

## OVERVIEW

A continuum of proficiency in Numeracy from Kindergarten through Grade 12.

The grade level proficiency descriptors highlight what a thinking or communication skill may look like for a proficient student across all learning areas, emphasizing their **CROSS-CURRICULAR** nature.

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CROSS CURRICULAR NUMERACY LEARNING PROGRESSIONS – GRADE LEVEL PROFICIENCY DESCRIPTORS														
Aspect	Sub-aspect	K	1	2	3	4	5	6	7	8	9	10	11	12

Aspect	Sub-aspect	K	1	2	3	4	5	6	7	8	9	10	11	12	
<div>→</div> <div>Interprets Accesses and identifies relevant information in order to understand the real-world problem to be solved</div> <div>→</div>	Understands the real-world problem Makes connections to a problem to aid understanding	Makes a personal connection with one aspect of the problem  <b>personal connection:</b> experiences and prior knowledge	Makes personal connections with aspects of the problem  <b>personal connection:</b> experiences and prior knowledge	Makes personal connections to explore the problem  <b>personal connection:</b> experiences and prior knowledge	Makes personal connections to explore the problem  <b>personal connection:</b> experiences and prior knowledge	Makes general connections to understand the problem in context  <b>general connection:</b> personal, or to similar problems	Makes general connections to understand the problem in context  <b>general connection:</b> personal, or to similar problems	Makes relevant connections to understand a real-world problem  <b>real-world problem:</b> contextual, relevant, related to current learning, personally/locally/ globally meaningful	Makes relevant connections to understand a real-world problem  <b>real-world problem:</b> contextual, relevant, related to current learning, personally/locally/ globally meaningful	Makes relevant connections to fully understand the real-world problem in context  <b>real-world problem:</b> contextual, relevant, related to current learning, personally/locally/ globally meaningful	Makes relevant connections to fully understand the real-world problem in context  <b>real-world problem:</b> contextual, relevant, related to current learning, personally/locally/ globally meaningful	Makes connections necessary to understand the context and implications of the real-world problem  <b>real-world problem:</b> contextual, relevant, related to current learning, personally/locally/ globally meaningful	Makes connections necessary to investigate and understand new contexts and implications of real-world problems  <b>real-world problem:</b> contextual, relevant, related to current learning, personally/locally/ globally meaningful	Makes connections necessary to investigate and understand new contexts and implications of real-world problems  <b>real-world problem:</b> contextual, relevant, related to current learning, personally/locally/ globally meaningful	
	Extracts relevant information Extracts key information, data, facts in order to solve a problem	Identifies a significant fact about the problem	Identifies a significant fact and gathers other information from the problem	Identifies and gathers most of the significant information from the presented problem to assist in solving it	Identifies and gathers most of the significant information from the presented problem to assist in solving it	Gathers relevant information from the presented problem to assist in solving it	Gathers relevant information from the presented problem to assist in solving it	Extracts relevant information from the presented problem as needed to solve it	Extracts relevant information from the presented problem as needed to solve it	Extracts relevant information from the presented problem and other resources as needed to solve the problem	Extracts relevant information from the presented problem and other resources as needed to solve the problem	Extracts relevant information from the presented problem and a variety of other external resources to solve the problem	Extracts and organizes relevant information from the presented problem and a variety of other external resources to solve the problem	Extracts and organizes relevant information from the presented problem and a variety of other external resources to solve the problem	Extracts and organizes relevant information from the presented problem and a variety of other external resources to solve the problem
	Identifies parameters and limitations Recognizes reasonable factors, conditions, limitations that define the problem	Understands that problems have parameters  <b>parameters:</b> factors and conditions that define the problem	Identifies a clearly defined parameter needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem	Identifies some of the clearly defined parameters needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem	Identifies most of the clearly defined parameters needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem	Identifies all clearly defined parameters needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem	Identifies all clearly defined parameters needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem	Identifies only relevant explicit parameters needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem	Identifies only relevant explicit parameters needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem	Identifies relevant explicit parameters and limitations needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem  <b>limitations:</b> reasonable constraints in a real-world problem or context	Identifies relevant explicit parameters and limitations needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem  <b>limitations:</b> reasonable constraints in a real-world problem or context	Identifies relevant explicit parameters and infers implicit limitations needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem  <b>limitations:</b> reasonable constraints in a real-world problem or context	Identifies explicit and implicit parameters and limitations needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem  <b>limitations:</b> reasonable constraints in a real-world problem or context	Identifies explicit and implicit parameters and limitations needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem  <b>limitations:</b> reasonable constraints in a real-world problem or context	Identifies explicit and implicit parameters and limitations needed to solve the problem  <b>parameters:</b> factors and conditions that define the problem  <b>limitations:</b> reasonable constraints in a real-world problem or context

Each **ASPECT** represents a set of transferrable thinking or communication skills

A proficient student must develop, practice, and demonstrate each aspect to become a Literate Learner

All aspects are important when building Literacy skills

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All aspects are important  
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skills

Each **SUB-ASPECT** further defines the transferrable skills within each aspect

The **DESCRIPTOR** is grade specific and describes what proficient student learning looks like at the end of the year/term

**Interprets**  
Accesses and identifies relevant information in order to understand the real-world problem to be solved

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Aspect	Sub-aspect	K	1	2	3	4	5	6	7	8	9	10	11	12
<b>Interprets</b> <i>Accesses and identifies relevant information in order to understand the real-world problem to be solved</i>	<b>Understands the real-world problem</b> <i>Makes connections to a problem to aid understanding</i>	Makes a personal connection with one aspect of the problem  <b>personal connection:</b> <i>experiences and prior knowledge</i>	Makes personal connections with aspects of the problem  <b>personal connection:</b> <i>experiences and prior knowledge</i>	Makes personal connections to explore the problem  <b>personal connection:</b> <i>experiences and prior knowledge</i>	Makes personal connections to explore the problem  <b>personal connection:</b> <i>experiences and prior knowledge</i>	Makes general connections to understand the problem in context  <b>general connection:</b> <i>personal, or to similar problems</i>	Makes general connections to understand the problem in context  <b>general connection:</b> <i>personal, or to similar problems</i>	Makes relevant connections to understand a real-world problem  <b>real-world problem:</b> <i>contextual, relevant, related to current learning, personally/locally/globally meaningful</i>	Makes relevant connections to understand a real-world problem  <b>real-world problem:</b> <i>contextual, relevant, related to current learning, personally/locally/globally meaningful</i>	Makes relevant connections to fully understand the real-world problem in context  <b>real-world problem:</b> <i>contextual, relevant, related to current learning, personally/locally/globally meaningful</i>	Makes relevant connections to fully understand the real-world problem in context  <b>real-world problem:</b> <i>contextual, relevant, related to current learning, personally/locally/globally meaningful</i>	Makes connections necessary to understand the context and implications of the real-world problem  <b>real-world problem:</b> <i>contextual, relevant, related to current learning, personally/locally/globally meaningful</i>	Makes connections necessary to investigate and understand new contexts and implications of real-world problems  <b>real-world problem:</b> <i>contextual, relevant, related to current learning, personally/locally/globally meaningful</i>	Makes connections necessary to investigate and understand new contexts and implications of real-world problems  <b>real-world problem:</b> <i>contextual, relevant, related to current learning, personally/locally/globally meaningful</i>
	<b>Extracts relevant information</b> <i>Extracts key information, data, facts in order to solve a problem</i>	Identifies a significant fact about the problem	Identifies a significant fact and gathers other information from the problem	Identifies and gathers most of the significant information from the presented problem to assist in solving it	Identifies and gathers most of the significant information from the presented problem to assist in solving it	Gathers relevant information from the presented problem to assist in solving it	Gathers relevant information from the presented problem to assist in solving it	Extracts relevant information from the presented problem as needed to solve it	Extracts relevant information from the presented problem as needed to solve it	Extracts relevant information from the presented problem and other resources as needed to solve the problem	Extracts relevant information from the presented problem and other resources as needed to solve the problem	Extracts and organizes relevant information from the presented problem and a variety of other external resources to solve the problem	Extracts and organizes relevant information from the presented problem and a variety of other external resources to solve the problem	Extracts and organizes relevant information from the presented problem and a variety of other external resources to solve the problem
	<b>Identifies parameters and limitations</b> <i>Recognizes reasonable factors, conditions, limitations that define the problem</i>	Understands that problems have parameters  <b>parameters:</b> <i>factors and conditions that define the problem</i>	Identifies a clearly defined parameter needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>	Identifies some of the clearly defined parameters needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>	Identifies most of the clearly defined parameters needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>	Identifies all clearly defined parameters needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>	Identifies all clearly defined parameters needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>	Identifies only relevant explicit parameters needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>	Identifies only relevant explicit parameters needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>	Identifies relevant explicit parameters and limitations needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>  <b>limitations:</b> <i>reasonable constraints in a real-world problem or context</i>	Identifies relevant explicit parameters and limitations needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>  <b>limitations:</b> <i>reasonable constraints in a real-world problem or context</i>	Identifies relevant explicit parameters and infers implicit limitations needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>  <b>limitations:</b> <i>reasonable constraints in a real-world problem or context</i>	Identifies explicit and implicit parameters and limitations needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>  <b>limitations:</b> <i>reasonable constraints in a real-world problem or context</i>	Identifies explicit and implicit parameters and limitations needed to solve the problem  <b>parameters:</b> <i>factors and conditions that define the problem</i>  <b>limitations:</b> <i>reasonable constraints in a real-world problem or context</i>

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Aspect	Sub-aspect	K	1	2	3	4	5	6	7	8	9	10	11	12
Applies <i>Applies mathematical vocabulary, tools, and symbols and develops a plan of approach to solve the problem</i>	<b>Translates the scenario into a mathematical problem (mathematizes)</b> <i>Translate a scenario into a problem using mathematical vocabulary</i>	Recognizes the mathematical competencies and content needed to solve the problem  <i><b>content:</b> refer to <a href="#">Math curriculum</a></i>	Recognizes the mathematical competencies and content needed to solve the problem  <i><b>content:</b> refer to <a href="#">Math curriculum</a></i>	Identifies the mathematical competencies and content needed to solve the problem  <i><b>content:</b> refer to <a href="#">Math curriculum</a></i>	Identifies the mathematical competencies and content needed to solve the problem  <i><b>content:</b> refer to <a href="#">Math curriculum</a></i>	Applies the mathematical understanding needed to partially translate a familiar scenario into a mathematical problem  <i><b>mathematical understanding:</b> refer to <a href="#">Math curriculum</a></i>	Applies the mathematical understanding needed to partially translate a familiar scenario into a mathematical problem  <i><b>mathematical understanding:</b> refer to <a href="#">Math curriculum</a></i>	Applies the mathematical understanding needed to translate a familiar scenario into a mathematical problem  <i><b>mathematical understanding:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>familiar:</b> previously seen or modelled</i>	Applies the mathematical understanding needed to translate a familiar scenario into a mathematical problem  <i><b>mathematical understanding:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>familiar:</b> previously seen or modelled</i>	Applies the mathematical understanding needed to translate an unfamiliar scenario into a mathematical problem  <i><b>mathematical understanding:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>unfamiliar:</b> previously unseen or unmodelled</i>	Applies the mathematical understanding needed to translate an unfamiliar scenario into a mathematical problem  <i><b>mathematical understanding:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>unfamiliar:</b> previously unseen or unmodelled</i>	Applies the mathematical understanding needed to translate an unfamiliar scenario into a mathematical problem  <i><b>mathematical understanding:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>unfamiliar:</b> previously unseen or unmodelled</i>	Applies the mathematical understanding needed to translate a complex, unfamiliar scenario into a mathematical problem  <i><b>mathematical understanding:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>unfamiliar:</b> previously unseen or unmodelled</i>	Applies the mathematical understanding needed to translate a complex, unfamiliar scenario into a mathematical problem  <i><b>mathematical understanding:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>unfamiliar:</b> previously unseen or unmodelled</i>
	<b>Represents the mathematical problem (visualizes)</b> <i>Visually represents a problem with mathematical tools, visual representations, or mathematical symbols</i>	Represents the mathematical problem, using concrete materials and/or pictures	Represents the mathematical problem, using concrete materials and diagrams	Represents the mathematical problem, using concrete materials and diagrams	Represents the mathematical problem, using concrete materials, diagrams, and/or some familiar equations  <i><b>familiar:</b> previously seen or modelled</i>	Represents the mathematical problem, using concrete materials, diagrams, and/or some familiar equations  <i><b>familiar:</b> previously seen or modelled</i>	Represents the mathematical problem, using concrete materials, diagrams, and/or equations  <i><b>models:</b> e.g., concrete materials, diagrams, equations</i>	Accurately represents the mathematical problem, using a variety of models  <i><b>models:</b> e.g., concrete materials, diagrams, equations</i>	Accurately represents the mathematical problem, using a variety of models  <i><b>models:</b> e.g., concrete materials, diagrams, equations</i>	Clearly represents the mathematical problem by choosing an appropriate model(s)  <i><b>appropriate:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>models:</b> e.g., concrete materials, diagrams, equations</i>	Clearly represents the mathematical problem by choosing an appropriate model(s)  <i><b>appropriate:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>models:</b> e.g., concrete materials, diagrams, equations</i>	Clearly and accurately represents the problem by strategically choosing an effective model(s)  <i><b>models:</b> e.g., concrete materials, diagrams, equations</i>	Clearly and accurately represents the problem in context by strategically choosing an effective model(s)  <i><b>models:</b> e.g., concrete materials, diagrams, equations</i>	Clearly and accurately represents the problem in context by strategically choosing an effective model(s)  <i><b>models:</b> e.g., concrete materials, diagrams, equations</i>
	<b>Develops a plan of approach</b> <i>Thinks of and outlines various approaches to solve a mathematical problem</i>	Experiments with problem solving using prior knowledge	Develops a straightforward plan of approach, using prior knowledge and mathematical tools and strategies	Develops a basic plan of approach, using familiar mathematical tools and/or strategies  <i><b>basic:</b> could be one step</i>  <i><b>familiar:</b> previously seen or modelled</i>	Develops a basic plan of approach, using familiar mathematical tools and/or strategies  <i><b>basic:</b> could be one step</i>  <i><b>familiar:</b> previously seen or modelled</i>	Develops a sequence of steps that applies familiar mathematical tools and/or strategies  <i><b>familiar:</b> previously seen or modelled</i>	Develops a logical sequence of steps that applies familiar mathematical tools and/or strategies  <i><b>familiar:</b> previously seen or modelled</i>	Develops an organized and intentional sequence of steps that applies appropriate mathematical tools and/or strategies  <i><b>appropriate:</b> refer to <a href="#">Math curriculum</a></i>	Develops a logical and organized plan that applies appropriate mathematical tools and/or strategies  <i><b>appropriate:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>strategies:</b> e.g., using a tool (calculator), picture, graph, equation</i>	Uses mathematical reasoning to develop a logical and organized plan that applies appropriate mathematical tools and/or strategies  <i><b>appropriate:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>strategies:</b> e.g., using a tool (calculator), picture, graph, equation</i>	Uses mathematical reasoning to develop a logical and organized plan that applies appropriate mathematical tools and/or strategies  <i><b>appropriate:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>strategies:</b> e.g., using a tool (calculator), picture, graph, equation</i>	Uses mathematical reasoning to develop a logical, organized, and effective multi-step plan that applies appropriate mathematical tools and/or strategies  <i><b>appropriate:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>strategies:</b> e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text</i>	Uses mathematical reasoning to develop a logical, organized, and effective multi-step plan that applies appropriate mathematical tools and/or strategies  <i><b>appropriate:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>strategies:</b> e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text</i>	Uses mathematical reasoning to develop a logical, organized, and effective multi-step plan that applies appropriate mathematical tools and/or strategies  <i><b>appropriate:</b> refer to <a href="#">Math curriculum</a></i>  <i><b>strategies:</b> e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text</i>

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Aspect	Sub-aspect	K	1	2	3	4	5	6	7	8	9	10	11	12
Solves	Estimates reasonably in context <i>Uses the information provided to support a best guess solution</i>	Estimates the scope of the answer  <b>scope:</b> e.g., range, size, shape, time	Estimates the scope of the answer  <b>scope:</b> e.g., range, size, shape, time	Estimates reasonably within known parameters, using benchmarks  <b>benchmarks:</b> e.g., 25, 50, 100, distance, colour, rhythm, pattern	Estimates reasonably within identified parameters, using benchmarks and relevant information from the scenario  <b>benchmarks:</b> e.g., up to 1000, distance, colour, rhythm, pattern	Estimates reasonably within identified parameters, using benchmarks and relevant information from the scenario  <b>benchmarks:</b> e.g., up to 10 000, fractions, decimals, distance, colour, rhythm, pattern	Estimates reasonably within identified parameters, using benchmarks and relevant information from the scenario  <b>benchmarks:</b> e.g., up to 1 000 000, fractions, decimals, distance, colour, rhythm, pattern	Estimates reasonably within the context and parameters of the scenario, using benchmarks  <b>benchmarks:</b> e.g., thousandths to billions, fractions, decimals, area, rhythm, pattern	Estimates reasonably within the context and parameters of the scenario, using benchmarks  <b>benchmarks:</b> e.g., thousandths to billions, length, area; Arts: rhythm, pattern; Science: trend, frequency; Language Arts: pattern; ADST: area, materials needed	Estimates reasonably within the context and parameters of the scenario, using appropriate benchmarks  <b>benchmarks:</b> e.g., perfect squares, volume; Arts: rhythm, pattern; Science: trend, frequency; Language Arts: pattern; ADST: area, volume, materials needed	Estimates reasonably in context, within parameters, and considering limitations	Estimates reasonably in context, within parameters, and considering limitations; explains reasoning for estimate	Estimates reasonably in context, within parameters, and considering limitations; explains reasoning for estimate	Estimates reasonably in context, within parameters, and considering limitations; explains reasoning for estimate
	Solves the mathematical problem <i>Uses various approaches to find a solution to the problem</i>	Finds a solution, using play, concrete materials, or models	Finds a solution, using play, concrete materials, or models	Finds a solution, using mathematical tools and/or strategies  <b>strategies:</b> e.g., play, concrete materials, models	Finds a solution by applying familiar mathematical tools and/or strategies  <b>strategies:</b> e.g., play, concrete materials, models	Finds a solution by applying familiar mathematical tools and/or strategies  <b>strategies:</b> e.g., equations, play, concrete materials, models	Finds a solution by applying familiar mathematical tools and/or strategies  <b>strategies:</b> e.g., equations, play, concrete materials, models	Finds a solution, using appropriate strategies  <b>strategies:</b> e.g., using a tool (calculator), picture, graph, equations, concrete materials, and/or models	Finds a solution, using appropriate strategies  <b>strategies:</b> e.g., using a tool (calculator), picture, graph, equations, concrete materials, and/or models	Solves the mathematical problem, using effective strategies as needed  <b>strategies:</b> e.g., using a tool (calculator), picture, graph, equations, concrete materials, and/or models	Solves the mathematical problem by following a logical plan and using efficient strategies as needed  <b>strategies:</b> e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text	Solves the mathematical problem by following a logical, multi-step plan and using efficient strategies as needed  <b>strategies:</b> e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text	Solves the mathematical problem by following a logical, multi-step plan and using efficient strategies as needed  <b>strategies:</b> e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text	Solves the mathematical problem by following a logical, multi-step plan and using efficient strategies as needed  <b>strategies:</b> e.g., using a tool (calculator), algorithm, picture, graph; Social Studies/Science: evidence from text
	Verifies accuracy of the mathematical solution <i>Checks their solution based on similar problems, others' solutions, or their estimate</i>	Compares their solution with those of their teacher and/or peers	Compares their solution with those of their teacher and/or peers	Verifies the accuracy of their solution by comparing it with a variety of proofs/checks, including estimation	Verifies the accuracy of their solution, using familiar mathematical strategies and/or by comparing with their estimate  <b>familiar:</b> previously seen or modelled	Verifies the accuracy of their solution, using reasonable estimates and other familiar mathematical strategies  <b>familiar:</b> previously seen or modelled	Verifies the accuracy of their solution, using reasonable estimates and other familiar mathematical strategies  <b>familiar:</b> previously seen or modelled	Verifies the accuracy of their results and/or solution, using reasonable estimates and other familiar strategies  <b>familiar:</b> previously seen or modelled	Verifies the accuracy of their results and/or solution, using reasonable estimates and other familiar strategies  <b>familiar:</b> previously seen or modelled (e.g., using a tool [calculator], alternate algorithm, picture, graph)	Verifies the accuracy of their results and/or solution, using reasonable estimates and other familiar strategies; identifies factors that could affect accuracy of results	Verifies the accuracy of their results and/or solution, using reasonable estimates and other familiar strategies; identifies factors that could affect accuracy of results	Verifies the accuracy of their results and/or solution, using reasonable estimates and other familiar strategies; describes how factors affect accuracy of results	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	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



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Aspect	Sub-aspect	K	1	2	3	4	5	6	7	8	9	10	11	12
Analyzes <i>Reflects on the reasonableness of their solution; evaluates alternative approaches and solutions, and revises approach</i>	Reflects on the reasonableness of the solution in context <i>Looks back on the reasonableness of the solution within the context of the problem (Does this make sense?)</i>	Identifies a reasonable solution in relation to the original problem/ scenario	Identifies a reasonable solution in relation to the original problem/ scenario	Reflects on the reasonableness of a solution in relation to the original problem/scenario	Reflects on the reasonableness of a solution in relation to the original problem/scenario	Reflects on the reasonableness of their solution in relation to the original problem/ scenario	Reflects on the reasonableness of their solution in relation to the original problem/ scenario	Reflects on the reasonableness of their solution within the context of the problem  <b>context of the problem:</b> e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Reflects on the reasonableness of their solution within the context of the problem  <b>context of the problem:</b> e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Reflects on the validity of their solution within the context of the problem  <b>validity:</b> accuracy in context  <b>context of the problem:</b> e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Reflects on the validity of their solution within the context of the problem  <b>validity:</b> accuracy in context  <b>context of the problem:</b> e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Reflects on the validity of their solution, identifying contextual factors that may affect their answer  <b>validity:</b> accuracy in context  <b>solution:</b> e.g., lab results, map, product, model  <b>contextual factors:</b> e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Reflects on the validity and reliability of their processes and solutions and describes how contextual factors may affect their answer  <b>validity:</b> accuracy in context  <b>reliability:</b> reproducibility of results  <b>contextual factors:</b> e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback	Reflects on the validity and reliability of their processes and solutions and describes how contextual factors may affect their answer  <b>validity:</b> accuracy in context  <b>reliability:</b> reproducibility of results  <b>contextual factors:</b> e.g., Social Studies/Science: evidence from text; Arts: soliciting feedback
	Evaluates alternative approaches <i>Checks on the reasonableness of others’ approaches to solve the problem</i>	Identifies an alternative approach  <b>approach:</b> own approach, peer- or teacher-driven approach	Identifies an alternative approach  <b>approach:</b> own approach, peer- or teacher-driven approach	Explores an alternative approach  <b>approach:</b> own approach, peer- or teacher-driven approach	Explores alternative approaches  <b>approach:</b> own approach, peer- or teacher-driven approach	Compares and contrasts alternative approaches  <b>approaches:</b> own approach, peer- or teacher-driven approach	Compares and contrasts alternative approaches  <b>approaches:</b> own approach, peer- or teacher-driven approach	Describes the benefits and limitations of alternative approaches  <b>approaches:</b> own approach, peer- or teacher-driven approach	Describes the benefits and limitations of alternative approaches  <b>approaches:</b> own approach, peer- or teacher-driven approach	Evaluates the benefits and limitations of alternative approaches  <b>approaches:</b> own approach, peer- or teacher-driven approach	Evaluates the benefits and limitations of alternative approaches  <b>approaches:</b> own approach, peer- or teacher-driven approach, comparison with research- based approaches	Evaluates the efficiency and effectiveness of alternative approaches  <b>approaches:</b> own approach, peer- or teacher-driven approach, comparison with research- based approaches	Evaluates the efficiency and effectiveness of alternative approaches and possible improvements  <b>approaches:</b> own approach, peer- or teacher-driven approach, comparison with research- based approaches	Evaluates the efficiency and effectiveness of alternative approaches and possible improvements  <b>approaches:</b> own approach, peer- or teacher-driven approach, comparison with research- based approaches
	Revises approach as needed <i>Revises their approach based on checking with others’ solution and/or approach</i>	Experiments with a recommended alternative approach to solve the problem	Experiments with a recommended alternative approach to solve the problem	Selects an alternative approach to solve the problem	Selects an alternative approach to solve the problem	Identifies and experiments with an alternative approach to solve the problem	Identifies and experiments with an alternative approach to solve the problem	Refines approach, using the benefits and limitations of alternative approaches to solving the problem  <b>refines:</b> improves through small changes	Refines approach, using the benefits and limitations of alternative approaches to solving the problem  <b>refines:</b> improves through small changes	Revises approach, using the benefits and limitations of alternative approaches to solving the problem  <b>revises:</b> reflects and adjusts	Revises approach based on their evaluation of alternative approaches to solving the problem  <b>revises:</b> reflects and adjusts	Revises approach, using the benefits and limitations of alternative approaches to compare alternative solution(s) to the problem  <b>revises:</b> reflects and adjusts	Redesigns approach to improve efficiency of process or accuracy of solution to the problem  <b>redesigns:</b> iteratively reflects and adjusts	Redesigns approach to improve efficiency of process or accuracy of solution to the problem  <b>redesigns:</b> iteratively reflects and adjusts

CROSS CURRICULAR NUMERACY LEARNING PROGRESSIONS – GRADE LEVEL PROFICIENCY DESCRIPTORS														
Aspect	Sub-aspect	K	1	2	3	4	5	6	7	8	9	10	11	12
Communicates <i>Represents, explains, and defends their approach and solution within the problem's scenario</i>	<b>Represents processes and solution</b> <i>Effectively communicates the thinking and/or understanding in their approach and/or solution using visual representations or mathematical symbols</i>	Represents the problem-solving process, using numbers, pictures, and/or manipulatives	Represents the problem-solving process, using words, numbers, pictures, symbols, and/or manipulatives	Represents the problem-solving process, using familiar tools  <b>familiar tools:</b> e.g., manipulatives, symbols, graphic organizers, charts	Represents processes and solution by selecting and using reasonable tools  <b>reasonable tools:</b> e.g., table, manipulative, graphic organizer, array, model	Represents processes and solution by selecting and using reasonable tools  <b>reasonable tools:</b> e.g., model, chart, map, table, graph, array	Represents processes and solution by selecting and using reasonable tools  <b>reasonable tools:</b> e.g., model, chart, map, table, graph, array	Represents the complete process and solution by selecting and using appropriate tools  <b>appropriate tools:</b> e.g., model, chart, map, table, graph, array	Represents the complete process and solution by selecting and using appropriate tools  <b>appropriate tools:</b> e.g., model, chart, map, table, graph, array, equation	Effectively represents the complete process and solution, using appropriate presentations  <b>appropriate presentations:</b> e.g., bulleted explanation, equation, graph, model, map, table, array	Effectively represents the complete process and solution, using appropriate presentations  <b>appropriate presentations:</b> e.g., bulleted explanation, equation, graph, model, map, table, diagram	Represents complex processes and solutions, using a variety of presentations in a manner that is suitable to the context  <b>presentations:</b> e.g., bulleted explanation, equation, graph, model, map, table, diagram	Represents complex processes and solutions; chooses a presentation that suits the purpose, context, and audience  <b>presentation:</b> e.g., proof, model, equation, graph, model, map, table, diagram	Represents complex processes and solutions; chooses a presentation that suits the purpose, context, and audience  <b>presentation:</b> e.g., proof, model, equation, graph, model, map, table, diagram
	<b>Explains the approach taken</b> <i>Clearly explains their problem-solving approach and solution with mathematical vocabulary</i>	Identifies one step of their problem-solving approach	Outlines their problem-solving approach	Outlines their problem-solving approach, using familiar mathematical language  <b>familiar:</b> previously seen or modelled  <b>mathematical language:</b> refer to <a href="#">Math curriculum</a>	Describes their problem-solving approach, using familiar mathematical language  <b>familiar:</b> previously seen or modelled  <b>mathematical language:</b> refer to <a href="#">Math curriculum</a>	Describes their problem-solving approach, using familiar mathematical language  <b>familiar:</b> previously seen or modelled  <b>mathematical language:</b> refer to <a href="#">Math curriculum</a>	Describes their problem-solving approach, using familiar mathematical language  <b>familiar:</b> previously seen or modelled  <b>mathematical language:</b> refer to <a href="#">Math curriculum</a>	Accurately explains their problem-solving approach  <b>approach:</b> e.g., process: making a model; tool: manipulatives; strategy: using an equation	Accurately explains their problem-solving approach  <b>approach:</b> e.g., process: making a model; tool: calculator; strategy: using an equation	Accurately explains their problem-solving approach, identifying its limitations and assumptions  <b>approach:</b> e.g., process: making a diagram; tool: calculator; strategy: using an equation	Accurately explains their problem-solving approach, identifying its limitations and assumptions  <b>approach:</b> e.g., process: making a diagram; tool: calculator; strategy: using an equation	Explains their problem-solving approach, describing any limitations and assumptions  <b>approach:</b> e.g., process: making a flowchart; tool: calculator; strategy: using a familiar algorithm or evidence from text  <b>evaluating:</b> assessing the implications	Explains their problem-solving approach accurately and in detail, evaluating the effect of any assumptions or limitations  <b>approach:</b> e.g., process: making a flowchart; tool: calculator; strategy: using an algorithm or evidence from text  <b>evaluating:</b> assessing the implications	Explains their problem-solving approach accurately and in detail, evaluating the effect of any assumptions or limitations  <b>approach:</b> e.g., process: making a flowchart; tool: calculator; strategy: using an algorithm or evidence from text  <b>evaluating:</b> assessing the implications
	<b>Defends decisions and assumptions</b> <i>Clearly justifies and defends the decisions and assumptions made in their approach and/or solution</i>	Identifies one problem-solving decision	Outlines one problem-solving decision	Describes one problem-solving decision and a supporting reason	Describes their problem-solving decisions and supporting reasons	Explains their problem-solving decisions and supporting reasons	Explains their problem-solving decisions and supporting reasons	Presents a rationale for their problem-solving decisions and assumptions	Presents a rationale for their problem-solving decisions and assumptions	Presents a logical argument and justifies their decisions and assumptions	Presents a logical argument and justifies their decisions and assumptions	Presents a valid, logical argument to justify their decisions about the selected approach and assumptions, and describes the effects of these choices  <b>evaluating:</b> assessing the implications	Presents a valid, logical argument to justify their decisions about the selected approach, evaluating assumptions and the effects of their choices  <b>evaluating:</b> assessing the implications	Presents a valid, logical argument to justify their decisions about the selected approach, evaluating assumptions and the effects of their choices  <b>evaluating:</b> assessing the implications