationale for their problem- solving decisions and assumptions

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 8 PROFICIENCY DESCRIPTORS			
Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes relevant connections to fully understand the **real-world problem** in context **real-world problem:** contextual, relevant, related to current learning, personally/locally/globally meaningful	Extracts relevant information from the presented problem and other resources as needed to solve the problem	Identifies relevant explicit **parameters** and **limitations** needed to solve the problem **parameters:** factors and conditions that define the problem **limitations:** reasonable constraints in a real-world problem or context
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Applies the **mathematical understanding** needed to translate an **unfamiliar scenario** into a mathematical problem **mathematical understanding:** refer to Math curriculum **unfamiliar scenario:** previously unseen or unmodelled	Clearly represents the mathematical problem by choosing an **appropriate model(s)** **appropriate:** refer to Math curriculum **models:** e.g., concrete materials, diagrams, equations	Uses mathematical reasoning to develop a logical and organized plan that applies **appropriate** mathematical tools and/or **strategies** **appropriate:** refer to Math curriculum **strategies:** e.g., using a tool (calculator), picture, graph, equation
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably within the context and parameters of the scenario, using appropriate **benchmarks** **benchmarks:** e.g., perfect squares, volume; Arts: rhythm, pattern; Science: trend, frequency; Language Arts: pattern; ADST: area, volume, materials needed	Solves the mathematical problem, using effective **strategies** as needed **strategies:** e.g., using a tool (calculator), picture, graph, equations, concrete materials, and/or models	Verifies the accuracy of their results and/or solution, using reasonable estimates and other **familiar strategies**; identifies factors that could affect accuracy of results **familiar strategies:** previously seen or modelled (e.g., using a tool [calculator], alternate algorithm, picture, graph)

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the **validity** of their solution within the **context of the problem** **validity:** accuracy in context **context of the problem:** e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Evaluates the benefits and limitations of alternative **approaches** **approaches:** own approach, peer- or teacher-driven approach	**Revises** approach, using the benefits and limitations of alternative approaches to solving the problem **revises:** reflects and adjusts
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Effectively represents the complete process and solution, using **appropriate presentations** **appropriate presentations:** e.g., bulleted explanation, equation, graph, model, map, table, array	Accurately explains their problem-solving **approach**, identifying its limitations and assumptions **approach:** e.g., process: making a diagram; tool: calculator; strategy: using an equation	Presents a logical argument and justifies their decisions and assumptions

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 9 PROFICIENCY DESCRIPTORS			
Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes relevant connections to fully understand the **real-world problem** in context **real-world problem:** contextual, relevant, related to current learning, personally/locally/globally meaningful	Extracts relevant information from the presented problem and other resources as needed to solve the problem	Identifies relevant explicit **parameters** and **limitations** needed to solve the problem **parameters:** factors and conditions that define the problem **limitations:** reasonable constraints in a real-world problem or context
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Applies the **mathematical understanding** needed to translate an **unfamiliar scenario** into a mathematical problem **mathematical understanding:** refer to Math curriculum **unfamiliar scenario:** previously unseen or unmodelled	Clearly represents the mathematical problem by choosing an **appropriate model(s)** **appropriate:** refer to Math curriculum **models:** e.g., concrete materials, diagrams, equations	Uses mathematical reasoning to develop a logical and organized plan that applies **appropriate** mathematical tools and/or **strategies** **appropriate:** refer to Math curriculum **strategies:** e.g., using a tool (calculator), picture, graph, equation
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably within the context and parameters of the scenario, using appropriate **benchmarks** **benchmarks:** e.g., perfect squares, volume; Arts: rhythm, pattern; Science: trend, frequency; Language Arts: pattern; ADST: area, volume, materials needed	Solves the mathematical problem, using effective **strategies** as needed **strategies:** e.g., using a tool (calculator), picture, graph, equations, concrete materials, and/or models	Verifies the accuracy of their results and/or solution, using reasonable estimates and other **familiar strategies**; identifies factors that could affect accuracy of results **familiar strategies:** previously seen or modelled e.g., using a tool [calculator], alternate algorithm, picture, graph

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the **validity** of their solution within the **context of the problem** **validity:** accuracy in context **context of the problem:** e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Evaluates the benefits and limitations of alternative **approaches** **approaches:** own approach, peer- or teacher-driven approach, comparison with research- based approaches	**Revises** approach based on their evaluation of alternative approaches to solving the problem **revises:** reflects and adjusts
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Effectively represents the complete process and solution, using **appropriate presentations** **appropriate presentations:** e.g., bulleted explanation, equation, graph, model, map, table, array	Accurately explains their problem-solving **approach**, identifying its limitations and assumptions **approach:** e.g., process: making a diagram; tool: calculator; strategy: using an equation	Presents a logical argument and justifies their decisions and assumptions

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 10 PROFICIENCY DESCRIPTORS			
Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes connections necessary to understand the context and implications of the **real-world problem** **real-world problem:** contextual, relevant, related to current learning, personally/locally/globally meaningful	Extracts and organizes relevant information from the presented problem and a variety of other external resources to solve the problem	Identifies relevant explicit **parameters** and infers implicit **limitations** needed to solve the problem **parameters:** factors and conditions that define the problem **limitations:** reasonable constraints in a real-world problem or context
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Applies the **mathematical understanding** needed to translate an **unfamiliar scenario** into a mathematical problem **mathematical understanding:** refer to Math curriculum **unfamiliar scenario:** previously unseen or unmodelled	Clearly and accurately represents the problem by strategically choosing an effective **model(s)** **models:** e.g., concrete materials, diagrams, equations	Uses mathematical reasoning to develop a logical, organized, and effective plan that applies **appropriate mathematical tools** and/or **strategies** **appropriate mathematical tools:** refer to Math curriculum **strategies:** e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably in context, within parameters, and considering limitations	Solves the mathematical problem by following a logical plan and using efficient **strategies** as needed **strategies:** e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text	Verifies the accuracy of their results and/or solution, using reasonable estimates and other **familiar strategies**; describes how factors affect accuracy of results **familiar strategies:** previously seen or modelled (e.g., using a tool [calculator], alternate algorithm, picture, graph)

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the **validity** of their **solution**, identifying **contextual factors** that may affect their answer **validity:** accuracy in context **solution:** e.g., lab results, map, product, model **contextual factors:** e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Evaluates the efficiency and effectiveness of alternative **approaches** **approaches:** own approach, peer- or teacher-driven approach, comparison with research- based approaches	**Revises** approach, using the benefits and limitations of alternative approaches to compare alternative solution(s) to the problem **revises:** reflects and adjusts
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents complex processes and solutions, using a variety of **presentations** in a manner that is suitable to the context **presentations:** e.g., bulleted explanation, equation, graph, model, map, table, diagram	Explains their problem-solving **approach**, describing any limitations and assumptions **approach:** e.g., process: making a flowchart; tool: calculator; strategy: using a familiar algorithm or evidence from text	Presents a valid, logical argument to justify their decisions about the selected approach and assumptions, and describes the effects of these choices

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 11 PROFICIENCY DESCRIPTORS			
Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes connections necessary to investigate and understand new contexts and implications of **real-world problems** **real-world problem:** contextual, relevant, related to current learning, personally/locally/globally meaningful	Extracts and organizes relevant information from the presented problem and a variety of other external resources to solve the problem	Identifies explicit and implicit **parameters** and **limitations** needed to solve the problem **parameters:** factors and conditions that define the problem **limitations:** reasonable constraints in a real-world problem or context
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Applies the **mathematical understanding** needed to translate a complex, **unfamiliar scenario** into a mathematical problem **mathematical understanding:** refer to Math curriculum **unfamiliar scenario:** previously unseen or unmodelled	Clearly and accurately represents the problem in context by strategically choosing an effective **model(s)** **models:** e.g., concrete materials, diagrams, equations	Uses mathematical reasoning to develop a logical, organized, and effective multi-step plan that applies **appropriate mathematical tools** and/or **strategies** **appropriate mathematical tools:** refer to Math curriculum **strategies:** e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably in context, within parameters, and considering limitations; explains reasoning for estimate	Solves the mathematical problem by following a logical, multi-step plan and using efficient **strategies** as needed **strategies:** e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text	Verifies the accuracy of their results and/or solution, using reasonable estimates and other **familiar strategies**; compares and evaluates how factors affect accuracy of results **familiar strategies:** previously seen or modelled (e.g., using a tool [calculator], alternate algorithm, picture, graph)

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the **validity** and **reliability** of their processes and solutions and describes how **contextual factors** may affect their answer **validity:** accuracy in context **reliability:** reproducibility of results **contextual factors:** e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Evaluates the efficiency and effectiveness of alternative **approaches** and possible improvements **approaches:** own approach, peer- or teacher-driven approach, comparison with research- based approaches	**Redesigns** approach to improve efficiency of process or accuracy of solution to the problem **redesigns:** iteratively reflects and adjusts
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents complex processes and solutions; chooses a **presentation** that suits the purpose, context, and audience **presentation:** e.g., proof, model, equation, graph, model, map, table, diagram	Explains their problem-solving **approach** accurately and in detail, **evaluating** the effect of any assumptions or limitations **approach:** e.g., process: making a flowchart; tool: calculator; strategy: using an algorithm or evidence from text **evaluating:** assessing the implications	Presents a valid, logical argument to justify their decisions about the selected approach, **evaluating** assumptions and the effects of their choices **evaluating:** assessing the implications

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

NUMERACY LEARNING PROGRESSIONS – GRADE 12 PROFICIENCY DESCRIPTORS			
Aspect	**Interprets –** *The student accesses and identifies relevant information in order to understand the real-world problem to be solved*		
Sub-Aspect	**Understands the real-world problem** *Makes connections to a problem to aid understanding*	**Extracts relevant information** *Extracts key information, data, facts in order to solve a problem*	**Identifies parameters and limitations** *Recognizes reasonable factors, conditions, limitations that define the problem*
Descriptor	Makes connections necessary to investigate and understand new contexts and implications of **real-world problems** **real-world problem:** contextual, relevant, related to current learning, personally/locally/globally meaningful	Extracts and organizes relevant information from the presented problem and a variety of other external resources to solve the problem	Identifies explicit and implicit **parameters** and **limitations** needed to solve the problem **parameters:** factors and conditions that define the problem **limitations:** reasonable constraints in a real-world problem or context
Aspect	**Applies –** *The student applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem*		
Sub-Aspect	**Translates the scenario into a mathematical problem (mathematizes)** *Translate a scenario into a problem using mathematical vocabulary*	**Represents the mathematical problem (visualizes)** *Visually represents a problem with mathematical tools, visual representations, or mathematical symbols*	**Develops a plan of approach** *Thinks of and outlines various approaches to solve a mathematical problem*
Descriptor	Applies the **mathematical understanding** needed to translate a complex, **unfamiliar scenario** into a mathematical problem **mathematical understanding:** refer to Math curriculum **unfamiliar scenario:** previously unseen or unmodelled	Clearly and accurately represents the problem in context by strategically choosing an effective **model(s)** **models:** e.g., concrete materials, diagrams, equations	Uses mathematical reasoning to develop a logical, organized, and effective multi-step plan that applies **appropriate mathematical tools** and/or **strategies** **appropriate mathematical tools:** refer to Math curriculum **strategies:** e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text
Aspect	**Solves –** *The student implements a plan to solve the mathematical problem and checks their solution*		
Sub-Aspect	**Estimates reasonably in context** *Uses the information provided to support a best guess solution*	**Solves the mathematical problem** *Uses various approaches to find a solution to the problem*	**Verifies accuracy of the mathematical solution** *Checks their solution based on similar problems, others' solutions, or their estimate*
Descriptor	Estimates reasonably in context, within parameters, and considering limitations; explains reasoning for estimate	Solves the mathematical problem by following a logical, multi-step plan and using efficient **strategies** as needed **strategies:** e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text	Verifies the accuracy of their results and/or solution, using reasonable estimates and other **familiar strategies**; compares and evaluates how factors affect accuracy of results **familiar strategies:** previously seen or modelled (e.g., using a tool [calculator], alternate algorithm, picture, graph)

Aspect – the overarching skill being developed

Sub-Aspect – the skills that support the development of the Aspect

Descriptor – defines what a proficient understanding or display of the skill looks like at that grade level.

Aspect	**Analyzes –** *The student reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach*		
Sub-Aspect	**Reflects on the reasonableness of the solution in context** *Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)*	**Evaluates alternative approaches** *Checks on the reasonableness of others' approaches to solve the problem*	**Revises approach as needed** *Revises their approach based on checking with others' solution and/or approach*
Descriptor	Reflects on the **validity** and **reliability** of their processes and solutions and describes how **contextual factors** may affect their answer **validity:** accuracy in context **reliability:** reproducibility of results **contextual factors:** e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Evaluates the efficiency and effectiveness of alternative **approaches** and possible improvements **approaches:** own approach, peer- or teacher-driven approach, comparison with research- based approaches	**Redesigns** approach to improve efficiency of process or accuracy of solution to the problem **redesigns:** iteratively reflects and adjusts
Aspect	**Communicates –** *The student represents, explains, and defends their approach and solution within the problem's scenario*		
Sub-Aspect	**Represents processes and solution** *Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols*	**Explains the approach taken** *Clearly explains their problem-solving approach and solution with mathematical vocabulary*	**Defends decisions and assumptions** *Clearly justifies and defends the decisions and assumptions made in their approach and/or solution*
Descriptor	Represents complex processes and solutions; chooses a **presentation** that suits the purpose, context, and audience **presentation:** e.g., proof, model, equation, graph, model, map, table, diagram	Explains their problem-solving **approach** accurately and in detail, **evaluating** the effect of any assumptions or limitations **approach:** e.g., process: making a flowchart; tool: calculator; strategy: using an algorithm or evidence from text **evaluating:** assessing the implications	Presents a valid, logical argument to justify their decisions about the selected approach, **evaluating** assumptions and the effects of their choices **evaluating:** assessing the implications