ELD STANDARDS FRAMEWORK FOR DEVELOPING THE LANGUAGE OF MATH GRADES 9-12

Table of Contents

SECTION 1: ELD STANDARDS FRAMEWORK FOR DEVELOPING THE LANGUAGE OF MATH GRADES 9-12 - OVERVIEW

Section 1: Purpose

The **purpose of the English Language Development (ELD) Standards Framework and Instructional Guidance documents** is to provide clarity in the implementation and integration of the Nevada ELD Standards with Nevada Academic Content Standards and instruction. In addition, they support the application of the Nevada Educator Performance Framework (NEPF) Standards of best practices for multilingual learners and other diverse student populations.

These Nevada ELD Standards documents specify the connection between the WIDA ELD Standards and the content disciplinary practices of mathematics. The practices identified in this document were created within the Common Core State Standards (CCSS) for Mathematics. The ELD Standards Instructional Guidance documents conceptualize the Nevada ELD Standards as intertwined with learning the Nevada Academic Content Standards and College and Career Readiness Standards.

Section 1: Overview Document

Section 2: **Framework for Developing the Language of MATH**

A. Student Moves: Language Expectations
B. Teacher Moves: Supports for Interpreting and Expressing in the Language of the Content
C. Teacher Moves: Supports for Collaborating in the Academic Language

Section 3: **Instructional Guidance: Mathematical Practices**

A. Summary: Content Disciplinary Practices and Example Tasks
B. Math Disciplinary Practices
   - Practice 1: Make sense of problems and persevere in solving them
   - Practice 2: Reason abstractly and quantitatively
   - Practice 3: Construct viable arguments and critique the reasoning of others
   - Practice 4: Model with mathematics
   - Practice 5: Use appropriate tools strategically
   - Practice 6: Attend to precision
   - Practice 7: Look for and make use of structure
   - Practice 8: Look for and express regularity in repeated reasoning

Section 1: Key Uses of Academic Language

These purposes, referred to as **Key Uses**, were identified based on reviews of literature and a language analysis of college and career readiness standards:

KEY USES	KEY USES DESCRIPTION
NARRATE	Highlights language to convey real or imaginary experiences through stories and histories. Example tasks for the Key Use of **Narrate** include telling or summarizing stories, sharing past experiences, recounting an incident, or to chronicle a report.
INFORM	Highlights language to provide factual information, to tell, give knowledge, apprise, notify, to make aware of ideas, actions, or phenomena. Example tasks for the Key Use of **Inform** include defining, describing, comparing, contrasting, categorizing, or classifying concepts, ideas, or phenomena.
EXPLAIN	Highlights language to give an account for how things work or why things happen to clarify ideas, actions, or phenomena. Example tasks for the Key Use of **Explain** include interpreting, elaborating, illustrating, simplifying ideas, actions, or phenomena.
ARGUE	Highlights language to justify claims using evidence and reasoning, constructing arguments with evidence, or stating preferences or opinions. Example tasks for the Key Use of **Argue** include advancing or defending an idea or solution, changing the audience's point of view, or evaluating an issue.
DISCUSS	Highlights language to interact with others to build meaning and to share knowledge. Example tasks for the Key Use of **Discuss** include participating in small or large group activities and projects. **Discuss** can be found in Standard 1: Language of Social and Instructional Purposes of the WIDA 2002 Standards Framework.

SECTION 2: ELD STANDARDS FRAMEWORK FOR DEVELOPING THE LANGUAGE OF MATH GRADES 9-12

Section 2A: Student Moves: Language Expectations

With appropriate instructional support (visual, graphic, and interactive), multilingual learners can…

Language Domains	Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Interpretive: Listening, Reading, & Viewing	• **Identify** language of basic components of coordinate planes, graphs or equations from figures and oral statements. • **Compare** angles from figures and oral commands. • **Identify** basic components of multi-dimensional shapes from visually supported words or phrases. • **Pair** descriptions of multi-dimensional shapes or their components with visually supported sentences.	• **Match** specific language of complex graphs, equations or coordinate planes with figures and detailed oral descriptions. • **Compare/contrast** graphs, equations or coordinate planes from figures and oral scenarios using some technical language. • **Compare/contrast** multi-dimensional shapes or arguments within visually supported text. • **Match** specific and some technical language associated with components of geometric arguments, constructions or shapes to visually supported text.	• **Analyze** graphing techniques, graphical models or equations from oral reading of grade-level material (e.g., best fit lines, connections between multiple representations). • **Analyze** and **defend** geometric arguments, theorems or shapes (e.g., examples v. proofs).

Section 2A: Student Moves: Language Use Expectations (continued)

With appropriate instructional support (visual, graphic, and interactive), multilingual learners can…

Language Domains	Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Expressive: Speaking, Writing, & Representing	• **Name** variables from illustrations and notation. • **Relate** functions of two variables from illustrations and notation. • **Produce** elements of equations or formulas from word/phrase banks and models (e.g., labeling diagrams). • **Describe** equations or formulas using figures and notation from word/phrase banks and models.	• **State** examples of representations of functions of two variables from illustrations and notation. • **Interpret** representations of functions of two variables with or without visual support. • **Sequence** steps from solving problems involving equations or formulas using figures, notation, and sequential language. • **Explain** uses of equations or formulas using figures, notation, and complex sentences.	• **Analyze** functions of one variable in relation to another (e.g., rates of change, intercepts, zeros, asymptotes). • **Summarize** procedures for solving problems involving formulas and equations (e.g., geometry problems involving algebra).

Section 2B: Teacher Moves: Supports for Developing Interpretive and Expressive Language

What general supports can teachers provide to students at **different language proficiency levels** to interpret and express **academic language** in all language domains?

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
● **Build** background in key language and concepts. ● **Provide** explicit instruction and practice in key social and instructional vocabulary. ● **Model** orally the academic language and specific vocabulary. ● **Provide** explicit instruction and practice for students to construct the language using sentence and discourse starters and visual aids from the text. ● **Use** physical gestures to accompany oral directives. ● **Label v**isuals and objects with target vocabulary. ● **Introduce** cognates to aid comprehension. ● **Give** two step Contextualized directions. ● **Restate/rephrase** and **use** Patterned Oral Language routines. ● **Use** Wait Time before and after questions**.** ● **Preview** the text content with pictures, demos, charts, or experiences. ● **Provide** a list of important concepts on a graphic organizer. ● **Provide** a content vocabulary Word Bank with non-linguistic representations. ● **Provide** opportunities for translanguaging and multilingual supports during the task.	● **Build** background in key language and concepts. ● **Model** orally the academic language and specific vocabulary. ● **Provide** explicit instruction and practice for students to construct the language using sentence and discourse starters and visual aids from the text. ● **Provide** a system for students to record and process key academic and content- specific vocabulary. ● **Check** Comprehension of all students frequently. ● **Use** Wait Time. ● **Ask** open-ended questions and require full sentence responses. ● **Require** full sentence responses by asking open ended questions. ● **Use** Varied Presentation Formats such as role plays. ● **Scaffold** oral reports with note cards and provide time for prior practice. ● **Require** the use of academic language. ● **Provide** a list of important concepts on a graphic organizer. ● **Provide** a content vocabulary Word Bank with non-linguistic representations. ● **Provide** opportunities for translanguaging and multilingual supports during the task.	● **Build** background in key language and concepts. ● **Use** complex sentence and discourse starters. ● **Model** orally the academic language and specific vocabulary. ● **Confirm** students' prior knowledge of content topics. ● **Extend** content vocabulary with multiple examples and non-examples. ● **Provide** opportunities for translanguaging during the task. ● Provide tasks that encourage discourse and then facilitate and support discourse between and among students.

Section 2C: Teacher Moves: Supports for Collaborating in the Academic Language

How can teachers provide ongoing opportunities for students to collaborate using academic language?

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Prior to reading, writing, and discussion, Teacher prepares collaborative discourse structures for students to… ● **Engage in pair work (in L1 if possible)** to prepare questions for discussion using graphic, interactive, and/or language supports. ● **Participate in pair/triad/small group** discussions using graphic, interactive, and/or language supports (including L1 as appropriate). ● **Use** Clock Buddies. ● **Use** Numbered Heads Together. ● **Use** Think-Pair-Share Squared. ● **Use** key sentence frames for pair interactions ● **Participate with Strategic Partners** at a higher English proficiency level and/or with the same primary language peer(s). ● **Use** Think-Pair-Share ● **Use** Cloze sentences with a Word Bank ● **Use dialogue structures** (e.g.): My turn/ your turn; Partner A/Partner B; Collaborative groups. ● Model and encourage students to build upon their own ideas and those of others in all shared languages.	**Prior to reading, writing, and discussion**, Teacher prepares collaborative discourse structures for students to… ● **Engage pair work** to prepare questions for discussion using graphic, interactive, and/or language supports as needed. ● **Contribute to pair/triad/small group discussions** by supporting with examples, asking clarifying questions, and using graphic, interactive, and/or language supports as needed. ● **Engage with whole/large group discussions** by connecting ideas with supporting details, generating original questions, and using graphic, interactive, and/or language supports as needed ● **Use** Think-Pair-Share ● **Repeat and expand** their responses and other students' responses in a Collaborative Dialogue ● **Use dialogue structures** (e.g.): My turn/ your turn; Partner A/Partner B; Collaborative groups. ● Model and encourage students to build upon their own ideas and those of others.	**Prior to reading, writing, and discussion**, Teacher prepares collaborative discourse structures for students to… ● **Engage in structured pair work** to process ● **Inform and formulate** thinking, then prepare questions for discussion ● **Contribute to pair/triad/small group discussions** to share individual ideas and compare with other ideas in the group, using graphic, interactive, and/or language supports as needed ● **Engage with whole/large group discussions** by generating original questions and/or building on the ideas of others using graphic, interactive, and/or language supports as needed ● **Use** oral reporting for summarizing group work ● **Use dialogue structures** (e.g.): My turn/ your turn; Partner A/Partner B; Collaborative groups. ● Model and encourage students to build upon their own ideas and those of others.

SECTION 3: INSTRUCTIONAL GUIDANCE

for English Language Development in the Content Area of MATH Practices Grades 9-12

SECTION 3: INSTRUCTIONAL GUIDANCE: MATH PRACTICES GRADES 6-8

Section 3A: Summary: Content Disciplinary Practices and Example Tasks

Table of example tasks for each practice, with sample proficiency descriptors for each **Key Use of Academic Language**: **(For a complete continuum of grade-level Proficiency Level Descriptors to support mastery of content area standards, see WIDA ELD Standards 2020)**

WIDA English Language Development Standards Framework, 2020 Edition Kindergarten - Grade 12 (wisc.edu)

Math Practices	Example Tasks	Inform	Explain	Argue	Discuss
1. **Make** sense of problems and persevere in solving them.	Digging Dinosaurs | Inside Mathematics	Proficient math students can make sense of problems by **describing** and **summarizing** their strategies by introducing a concept through mathematical terms and phrases to describe concept, process, or purpose to write an equation to model the situation.	Proficient math students can **explain** their strategy to solve a mathematical task by stating reasoning used to generate a solution through causal connectors to express reasoning (I, We took these steps to solve the problem…) to decide what function best models the data.	Proficient students can **justify** and **defend** their strategy to solve a mathematical task with evidence and mathematical principles through technical nouns and noun groups to add precision and details (equations, variables, functions, and linear and non-linear patterns) to consider the reasonableness of their prediction.	Proficient students can **recount, elaborate**, and **extend** the mathematical reasoning of others by utilizing everyday, cross-disciplinary, and technical language.
2. **Reason** abstractly and quantitatively.	You Pour, I Choose	Proficient math students can **reason** abstractly and quantitatively by **describing** and **summarizing** the approach to solve a problem by introducing a concept through mathematical terms and phrases to describe concept, process, or purpose (radius, height, volume).	Proficient math students can **explain** their strategy to solve a mathematical task by sharing solutions with others through first person (I, We) to describe approach, third person to describe approach with neutral stance of authority.	Proficient students can **justify** their use of strategies and communicate them to others using mathematical facts through technical nouns and noun groups to add precision and details (doubling radius; height, diameter).	Proficient math students can **elaborate**, and **extend** the mathematical reasoning of others by evaluating and critiquing the arguments of others through causal connectors (so, because, therefore) to identify misconceptions (These two figures have to have the same volume because…).

Math Practices	Example Tasks	Inform	Explain	Argue	Discuss
3. **Construct** viable arguments and critique the reasoning of others.	Best Circle	Proficient students can **convey** clear and precise arguments by sharing solutions with others through First person (I, We) to describe approach; third person to describe approach with neutral stance of authority to test their rule against lots of different cases.	Proficient students can **explain** their strategy to solve a mathematical task by stating reasoning used to generate a solution through causal connectors to express reasoning (We took these steps to solve the problem because…).	Proficient students can… • **justify** and **persuade** others in their use of strategies through the use of resources provided (areas, perimeters, and coordinates) to demonstrate principles along with conditional structures (if/then, when) to demonstrate rules to draw conclusions. • **evaluate** **and critique others' arguments** through questions (what, how, why) requests -(could, would) to request information, clarification, procedure (Could you show me how you got that answer? Why did you do… instead of…?)	Proficient students can **recount**, **elaborate**, and **extend** the mathematical reasoning of others by utilizing everyday, cross-disciplinary, and technical language.

Math Practices	Example Tasks	Inform	Explain	Argue	Discuss
4. **Model** with mathematics.	Penny Circle	Proficient students can **recount** the model used to solve mathematical problems by **describing** the approach in the model to solve a mathematical problem using first person (I, We) or third person to describe the approach with a neutral stance of authority.	Proficient students can **explain** problem-solving strategies through visual displays to clarify the approach and solution to solve a mathematical task using technology efficiently to support the mathematics.	Proficient students can **justify** and **defend** their conclusions with evidence and mathematical principles through conditional structures (if/then, when, given) to test whether their model's predictions are reasonable.	Proficient students can **elaborate** and **extend** the mathematical reasoning of others by evaluating and critiquing through questions (what, how, why, do) requests (could, would) to request information, clarification, procedure (Could you show me how you got that answer? Why did you do … instead of …?
5. **Use** appropriate tools strategically.	Graphs	Proficient students select and use appropriate tools aligned to the mathematical task and **describe** why they use it by introducing concepts through relating verbs (belong to, are part of, be, have) to define or describe concept (coordinates).	Proficient students can **explain** their strategy to solve a mathematical task by describing an approach to solve a problem through imperative verbs (factor, solve, invert, simplify, apply) to establish a process or approach to linear and quadratic functions, their graphs and equations.	Proficient students can **justify** and **refute** conclusions with evidence and mathematical principles through technical nouns and noun groups to add precision and details (quadratic equations).	Proficient students **can evaluate** and **extend** the mathematical reasoning of others by utilizing everyday, cross-disciplinary, and technical language.

Math Practices	Example Tasks	Inform	Explain	Argue	Discuss
6. **Attend** to precision.	Expressions	Proficient students can **describe** and **summarize** using mathematically correct language and symbols by introducing a concept or entity through mathematical terms and phrases to describe concept, process, or purpose.	Proficient students can **elaborate** by using precise mathematical vocabulary and math specific discourse by describing an approach to solve a problem through abstract, generalized, or multi-meaning noun groups to provide precision to mathematical expressions for areas and perimeters of parallelograms and trapezoids.	Proficient students can **justify** conclusions with evidence and mathematical facts through expressions and graphs to demonstrate principles.	Proficient students **can evaluate** and **extend** the mathematical reasoning of others by utilizing everyday, cross-disciplinary, and technical language and causal connectors (so, because, therefore) to identify misconceptions.
7. **Look** for and make use of structure.	Looking For and Making Use of Structure Task Review Additional Information (Task) Looking For and Making Use of Structure - Quadratic Equations 1	Proficient students can **identify** and **describe** mathematical structures by introducing concepts through mathematical terms and phrases, casting the equation into standard form for procedural fluency.	Proficient students **explain** their strategy to solve a mathematical task describing an approach to solve a problem through imperative verbs (factor, solve, invert, simplify, apply) to establish a process and procedure.	Proficient students can **justify** conclusions with evidence and mathematical facts through technical nouns and noun groups to add precision and details to connecting mathematical language with mathematical representations.	Proficient students **recount, elaborate**, and **extend** the mathematical reasoning of others by evaluating and critiquing others' arguments through questions (what, how, why) requests (could, would) to request information, clarification, procedure (Could you show me how you got that answer?)

Math Practices	Example Tasks	Inform	Explain	Argue	Discuss
8. **Look** for and express regularity in repeated reasoning.	Magic Squares	Proficient students **identify** and **describe** repeated reasoning and **evaluate** the reasonableness of intermediate results by sharing solutions with others through First person (I, We) to describe approach, third person to describe approach with neutral stance of authority to calculate cell value using simple algebraic notation.	Proficient students **explain** their strategy to solve a mathematical task through visual data displays (tables, data charts) to clarify approach and/or solution.	Proficient students can **generalize** logical relationships through declarative statements to present generalizable processes (The expression…can be used to find any value in the pattern).	Proficient students **recount**, **elaborate**, and **extend** the mathematical reasoning of others through causal connectors (so, because, therefore) to identify misconceptions (The pattern is…).

Distribution of Math Key Language Uses in Grades 9-12				
WIDA ELD STANDARD	Narrate	Inform	Explain	Argue
1. Language for Mathematics	○	◐	●	●

● Most Prominent ◐ Prominent ○ Present

Adapted from the WIDA 2020 Standards Framework p. 290-292

Section 3B: Math Disciplinary Practices

Practice 1a: Make Sense of Problems and Persevere in Solving Them – Teacher Moves

Teacher Moves: What supports can teachers provide students at different proficiency levels **to use language to interpret or make meaning** of the content? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
● **Provide** scaffolded tasks for students to draw a picture of their problem and of their solution and to label it. ● **Provide** simple patterned oral and written sentence frames for students to **emulate/copy** basic content provided with a predetermined learning partner. ● **Model** the language of mathematical expression ratio examples, and then **provide** the task for students to **label** the mathematical expressions with a predetermined learning partner; have students **state** the academic vocabulary associated with the number or illustrated expression. ● **Provide** sentence frames or sentence starters for students to use to access group discussion. **For example:** The first thing I did was _____. I already know _____ so _____. ● Question prompts for students: Can you please repeat that? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	● **Provide** learning tasks in which students can **use illustrations or numbers** to **explain** their understanding of problems and strategies for solutions. ● **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. ● **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I think ____ because _____. I solved the problem by _____. ● Question prompts for students: Can you say it another way? So, does that mean_____? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	● **Provide** learning tasks in which students can **use illustrations or numbers** to **explain** their understanding. ● **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning while providing evidence to a partner or small group. **Listen** to the ideas of others and then agree or **disagree by providing reasons to ensure the** participation of all students. ● **Provide** students with **sentence starters** from a leveled list of statements using more complex language. **For example:** My answer makes sense because _____. I hadn't thought about _____. ● Question prompts for students: What's another way to look at the problem/ solution? What part do you understand? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 1b: Make Sense of Problems and Persevere in Solving Them – Success Criteria

Success Criteria: How will students be able to **communicate or demonstrate** their learning of language and content at **different language proficiency levels**? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Success Criteria **With prompting and supports, students will…** ● **Identify** and **state** the academic vocabulary associated with the content. (e.g., properties, axioms, transformations, construction, functions) ● **Describe** steps used to solve problems using expression, pictures, symbols, or artifacts (ex. slope, coordinate pairs, proof). **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** and **produce** a graphic representation (Pictures and/or numbers) of their strategy for solving a problem. ● **Use** some **cross-disciplinary** and **technical language** in their **explanation** of one of the preferred student strategies. **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain, justify**, and **defend** their problem-solving strategies. ● **Use cross-disciplinary** and **technical language** in their **explanation, justification,** and **defense** of one of the preferred student strategies. **Assessment Tool** Assessing the 8 Mathematical Practices Rubric **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 2a: Reason Abstractly and Quantitatively – Teacher Moves

Teacher Moves: What supports can teachers provide students at different proficiency levels **to use language to interpret or make meaning** of the content? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
● **Provide** scaffolded tasks for students to draw a picture of their solution and **label** it. ● **Orally Model** and **provide** simple patterned oral and written sentence frames for students to **emulate/copy** basic mathematical expressions with a predetermined learning partner and to **state** the academic vocabulary associated with illustrated expression. ● **Provide** students the opportunity to share with a partner or in a small group their thinking using sentence frames. **For Example:** The numbers I can use to represent this problem are _____. The words I can use to represent this problem are _____. ● Question prompts for students: What is the problem asking you to figure out? Which part of the problem makes sense? ● **Use** tools to aid in grade level content. **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	● **Provide** learning tasks in which students can **use illustrations or numbers** to **explain** their understanding. ● **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. ● **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I know _____ because _____. I learned _____. ● Question prompts for students: What do the numbers in the problem represent? What do the words in the problem mean? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	● **Provide** learning tasks in which students can **use numbers** to **explain** their understanding. ● **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. ● **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** A different way to find the answer is _____. I noticed that _____. ● Question prompts for students: I hadn't thought about that… I think it is helpful to look at… **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 2b: Reason Abstractly and Quantitatively – Success Criteria

Success Criteria: How will students be able to **communicate or demonstrate their learning** of language and content at **different language proficiency levels?** Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Success Criteria **With prompting and supports, students will…** ● **Identify academic vocabulary** associated with the lesson. (e.g., properties, axioms, transformations, construction, functions) ● **Describe** mathematical solutions using pictures, symbols, or artifacts (e.g., slope, coordinate pairs, proof). **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** and **produce** a graphic representation of the concept in the lesson. (e.g., pictures, graphs, or numbers). ● **Use some cross-disciplinary and technical language** in their **explanation** of a preferred student strategy. **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** their strategy using numbers and variables to solve problems. ● **Use cross-disciplinary and technical language** in their explanation of a preferred student strategy. **Assessment Tool** Assessing the 8 Mathematical Practices Rubric **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 3a: Construct Viable Arguments and Critique the Reasoning of Others – Teacher Moves

Teacher Moves: What supports can teachers provide students at different proficiency levels **to use language to interpret or make meaning** of the content? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
● **Provide** scaffolded tasks for students to draw a picture of their solution and to label it. ● **Provide** simple patterned oral and written sentence frames for students to **emulate/copy** basic content provided with a predetermined learning partner. ● **Model** the language of mathematical expression ratio examples, and then **provide** the task for students to **label** the mathematical expressions with a predetermined learning partner; have students **state** the academic vocabulary associated with the number or illustrated expression. ● **Provide** sentence frames or sentence starters for students to use to access group discussion. **For example:** My answer is _____. My solution is _____. I think my error is here (point) ● Question prompts for students: Can you show me where_____? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	● **Provide** learning tasks in which students can **use illustrations or numbers** to **explain** their understanding. ● **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. ● **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I used this strategy because _____. My answer is correct because _____. Your answer is incorrect because _____. ● Question prompts for students: Can you explain how or why you did this? Why do you think ____ did _____? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	● **Provide** learning tasks in which students can **use numbers** to **explain** their understanding. ● **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. ● **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I agree/disagree with you because_____. I wonder if _____. I did this because _____. I think this is where you made your error _____ because _____. I can justify my answer by _____. ● Question prompts for students: How do you know that? Do you agree with Johnny's answer? Why? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 3b: Construct Viable Arguments and Critique the Reasoning of Others – Success Criteria

Success Criteria: How will students be able to **communicate or demonstrate their learning** of language and content at **different language proficiency levels?** Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Success Criteria **With prompting and supports, students will…** ● **Identify academic vocabulary** associated with the lesson. (e.g., properties, axioms, transformations, construction, functions) ● **Describe** mathematical solutions using pictures, symbols, or artifacts (e.g., slope, coordinate pairs, proof). **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** and **produce** a graphic representation of the concept in the lesson. (e.g., pictures, graphs, or numbers). ● **Use some cross-disciplinary and technical vocabulary** in their **explanation** of a preferred student strategy. **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** their strategy using numbers and variables to solve problems. ● **Use cross-disciplinary and technical vocabulary** in their explanation of a preferred student strategy. **Assessment Tool** Assessing the 8 Mathematical Practices Rubric **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 4a: Model with Mathematics – Teacher Moves

Teacher Moves: What supports can teachers provide students at different proficiency levels **to use language to interpret or make meaning** of the content? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
• **Provide** scaffolded tasks for students to draw a picture of their solution and to label it. • **Provide** simple patterned oral and written sentence frames for students to **emulate/copy** basic content provided with a predetermined learning partner. • **Model** the language of mathematical expression ratio examples, and then **provide** the task for students to **label** the mathematical expressions with a predetermined learning partner; have students **state** the academic vocabulary associated with the number or illustrated expression. • **Provide** sentence frames or sentence starters for students to use to access group discussion. **For example:** I drew _____. The graph shows _____. My answer is correct because _____. I used the _____ model to show my thinking about the problem. **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	• **Provide** learning tasks in which students can **use illustrations or numbers** to **explain** their understanding. • **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. • **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I used this model because _____. I drew _____ because _____. • Question prompts for students: What picture can you draw to help you? What can you use for a model? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	• **Provide** learning tasks in which students can **use numbers** to **explain** their understanding. • **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. • **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I can explain my solution to others by _____. I have seen this before when _____. • Question prompts for students: What model did you use? Is there another way to represent that? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 4b: Model with Mathematics – Success Criteria

Success Criteria: How will students be able to **communicate or demonstrate their learning** of language and content at **different language proficiency levels?** Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Success Criteria **With prompting and supports, students will…** ● **Identify academic vocabulary** associated with the lesson. (e.g., properties, axioms, transformations, construction, functions) ● **Describe** mathematical solutions using pictures, symbols, or artifacts (e.g., slope, coordinate pairs, proof). **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** and **produce** a graphic representation of the concept in the lesson. (e.g., pictures, graphs, or numbers). ● **Use some cross-disciplinary and technical language** in their **explanation** of a preferred student strategy. **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** their strategy using numbers and variables to solve problems. ● **Use cross-disciplinary and technical** in their explanation of a preferred student strategy. **Assessment Tool** Assessing the 8 Mathematical Practices Rubric **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 5a: Use Appropriate Tools Strategically – Teacher Moves

Teacher Moves: What supports can teachers provide students at different proficiency levels **to use language to interpret or make meaning** of the content? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
• **Provide** scaffolded tasks for students to draw a picture of their solution and to label it. • **Provide** simple patterned oral and written sentence frames for students to **emulate/copy** basic content provided with a predetermined learning partner. • **Model** the language of mathematical expression ratio examples, and then **provide** the task for students to **label** the mathematical expressions with a predetermined learning partner; have students **state** the academic vocabulary associated with the number or illustrated expression. • **Provide** sentence frames or sentence starters for students to use to access group discussion. **For example:** I used _____ because ____. The best tool to use is _____. • Question prompts for students: Is this an example of a tool? How would you use this tool? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	• **Provide** learning tasks in which students can **use illustrations or numbers** to **explain** their understanding. • **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. • **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I used the _____ tool to solve the problem by ____. Can you tell me more about the tool that you used _____? Using a _____ shows us/can't show us a _____. • Question prompts for students: What can you use to help you solve this problem? What resources are available? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	• **Provide** learning tasks in which students can **use numbers** to **explain** their understanding. • **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. • **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** This tool, _____ helps me prove my solution to others by _____. I agree/ disagree with _____'s choice_____ tool, but I chose _____ instead/also because_____. I could have used _____ (tool) to _____. • Question prompts for students: Why did you choose that tool to solve the problem? Is there a better tool that you can use? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 5b: Use Appropriate Tools Strategically – Success Criteria

Success Criteria: How will students be able to **communicate or demonstrate** their learning of language and content at **different language proficiency levels**? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Success Criteria **With prompting and supports, students will…** ● **Identify academic vocabulary** associated with the lesson. (e.g., properties, axioms, transformations, construction, functions) ● **Describe** mathematical solutions using pictures, symbols, or artifacts (e.g., slope, coordinate pairs, proof). **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** and **produce** a graphic representation of the concept in the lesson. (e.g., pictures, graphs, or numbers). ● **Use some cross-disciplinary and technical language** in their **explanation** of a preferred student strategy. **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** their strategy using numbers and variables to solve problems. ● **Use cross-disciplinary and technical language** in their explanation of a preferred student strategy. **Assessment Tool** Assessing the 8 Mathematical Practices Rubric **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 6a: Attend to Precision – Teacher Moves

Teacher Moves: What supports can teachers provide students at different proficiency levels **to use language to interpret or make meaning** of the content? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
• **Provide** scaffolded tasks for students to draw a picture of their solution and to label it. • **Provide** simple patterned oral and written sentence frames for students to **emulate/copy** basic content provided with a predetermined learning partner. • **Model** the language of mathematical expression ratio examples, and then **provide** the task for students to **label** the mathematical expressions with a predetermined learning partner; have students **state** the academic vocabulary associated with the number or illustrated expression. • **Provide** sentence frames or sentence starters for students to use to access group discussion. **For example:** I used the term _____when working with this problem. I didn't understand _____. The math term _____ means _____. I labeled it _____. **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	• **Provide** learning tasks in which students can **use illustrations or numbers** to **explain** their understanding. • **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. • **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I know my answer is accurate because_____. I used the label _____ because_____. • Questions to prompt students: Does your answer need a label in order to be precise? What terms should you use to be precise? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	• **Provide** learning tasks in which students can **use numbers** to **explain** their understanding. • **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. • **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I used the mathematical term _____ to explain _____. My answer is _____ rather than _____ because ____. • Questions to prompt students: Can you explain why you used significant digits for your answer? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 6b: Attend to Precision – Success Criteria

Success Criteria: How will students be able to **communicate or demonstrate** their learning of language and content at **different language proficiency levels**? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Success Criteria **With prompting and supports, students will…** ● **Identify academic vocabulary** associated with the lesson. (e.g., properties, axioms, transformations, construction, functions) ● **Describe** mathematical solutions using pictures, symbols, or artifacts (e.g., slope, coordinate pairs, proof). **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** and **produce** a graphic representation of the concept in the lesson. (e.g., pictures, graphs, or numbers). ● **Use some cross-disciplinary and technical language** in their **explanation** of a preferred student strategy. **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** their strategy using numbers and variables to solve problems. ● **Use cross-disciplinary and technical language** in their explanation of a preferred student strategy. **Assessment Tool** Assessing the 8 Mathematical Practices Rubric **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 7a: Look For and Make Use of Structure – Teacher Moves

Teacher Moves: What supports can teachers provide students at different proficiency levels **to use language to interpret or make meaning** of the content? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
● **Provide** scaffolded tasks for students to draw a picture of their solution and to label it. ● **Provide** simple patterned oral and written sentence frames for students to **emulate/copy** basic content provided with a predetermined learning partner. ● **Model** the language of mathematical expression ratio examples, and then **provide** the task for students to **label** the mathematical expressions with a predetermined learning partner; have students **state** the academic vocabulary associated with the number or illustrated expression. ● **Provide** sentence frames or sentence starters for students to use to access group discussion. **For example:** I tried _____. They are similar because_____? ● Questions to prompt students: What do you notice? Is there a pattern? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	● **Provide** learning tasks in which students can **use illustrations or numbers** to **explain** their understanding. ● **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. ● **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I already know _____ so _____. This reminded me of _____. ● Questions to prompt students: Have you done a similar type of problem before? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	● **Provide** learning tasks in which students can **use numbers** to **explain** their understanding. ● **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. ● **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** I noticed the connection between _____ and _____. How is _____ related to _____? ● Questions to prompt students: What do both problems have in common? What patterns do you see? What do you know about ___ that you can apply to this situation? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 7b: Look For and Make Use of Structure – Success Criteria

Success Criteria: How will students be able to **communicate or demonstrate their learning** of language and content at **different language proficiency levels?** Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Success Criteria **With prompting and supports, students will…** ● **Identify academic vocabulary** associated with the lesson. (e.g., properties, axioms, transformations, construction, functions) ● **Describe** mathematical solutions using pictures, symbols, or artifacts (e.g., slope, coordinate pairs, proof). **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** and **produce** a graphic representation of the concept in the lesson. (e.g., pictures, graphs, or numbers). ● **Use academic vocabulary** in their **explanation** of a preferred student strategy. **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** their strategy using numbers and variables to solve problems. ● **Use academic vocabulary** in their explanation of a preferred student strategy. **Assessment Tool** Assessing the 8 Mathematical Practices Rubric **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 8a: Look For and Express Regularity in Repeated Reasoning – Teacher Moves

Teacher Moves: What supports can teachers provide students at different proficiency levels **to use language to interpret or make meaning** of the content? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
• **Provide** scaffolded tasks for students to draw a picture of their solution and to label it. • **Provide** simple patterned oral and written sentence frames for students to **emulate/copy** basic content provided with a predetermined learning partner. • **Model** the language of mathematical expression ratio examples, and then **provide** the task for students to **label** the mathematical expressions with a predetermined learning partner; have students **state** the academic vocabulary associated with the number or illustrated expression. • **Provide** sentence frames or sentence starters for students to use to access group discussion. **For example:** I wonder/noticed_____. The rule/pattern is _____. • Questions to prompt students: Is there a pattern? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	• **Provide** learning tasks in which students can **use illustrations or numbers** to **explain** their understanding. • **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. • **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** The pattern/rule I noticed was _____ because _____. This is the same because _____. This is true because _____. Based on the information, I can conclude _____. • Questions to prompt students: How could this problem help you solve another? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**	• **Provide** learning tasks in which students can **use numbers** to **explain** their understanding. • **Model** a predetermined dialogue structure for students to **state** and **clarify** their reasoning to a partner or small group and **listen** to the ideas of others to **agree** or **disagree** with reasons to ensure the participation of all students. • **Provide** students with **sentence starters** from a leveled list of scaffolding statements. **For example:** If _____ then _____. I generalize that _____. The trend of the data is _____ because _____. • Questions to prompt students: What generalizations can you make? Can you find a short cut to solve the problem? **(NEPF – IP.1.2; 2.1; 2.2; 3.1; 3.2; 5.3)**

Section 3B: Math Disciplinary Practices (continued)

Practice 8b: Look For and Express Regularity in Repeated Reasoning – Success Criteria

Success Criteria: How will students be able to **communicate or demonstrate** their learning of language and content at **different language proficiency levels**? Examples:

Entering/Emerging (Levels 1-2)	Developing/Expanding (Levels 3-4)	Bridging/Reaching (Levels 5-6)
Success Criteria **With prompting and supports, students will…** ● **Identify academic vocabulary** associated with the lesson. (e.g., properties, axioms, transformations, construction, functions) ● **Describe** mathematical solutions using pictures, symbols, or artifacts (e.g., slope, coordinate pairs, proof). **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** and **produce** a graphic representation of the concept in the lesson. (e.g., pictures, graphs, or numbers). ● **Use some cross-disciplinary and technical language** in their **explanation** of a preferred student strategy. **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**	**Success Criteria** **With appropriate supports, students will…** ● Orally **explain** their strategy using numbers and variables to solve problems. ● **Use cross-disciplinary and technical language** in their explanation of a preferred student strategy. **Assessment Tool** Assessing the 8 Mathematical Practices Rubric **(NEPF – IP.1.3; 2.2; 3.4; 5.3)**