Integrating the CA ELD Standards into K–12 Mathematics and Science Teaching and Learning

A Supplementary Resource for Educators Implementing in Tandem the California English Language Development Standards, the California Common Core State Standards for Mathematics, and the Next Generation Science Standards for California Public Schools

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Table of Contents

Acknowledgements

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All teachers are responsible for ensuring that their EL students have full access to intellectually rich and comprehensive mathematics and science curricula and that each EL student makes steady progress in both his or her academic content learning and his or her English language development. With appropriate instructional support from their teachers (provided within appropriately designed school programs), ELs at all levels of English language proficiency are able to engage in intellectually challenging, content- and language-rich instruction so that they can develop the advanced levels of English that are necessary for college and career readiness and meaningful engagement with civic life. To achieve these goals and to fully include ELs in mathematics and science instruction, all teachers of ELs need to implement the CA ELD Standards in tandem with the California Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects (CA CCSS for ELA/Literacy); the CA CCSSM; and the CA NGSS.

Figure 1. Hyperlinks to California Standards and Framework Documents

CA ELD Standards
http://www.cde.ca.gov/sp/el/er/documents/eldstndspublication14.pdf

CA CCSS for ELA/Literacy
http://www.cde.ca.gov/be/st/ss/documents/finalelaccssstandards.pdf

CA CCSSM
http://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf

CA NGSS
http://www.cde.ca.gov/pd/ca/sc/ngssstandards.asp

English Language Arts/English Language Development Framework for California Public Schools: Kindergarten Through Twelfth Grade
http://www.cde.ca.gov/ci/rl/cf/elaeldfrmwrksbeadopted.asp

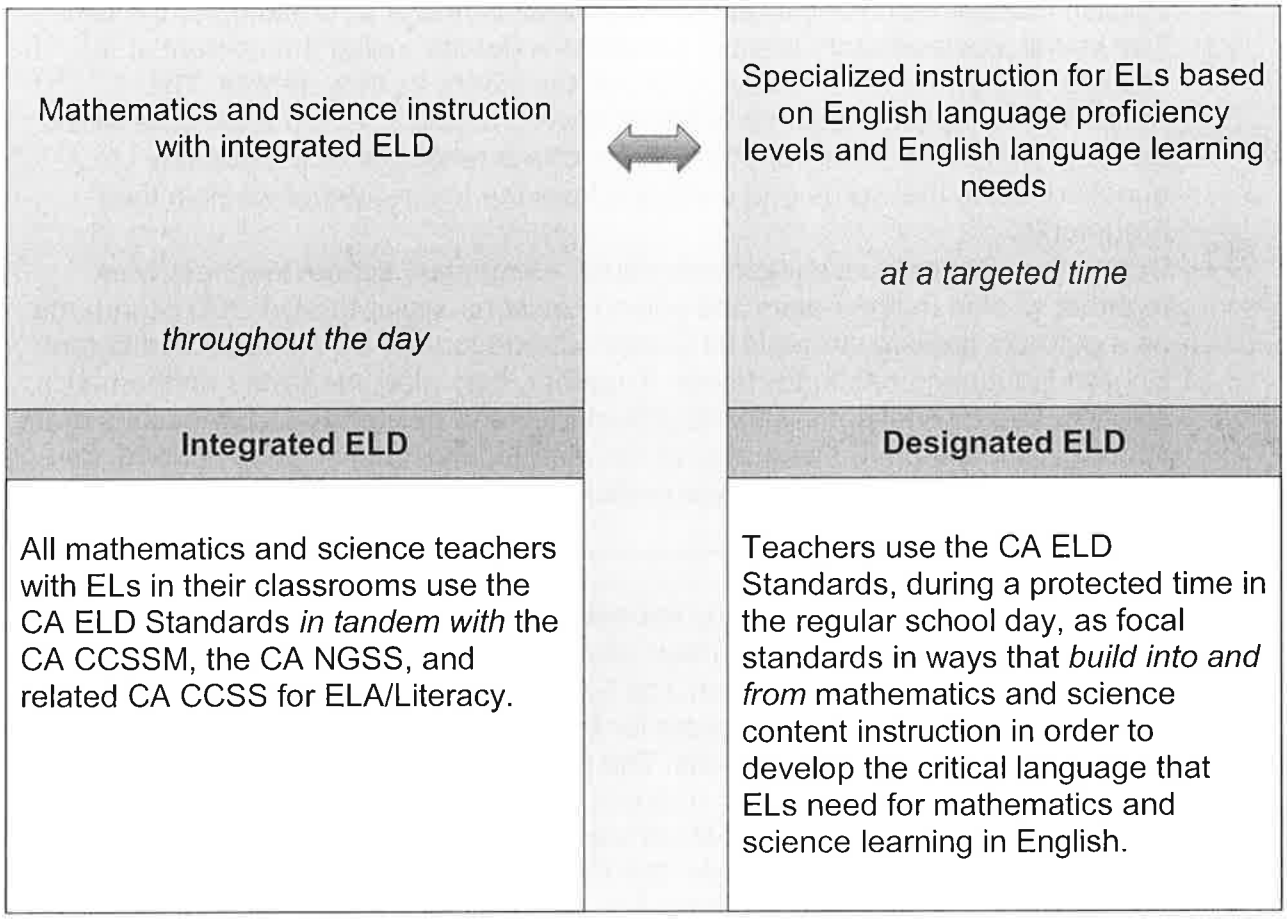
Mathematics Framework for California Public Schools: Kindergarten Through Twelfth Grade
http://www.cde.ca.gov/ci/ma/cf/draft2mathfwchapters.asp

Science Framework for California Public Schools: Kindergarten Through Twelfth Grade

Ensuring equitable learning and success for ELs requires careful lesson and unit planning (using both the CA ELD Standards and relevant content standards); observation of what students are doing and saying during mathematics and science instruction; reflection on how ELs engage with particular approaches to instruction; and necessary refining and adjusting of instruction, based on observation, evidence of learning, and reflection. It is critical that schools and districts ensure that EL students are not deprived of mathematics and science learning opportunities by placement in an English language development (ELD) class during the time that mathematics and science are taught.[2] For secondary students in particular, it is important that they are placed in the appropriate mathematics and science courses, based on their existing

[2] For newcomer ELs in secondary school (for example, ELs in their first year in U.S. schools), specially designed mathematics and science classes that integrate ELD with mathematics and science learning may offer equally rich mathematics and science learning experiences.

Figure 2. Integrated and Designated ELD



Implementation of both integrated and designated ELD does not require mathematics and science teachers to become linguists or ELD specialists. Rather, content teachers need to know enough about the language uses and practices of their discipline, and about how to support their EL students with disciplinary language and literacy development, so that ELs maintain a steady trajectory toward full proficiency in English. ELD specialists need to collaborate closely with content teachers in order to provide specialized ELD support and instruction that builds into and from disciplinary learning. Three examples of what this collaboration might look like in practice are provided below.

- A high school science teacher asks the school's ELD teacher to help her identify some of the language that will be challenging to her EL students in the science articles that the students will be reading for a research project. She wants to call attention to some of these language uses during instruction, and she asks the ELD teacher for ideas in how to approach this. The ELD teacher asks the science teacher to help her understand the science content better so that she can address it with the two newcomer EL students in the science class when she meets with them during designated ELD time. The teachers agree to meet regularly to plan scaffolding approaches and to monitor the students' progress as the unit unfolds.
- A middle school interdisciplinary team works together to focus on general academic and domain-specific vocabulary across the disciplines, with varying degrees of emphasis in each content area. The science teacher introduces the

California English Language Development Standards

The CA ELD Standards are organized into two main sections that are common across all grade levels: Section 1: Overview, including a Goal and Critical Principles for Developing Language and Cognition in Academic Contexts (see figure 3); and Section 2: Elaboration on Critical Principles for Developing Language and Cognition in Academic Contexts (see figure 4). Section 1 includes a Goal statement for all ELs in California, followed by broader Critical Principles for Developing Language and Cognition in Academic Contexts.

> **Goal:** An overarching goal statement that crystallizes what all educators in California want for ELs' development of academic English language proficiency, success with grade-level disciplinary content, and awareness about language.
>
> **Critical Principles for Developing Language and Cognition in Academic Contexts:** Further detail of the goal statement that defines the critical and meaningful experiences and knowledge that ELs need in order to ultimately achieve the goal.

Figure 4. CA ELD Standards—Parts and Strands

Part I: Interacting in Meaningful Ways
A. Collaborative (engagement in dialogue with others)
1. Exchanging information and ideas via oral communication and conversations
2. Interacting via written English (print and multimedia)
3. Offering opinions and negotiating with or persuading others
4. Adapting language choices to various contexts
B. Interpretive (comprehension and analysis of written and spoken texts)
5. Listening actively and asking/answering questions about what was heard
6. Reading closely and explaining interpretations and ideas from reading
7. Evaluating how well writers and speakers use language to present or support ideas
8. Analyzing how writers use vocabulary and other language resources
C. Productive (creation of oral presentations and written texts)
9. Expressing information and ideas in oral presentations
10. Writing literary and informational texts
11. Supporting opinions or justifying arguments and evaluating others' opinions or arguments
12. Selecting and applying varied and precise vocabulary and other language resources
Part II: Learning About How English Works
A. Structuring Cohesive Texts
1. Understanding text structure and organization based on purpose, text type, and discipline
2. Understanding cohesion and how language resources across a text contribute to the way a text unfolds and flows
B. Expanding and Enriching Ideas
3. Using verbs and verb phrases to create precision and clarity in different text types
4. Using nouns and noun phrases to expand ideas and provide more detail
5. Modifying to add details to provide more information and create precision
C. Connecting and Condensing Ideas
6. Connecting ideas within sentences by combining clauses
7. Condensing ideas within sentences using a variety of language resources

The CA CCSSM (CDE, 2014) include two types of standards: eight Standards for Mathematical Practice (identical for each grade level) and Mathematical Content Standards (different at each grade level). The mathematical content standards at each grade level are organized by domain (e.g., Number and Operations in Base Ten) for grades K–8 and by conceptual category (e.g., Functions) for courses in higher mathematics. The standards typically describe cognitive understanding (e.g., 4.NF.4a: Understand a fraction *a/b* as a multiple of 1/*b*) or mathematical processes (e.g., N-RN.2: Rewrite expressions involving radicals and rational exponents using the properties of exponents) without any explicit description of language use. A smaller number of standards include descriptors that explicitly involve discipline-specific language uses and purposes (e.g., 7.G.3: Describe the two-dimensional figures that result from slicing three-dimensional figures...).

The mathematical content standards are designed and intended to connect to the standards for mathematical practice (MPs) that apply across all standards at all grade levels. As noted in the introduction to the CA CCSSM, "Designers of curricula, assessments, and professional development should all attend to the need to connect the mathematical practices to mathematical content in mathematics instruction" (p. 8). The standards for mathematical practice rest on "processes and proficiencies" that include explicit wording specific to language uses and purposes, such as "explain" (MP.1 and MP.2) and "communicate" (MP.3 and MP.6).

Standards for Mathematical Practice

Standards for Mathematical Practice. California Department of Education. (2014). *California Common Core State Standards: Mathematics.* Sacramento, CA. pp. 6-8.
http://www.cde.ca.gov/be/st/ss/documents/ccssmathstandardaug2013.pdf

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Figure 5, drawn from the CA CCSSM, shows the relationship of the mathematical practices to one another. It is worth noting that MP.1 and MP.6, which are considered "overarching habits of mind" that connect to all the other practices, are described in ways that are particularly language-intensive. MP.3, which focuses on constructing and explaining viable arguments and critiquing the reasoning of others, is also language-intensive.

Next Generation Science Standards for California Public Schools, Kindergarten through Grade Twelve

The CA NGSS (CDE, 2013) are designed around three interrelated dimensions: Science and Engineering Practices (SEPs), Disciplinary Core Ideas (DCIs), and Crosscutting Concepts (CCCs). Performance Expectations (PEs) embody these three dimensions and are at the equivalent level of granularity to the grade-level standards in the CA CCSS for ELA/Literacy and in the CA CCSSM, and to the grade-level standards across proficiency levels in the CA ELD Standards. The CA NGSS include Connection Boxes that show how the PEs connect to prerequisite or connected standards in the CA CCSS for ELA/Literacy and the CA CCSSM.

Since each PE is associated with a SEP, the SEPs can be leveraged to examine correspondence of the CA ELD Standards with the CA NGSS, since, as noted in Appendix F of the CA NGSS:

> Engagement in [science and engineering] practices is *language intensive* and requires students to *participate in classroom science discourse*... . When supported appropriately, these [EL] students are capable of learning science through their emerging language and *comprehending and carrying out sophisticated language purposes* (e.g., arguing from evidence, providing explanations, developing models) using less-than-perfect English. By engaging in such practices, moreover, they simultaneously build on their understanding of science and their language proficiency (i.e., capacity to do more with language). (p. 3; emphasis added)

As also noted in Appendix F of the CA NGSS, "the eight practices are not separate; they intentionally overlap and interconnect" (p. 3). While the SEP are numbered 1–8, they are not intended to be interpreted or implemented in a linear or sequential way, due to this overlap and interconnectedness.

Science and Engineering Practices

Appendix F – Science and Engineering Practices in the NGSS. California Department of Education. (2013). *Next Generation Science Standards for California Public Schools, Kindergarten through Grade Twelve.* Sacramento, CA.
http://www.nextgenscience.org/sites/ngss/files/Appendix%20F%20%20Science%20and%20Engineering%20Practices%20in%20the%20NGSS%20-%20FINAL%20060513.pdf

1. Ask questions and define problems.
2. Develop and use models.
3. Plan and carry out investigations.
4. Analyze and interpret data.
5. Use mathematics and computational thinking.
6. Construct explanations and design solutions.
7. Engage in argument from evidence.
8. Obtain, evaluate, and communicate information.

This supplementary resource lists the key SEPs related to each ELD standard, and, for each ELD standard, provides a sample classroom content description, based on one or more PEs, that exemplifies the language demands that are entailed in the CA NGSS and explicit in the CA ELD Standards.

Sections II and III of this resource contain charts that include the full text of the grade-level CA ELD Standards for each of the three proficiency levels, organized into grade-level/grade-span groupings as follows: K, 1, and 2; 3, 4, and 5; 6, 7, and 8; and 9–10 and 11–12. Following each set of ELD standards are sets of corresponding mathematics or science and engineering practices that correspond to the ELD standard, as well as additional descriptors that aid mathematics and science educators in understanding how the CA ELD Standards can be integrated into the planning of mathematics and science teaching and learning. These charts are intended to be used along with the relevant standards and curriculum frameworks when planning curriculum or instructional units and lesson plans for mathematics and science courses or content. **These charts are not intended to be the sole source of curriculum, unit, or lesson planning.** Rather, they can be used as one of a number of resources from which to glean ideas for how to design mathematics or science units or lessons that address the needs of EL students. For further explanation of what each chart contains, see the introductory page of each set of charts: Section II, CA ELD Standards Applied to Mathematics Teaching and Learning, and Section III, CA ELD Standards Applied to Science Teaching and Learning.

II. Integrating CA ELD Standards into Mathematics Teaching and Learning

The charts in this section are organized into the elements described in the table below. For each element, the table explains what the element is and is not, along with guidance for how to use it.

Chart Element	What It Is	How to Use It	What It Is Not
CA ELD Standards	The full text of each CA ELD Standard for each grade and for each of the three proficiency levels (CDE, 2014)	Consider how the standard applies to mathematics teaching and learning in classrooms with EL students	***Not:*** Complete information on the organization, structure, or use of the CA ELD Standards
Applying ELD Standards to Mathematics	Additional information to *supplement* the text of each CA ELD Standard, describing how the standard applies to mathematics teaching and learning	Consider how the additional information helps to apply the standard to mathematics teaching and learning in classrooms with EL students	***Not:*** A full version of the standard, rewritten so that it applies to mathematics teaching and learning
Corresponding Standards for Mathematical Practice	The Standards for Mathematical Practice (MPs) that best correspond to each CA ELD Standard	Consider how each MP applies to designing mathematics units or lessons that integrate the ELD standard	***Not:*** All possible MPs that can be addressed when implementing combinations of multiple ELD standards and mathematics standards
Sample Integration of Mathematical and ELD Standards in the Classroom	An illustrative *sample* activity or activities that EL students at one grade level in the grade-level grouping could engage in, with a focus on the CA ELD Standard, MPs, and mathematical content standards listed for that grade level	Consider how the sample activity or activities can be adapted for: • mathematics instruction at other grade levels in the grouping; or • EL students at Emerging, Expanding, or Bridging levels of English language proficiency. Standards in Part II should always be used in tandem with standards in Part I. The Part I and Part II samples are separate only for purposes of the organization of the resource.	***Not:*** All knowledge or skills described in the CA ELD Standard, MPs, or mathematical content standards listed; content or strategies for students at all grade levels or at all English language proficiency levels; all possible processes, strategies, tasks, or activities related to the sample; a lesson plan; a description of an actual or complete classroom or lesson
Sample-Specific Standards for Mathematical Practice	Additional MPs that correspond to the activities described in the sample	Consider how each of these MPs applies to the sample classroom activities	***Not:*** MPs that always correspond to the standard

Grades 6, 7, and 8			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	7	7.NS.1a	112
PI.2	8	8.F.5	114
PI.3	8	8.EE.6	116
PI.4	7	7.RP.2d	118
PI.5	7	7.G.6	120
PI.6	6	6.SP.5	124
PI.7	6	6.RP.1	126
PI.8	8	8.SP.1	128
PI.9	8	8.G.6	130
PI.10	6	6.NS.7b	133
PI.11	7	7.SP.2	135
PI.12	6	6.EE.2b	139
PII.1	7	7.NS.1b	142
PII.2	6	6.EE.7	145
PII.3	8	8.SP.3	147
PII.4	7	7.RP.3	149
PII.5	8	8.F.4	151
PII.6	6	6.G.2	154
PII.7	7	7.EE.4	156

Grades 9–10 and 11–12			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	9–12	G-MG.1	159
PI.2	9–12	A-REI.11	161
PI.3	9–12	N-RN.1	163
PI.4	9–12	S-ID.5	166
PI.5	9–12	F-IF.9	168
PI.6	9–12	N-Q.1	171
PI.7	9–12	G-SRT.2	173
PI.8	9–12	F-LE.3	175
PI.9	9–12	A-REI.5	177
PI.10	9–12	S-ID.6a	179
PI.11	9–12	G-GPE.5	181
PI.12	9–12	N-RN.3	183
PII.1	9–12	A-SSE.3c	186
PII.2	9–12	F-TF.2	189
PII.3	9–12	G-CO.6	191
PII.4	9–12	F-IF.4	193
PII.5	9–12	S-CP.5	195
PII.6	9–12	G-GMD.4	197
PII.7	9–12	F-BF.1a	199

Grades 6, 7, and 8			
ELD Standard	Grade Level	Sample Standard	Page #
PI.6	6	6.SP.5	124
PI.7	6	6.RP.1	126
PI.10	6	6.NS.7b	133
PI.12	6	6.EE.2b	139
PII.2	6	6.EE.7	145
PII.6	6	6.G.2	155
PI.1	7	7.NS.1a	112
PI.4	7	7.RP.2d	118
PI.5	7	7.G.6	120
PI.11	7	7.SP.2	135
PII.1	7	7.NS.1b	142
PII.4	7	7.RP.3	149
PII.7	7	7.EE.4	156
PI.2	8	8.F.5	114
PI.3	8	8.EE.6	116
PI.8	8	8.SP.1	128
PI.9	8	8.G.6	130
PII.3	8	8.SP.3	147
PII.5	8	8.F.4	151

Grades 9–10 and 11–12			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	9–12	G-MG.1	159
PI.2	9–12	A-REI.11	161
PI.3	9–12	N-RN.1	163
PI.4	9–12	S-ID.5	166
PI.5	9–12	F-IF.9	168
PI.6	9–12	N-Q.1	171
PI.7	9–12	G-SRT.2	173
PI.8	9–12	F-LE.3	175
PI.9	9–12	A-REI.5	177
PI.10	9–12	S-ID.6a	179
PI.11	9–12	G-GPE.5	181
PI.12	9–12	N-RN.3	183
PII.1	9–12	A-SSE.3c	186
PII.2	9–12	F-TF.2	189
PII.3	9–12	G-CO.6	191
PII.4	9–12	F-IF.4	193
PII.5	9–12	S-CP.5	195
PII.6	9–12	G-GMD.4	197
PII.7	9–12	F-BF.1a	199

ELD Standards PII.1–PII.2			
ELD Standard	Grade Level	Sample Standard	Page #
PII.1	2	2.OA.3	48
PII.1	4	4.NF.4c	93
PII.1	7	7.NS.1b	142
PII.1	9–12	A-SSE.3c	186
PII.2	1	1.NBT.6	51
PII.2	3	3.NBT.2	96
PII.2	6	6.EE.7	145
PII.2	9–12	F-TF.2	189

ELD Standards PII.3–PII.5			
ELD Standard	Grade Level	Sample Standard	Page #
PII.3	K	K.G.5	53
PII.3	3	3.G.2	98
PII.3	8	8.SP.3	147
PII.3	9–12	G-CO.6	191
PII.4	2	2.MD.10	56
PII.4	5	5.NF.7c	100
PII.4	7	7.RP.3	149
PII.4	9–12	F-IF.4	193
PII.5	K	K.MD.1	58
PII.5	5	5.MD.2	103
PII.5	8	8.F.4	151
PII.5	9–12	S-CP.5	195

ELD Standards PII.6–PII.7			
ELD Standard	Grade Level	Sample Standard	Page #
PII.6	1	1.OA.6	60
PII.6	4	4.NF.3d	107
PII.6	6	6.G.2	154
PII.6	9–12	G-GMD.4	197
PII.7	1	1.G.1	62
PII.7	4	4.MD.2	110
PII.7	7	7.EE.4	156
PII.7	9–12	F-BF.1a	199

	• Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	K.CC.4b: Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. Students develop an understanding of the relationship between numbers and quantities by counting orally and listening as their peers count. First as a whole class and then in pairs, using teacher-facilitated structured routines for think-pair-share, students count out loud different arrangements of objects and confirm how many objects are in each arrangement. During the lesson, the teacher rearranges the objects that were just counted, or encourages students to count the same arrangement of objects but in a different order, so that students have the opportunity to recognize that arrangement and counting method do not affect the number of objects. The teacher guides the students in verifying which number name represents how many objects were counted. In pairs or in groups, students ask and answer questions to ensure that they understand that the number of objects is the same, regardless of their arrangement or the order in which they are counted. Students contribute to class, group, and partner discussions by using common phrases that they have learned, including: "How many do we have?"; "What number does that show?"; "What do you think?"; "Do you agree with me?"; "I like your math thinking!"; "I'm not sure I agree, so let's try it again."; "I want to add on to your idea." To support students at the Emerging level of English proficiency, the teacher allows students first to count in their home language. The teacher also provides oral support by having students repeat her phrasing when asking and answering questions.
Sample-Specific Standards for Mathematical Practice	N/A

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Compare the effectiveness of plausible arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.OA.1: Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. In mathematics at the first-grade level, writing includes creating diagrams and number sentences to match situations. Working in groups with mixed English language proficiency levels, students use objects or make drawings (MP.5) to represent the situations described in addition and subtraction word problems. To support students in learning about a variety of addition and subtraction situations, the teacher chooses word problems that involve unknowns in different parts of the matching number sentence. Students collaborate with partners to read and discuss each word problem, model the situation, and then use the model or diagram to find the result for the word problem and write a number sentence that represents the situation.
Sample-Specific Standards for Mathematical Practice	MP.5 Use appropriate tools strategically.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.MD.4: Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. When students analyze data sets, they organize, represent (MP.4), and interpret the data. In small groups, they offer opinions about their representations and interpretations of the data. As part of the conversations, they ask and answer questions, such as: "What is the total number of data points?"; "How many are in each category?"; "How many more or less are in one category than in another?" They also explain their reasoning by elaborating on ideas.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Sample Integration of Mathematical and ELD Standards in the Classroom	2.NBT.9: Explain why addition and subtraction strategies work, using place value and the properties of operations. When students explain mathematics concepts, such as why addition and subtraction strategies work, they must use accurate vocabulary and terms and must adjust language choices to share their ideas with peers and with the teacher. For example, students work in pairs to solve addition and subtraction problems, using more than one strategy, and then explain to another pair of students why their strategies work, using accurate terms and vocabulary. Students may use place value and appropriate vocabulary to explain how they add or subtract the ones, tens, hundreds, and so on. They may also mention the commutative and associative principles of addition and subtraction to describe the order in which they added or subtracted values. The whole class is then brought together to share the students' different strategies.
Sample-Specific Standards for Mathematical Practice	N/A

Sample Integration of Mathematical and ELD Standards in the Classroom	K.OA.2: Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem. When the teacher reads word problems out loud, students actively listen and ask clarifying questions about the problem situation. Students use objects or drawings (MP.4) to help them represent and solve word problems involving addition and subtraction. The teacher then encourages students to share their thinking about the problem and their addition and subtraction strategies. The teacher provides oral sentence frames and occasional prompting to support students in actively listening to the presentations. Students might ask one another common questions about their strategies, including "How many objects did you start with?" or "How many did you remove or add?"
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Applying ELD Standards to Mathematics	In mathematics, close reading and viewing are often required in order to determine key details in the context of examining, interpreting, and creating graphs and other models in real-world problem situations. Students use these details when describing ideas, concepts, and procedures.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	2.OA.1: Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. When students solve one- and two-step word problems involving addition and subtraction, they may use drawings (MP.4) and equations, with symbols for unknowns, to represent a variety of addition and subtraction situations, with the unknowns in any of the positions in the related number sentence. Understanding the text elements and key details of a word problem helps them better describe their ideas and strategies for solving the problem. The teacher provides scaffolding and support where needed, such as reading the text aloud to students or pairing students during this activity.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.NBT.4: Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. To show understanding of adding various one- and two-digit numbers with a variety of strategies, students relate the strategy to a written method (MP.2) and explain their reasoning. When students listen to others' presentations and explanations of the models and strategies that they used, and observe others describing their reasoning, students determine whether or not the explanations make sense and describe how the explanations could have been improved. In addition, students determine whether their peers have used the correct terminology (e.g., *add, subtract, one-digit, two-digit*) when describing their processes, with light prompting and support from the teacher. To support students at the Emerging level of English proficiency, the teacher provides more substantial support. For example, she ensures the students understand the specific term under discussion (e.g., one-digit, two digit) and asks a direct question such as "Mary said this is a two-digit number [pointing to a number]. Is this a two-digit number?"
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	2.MD.8: Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?* Students use different strategies and a variety of representations to explain how they solved a word problem involving money, with a focus on the precise symbols and words used to describe money. For example, to solve the problem "Using $1, $5, and $10 bills, how many different ways can you make $12?," students must use correct terminology to explain how to think of combining the bills in different ways. They must also correctly use the $ symbol to represent "dollars." The students can then compare when to use *put together two bills* versus *combine two bills*. The teacher encourages students to demonstrate problem situations, using actual money or other objects (MP.4) to represent dollar bills; use accurate vocabulary to describe the process; and use correct symbols to write equations representing the problems.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.

Sample Integration of Mathematical and ELD Standards in the Classroom	K.MD.2: Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.* When students explain a process or procedure, they will typically provide a logical progression of statements. If students are to directly compare two objects with a measurable attribute in common, they may describe the difference and explain how they know (MP.2) which has "more of"/"less of" the attribute. For example, a student is asked to "Choose two classmates who seem to be about the same height. Is one student actually taller or shorter than the other? How would you decide?" The student then explains a process of having the two students take off their shoes and stand back to back. A taller student or the teacher could put a yardstick (or book or similar suitable object) on the tops of both students' heads and try to place it so as to account for hairstyles that might affect the comparison. The student then plans and delivers an oral presentation to the group on his or her findings by describing how the yardstick shows which student is taller/shorter or if they still seem to be exactly the same height.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	2.G.3: Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape. To show fractional parts, students may work collaboratively or independently to make sketches or drawings (MP.4) to show a variety of ways to partition circles and rectangles into two, three, or four equal shares. When they explain their sketches or drawings in writing, they use correct terminology (e.g., *halves, thirds, half of, a third of*) to describe the squares, and describe the whole as two halves, three thirds, or four fourths. They use correct terminology (e.g., "This circle has *two halves*") to write explanations of their drawings. Drawings or sketches may also be used to show that equal shares of identical wholes need not have the same shape (MP.2). For example, given a square shape, students may partition the square into fourths by drawing the diagonals, showing three parallel lines that are equally spaced horizontally or vertically, showing a vertical line and a horizontal line, or using combinations of these partitionings, or by creating various non-linear partitions.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Sample Integration of Mathematical and ELD Standards in the Classroom	2.NBT.7: Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. Students use various concrete models and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to add and subtract larger numbers. Students use detailed evidence from their models to relate their strategy to a written method (MP.2) and to persuade others that their strategy is correct. Using examples and counterexamples, students show that sometimes it is necessary to compose or decompose tens or hundreds. For example, using place-value models, a student may show why 376 + 252 is not equal to 5128 (where 7 tens and 5 tens are written as "12" rather than composing a hundred), or may use estimation strategies to show that a sum of 5128 is not reasonable. To engage students at the Emerging level of English proficiency, the teacher provides verbal support to help the students express their understanding about the reasonableness of the solution. For example, once a student has used a model to test whether 5128 is the correct answer to 376 + 252, the teacher engages in a conversation with the student asking about the correctness of the solution, recasting the student's responses into appropriate phrases.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

2	a. Retell texts and recount experiences by using key words. b. Use a select number of general academic and domain-specific words to add detail (e.g., adding the word *generous* to describe a character, using the word *lava* to explain volcanic eruptions) while speaking and writing.	a. Retell texts and recount experiences using complete sentences and key words. b. Use a growing number of general academic and domain-specific words in order to add detail, create an effect (e.g., using the word *suddenly* to signal a change), or create shades of meaning (e.g., *scurry* versus *dash*) while speaking and writing.	a. Retell texts and recount experiences using increasingly detailed complete sentences and key words. b. Use a wide variety of general academic and domain-specific words, synonyms, antonyms, and non-literal language (e.g., He was *as quick as a cricket*) to create an effect, precision, and shades of meaning while speaking and writing.
Applying ELD Standards to Mathematics	Students use key words and a variety of general academic and mathematics-specific words and phrases when writing or speaking about mathematics content.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others.		
Sample Integration of Mathematical and ELD Standards in the Classroom	K.G.1: Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind,* and *next to.* Students provide sufficient details and domain-specific vocabulary as they describe or explain concepts or procedures. For example, when describing objects in the environment, they may use names of shapes and describe the relative positions of these objects with sentences such as "The *square* is *above* the *triangle* and *next to* the *circle*." The teacher may scaffold student use of appropriate language by providing prompting and support during discussions.		
Sample-Specific Standards for Mathematical Practice	N/A		

	independently.	with increasing independence.	independently.
Applying ELD Standards to Mathematics	As students express ideas, they use their understandings about how mathematics texts are organized, and about mathematical symbols or words, to help them comprehend and write texts so that they communicate clearly.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.		
Sample Integration of Mathematical and ELD Standards in the Classroom	2.OA.3: Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. To show comprehension and to express ideas about odd and even numbers, students may determine whether a group of objects has an odd or even number of members in a variety of ways (e.g., by pairing objects or counting them by 2s). To communicate their understanding, they write an equation (MP.4), using what they know about the structure of equations to express an even number as a sum of two equal addends, with prompting and support from the teacher. For example, "When I count these 13 pennies by 2s, I have one penny left over, so 13 is an odd number. If I had one penny more, I would have 7 pairs of pennies. The equation 7 + 7 = 14 shows that 14 is an even number." To support students at the Emerging level of English proficiency, the teacher offers language support to help students complete the task. For example, the teacher helps the students take the task one step at a time and uses a combination of written and oral language frames to help students appropriately structure their responses to each segment of the task. Once the student has completed all of the segments of the task and given oral or written responses, the teacher asks the students to practice their responses three times with a partner before sharing out to the class.		
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics.		

Applying ELD Standards to Mathematics	As students describe or explain mathematical concepts or procedures, they use their understandings about how ideas, events, and concepts in a spoken or written text are linked or refer to each other.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	1.NBT.6: Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. When students subtract multiples of 10 from multiples of 10 (in the range 10–90, with positive or zero differences), they may use concrete models or drawings (MP.5) and a variety of strategies. For example, a student may use place-value models of 10s (such as 10-rods, 10-sticks, or bundles of 10) to demonstrate the problem "60 – 20" as beginning with six 10-rods, then taking away two 10-rods, which leaves four 10-rods. Students work with partners and explain to one another the sequence of steps they took to subtract multiples of 10 by using language frames with text connectives (e.g., *We started with* ____. *First we* ___. *Then we* ___. *So now we* ____.), which supports them to connect the steps in ways that help others (and themselves) understand the flow of ideas.
Sample-Specific Standards for Mathematical Practice	MP.5 Use appropriate tools strategically.

2	a. Use frequently used verbs (e.g., walk, run) and verb types (e.g., doing, saying, being/having, thinking/feeling) in shared language activities guided by the teacher and sometimes independently. b. Use simple verb tenses appropriate to the text type and discipline to convey time (e.g., simple past tense for recounting an experience) in shared language activities guided by the teacher and sometimes independently.	a. Use a growing number of verb types (e.g., doing, saying, being/having, thinking/feeling) with increasing independence. b. Use a growing number of verb tenses appropriate to the text type and discipline to convey time (e.g., simple past tense for retelling, simple present for a science description) with increasing independence.	a. Use a variety of verb types (e.g., doing, saying, being/having, thinking/feeling) independently. b. Use a wide variety of verb tenses appropriate to the text type and discipline to convey time (e.g., simple present tense for a science description, simple future to predict) independently.
Applying ELD Standards to Mathematics	Students use a variety of verb types and appropriate verb tenses to express their understanding of mathematical concepts and procedures with precision.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others.		
Sample Integration of Mathematical and ELD Standards in the Classroom	K.G.5: Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes. In describing a process or explaining a strategy used to solve a problem, students use various verb types and tenses. When modeling shapes in the real world, students build shapes from components (e.g., sticks and clay balls) and sketch shapes (MP.4). When explaining their process and reasoning, they use past tense to tell what they did and why, present tense to describe what they now have, and future tense to make "what if" conjectures. For example: "I *made* this model of a house by using a shoe box. I *bent* a sheet of construction paper to make the roof. That *looks* like a tent. If I need to show the back porch, I *will add* a smaller shoe box to the back." To support students at the Emerging level of English proficiency, the teacher explicitly teachers the verb "make" in the past and future tenses, and helps students practice using it in the context of the task. Students say things such as, "Today I *made* a house. Tomorrow I will *make* a roof."		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Expand noun phrases in simple ways (e.g., adding a familiar adjective to describe a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on, in shared language activities guided by the teacher and sometimes independently.	Expand noun phrases in a growing number of ways (e.g., adding a newly learned adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on, in shared language activities guided by the teacher and with increasing independence.	Expand noun phrases in a wide variety of ways (e.g., adding a variety of adjectives to noun phrases) in order to enrich the meaning of phrases/sentences and add details about ideas, people, things, and so on, in shared language activities guided by the teacher and independently.
1	Expand noun phrases in simple ways (e.g., adding a familiar adjective to describe a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like, in shared language activities guided by the teacher and sometimes independently.	Expand noun phrases in a growing number of ways (e.g., adding a newly learned adjective to a noun) to enrich the meaning of sentences and add details about ideas, people, things, and the like, in shared language activities guided by the teacher and with increasing independence.	Expand noun phrases in a wide variety of ways (e.g., adding a variety of adjectives to noun phrases) in order to enrich the meaning of phrases/ sentences and add details about ideas, people, things, and the like, in shared language activities guided by the teacher and independently.
2	Expand noun phrases in simple ways (e.g., adding a familiar adjective to describe a noun) in order to enrich the meaning of sentences and to add details about ideas, people, things, and the like, in shared language activities guided by the teacher and sometimes independently.	Expand noun phrases in a growing number of ways (e.g., adding a newly learned adjective to a noun) in order to enrich the meaning of sentences and to add details about ideas, people, things, and the like, with increasing independence.	Expand noun phrases in a variety of ways (e.g., adding comparative/superlative adjectives to nouns) in order to enrich the meaning of phrases/sentences and to add details about ideas, people, things, and the like, independently.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Expand sentences with frequently used prepositional phrases (such as *in the house, on the boat*) to provide details (e.g., time, manner, place, cause) about a familiar activity or process in shared language activities guided by the teacher and sometimes independently.	Expand sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process in shared language activities guided by the teacher and with increasing independence.	Expand simple and compound sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) in shared language activities guided by the teacher and independently.
1	Expand sentences with frequently used prepositional phrases (such as *in the house, on the boat*) to provide details (e.g., time, manner, place, cause) about a familiar activity or process in shared language activities guided by the teacher and sometimes independently.	Expand sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process in shared language activities guided by the teacher and with increasing independence.	Expand simple and compound sentences with prepositional phrases to provide details (e.g., time, manner, place, cause) in shared language activities guided by the teacher and independently.
2	Expand sentences with frequently used adverbials (e.g., prepositional phrases, such as *at school, with my friend*) to provide details (e.g., time, manner, place, cause) about a familiar activity or process in shared language activities guided by the teacher and sometimes independently.	Expand sentences with a growing number of adverbials (e.g., adverbs, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process with increasing independence.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) independently.
Applying ELD Standards to Mathematics	Students use modifying words and phrases to express their understanding of mathematical concepts with precision.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
6. Connecting ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
K	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so*) in shared language activities guided by the teacher and sometimes independently.	Combine clauses in an increasing variety of ways to make connections between and join ideas, for example, to express cause/effect (e.g., *She jumped because the dog barked*) in shared language activities guided by the teacher and with increasing independence.	Combine clauses in a wide variety of ways (e.g., rearranging complete simple sentences to form compound sentences) to make connections between and join ideas (e.g., *The boy was hungry. The boy ate a sandwich. → The boy was hungry so he ate a sandwich*) in shared language activities guided by the teacher and independently.
1	Combine clauses in a few basic ways to make connections between and to join ideas (e.g., creating compound sentences using *and, but, so*) in shared language activities guided by the teacher and sometimes independently.	Combine clauses in an increasing variety of ways to make connections between and to join ideas, for example, to express cause/effect (e.g., *She jumped because the dog barked*), in shared language activities guided by the teacher and with increasing independence.	Combine clauses in a wide variety of ways (e.g., rearranging complete, simple-to-form compound sentences) to make connections between and to join ideas (e.g., *The boy was hungry. The boy ate a sandwich. → The boy was hungry so he ate a sandwich*) in shared language activities guided by the teacher and independently.
2	Combine clauses in a few basic ways to make connections between and to join ideas (e.g., creating compound sentences using *and, but, so*) in shared language activities guided by the teacher and sometimes independently.	Combine clauses in an increasing variety of ways to make connections between and to join ideas, for example, to express cause/effect (e.g., *She jumped because the dog barked*) with increasing independence.	Combine clauses in a wide variety of ways (e.g., rearranging complete simple to form compound sentences) to make connections between and to join ideas (e.g., *The boy was hungry. The boy ate a sandwich. → The boy was hungry so he ate a sandwich*) independently.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades K, 1, and 2			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
K	No standard for kindergarten.	No standard for kindergarten.	No standard for kindergarten.
1	Condense clauses in simple ways (e.g., changing: *I like blue. I like red. I like purple* → *I like blue, red, and purple*) to create precise and detailed sentences in shared language activities guided by the teacher and sometimes independently.	Condense clauses in a growing number of ways (e.g., through embedded clauses as in, *She's a doctor. She saved the animals.* → *She's the doctor who saved the animals*) to create precise and detailed sentences in shared language activities guided by the teacher and with increasing independence.	Condense clauses in a variety of ways (e.g., through embedded clauses and other condensing, for example, through embedded clauses as in *She's a doctor. She's amazing. She saved the animals.* → *She's the amazing doctor who saved the animals*) to create precise and detailed sentences in shared language activities guided by the teacher and independently.
2	Condense clauses in simple ways (e.g., changing: *It's green. It's red.* → *It's green and red*) to create precise and detailed sentences in shared language activities guided by the teacher and sometimes independently.	Condense clauses in a growing number of ways (e.g., through embedded clauses as in, *It's a plant. It's found in the rain forest.* → *It's a green and red plant that's found in the rain forest*) to create precise and detailed sentences with increasing independence.	Condense clauses in a variety of ways (e.g., through embedded clauses and other condensing as in, *It's a plant. It's green and red. It's found in the tropical rain forest.* → *It's a green and red plant that's found in the tropical rain forest*) to create precise and detailed sentences independently.
Applying ELD Standards to Mathematics	When explaining their thinking, or listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
1. Exchanging information and ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using short phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, building on responses, and providing useful feedback.
4	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using short phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, building on responses, and providing useful feedback.
5	Contribute to conversations and express ideas by asking and answering *yes-no* and *wh-* questions and responding using short phrases.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, and adding relevant information.	Contribute to class, group, and partner discussions, including sustained dialogue, by following turn-taking rules, asking relevant questions, affirming others, adding relevant information, building on responses, and providing useful feedback.
Applying ELD Standards to Mathematics	Working collaboratively provides students opportunities to both develop and display understanding of important mathematical concepts. While focusing on specific mathematical content, students share perspectives, ask and answer questions, examine specific cases, and address misconceptions.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
2. Interacting via written English			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
4	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
5	Collaborate with peers on joint writing projects of short informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.	Collaborate with peers on joint writing projects of a variety of longer informational and literary texts, using technology where appropriate for publishing, graphics, and the like.
Applying ELD Standards to Mathematics	Students often support their writing in mathematics with graphs, sketches and drawings, or geometric constructions. Sharing their work, students may make generalizations or justify their thinking with step-by-step reasoning.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
3. Offering opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Offer opinions and negotiate with others in conversations using basic learned phrases (e.g., *I think...*), as well as open responses in order to gain and/or hold the floor.	Offer opinions and negotiate with others in conversations using an expanded set of learned phrases (e.g., *I agree with X, and...*), as well as open responses in order to gain and/or hold the floor, provide counterarguments, and the like.	Offer opinions and negotiate with others in conversations using a variety of learned phrases (e.g., *That's a good idea, but...*), as well as open responses in order to gain and/or hold the floor, provide counterarguments, elaborate on an idea, and the like.
4	Negotiate with or persuade others in conversations using basic learned phrases (e.g., *I think...*), as well as open responses, in order to gain and/or hold the floor.	Negotiate with or persuade others in conversations using an expanded set of learned phrases (e.g., *I agree with X, but...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, and so on.	Negotiate with or persuade others in conversations using a variety of learned phrases (e.g., *That's a good idea. However...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, elaborate on an idea, and so on.
5	Offer opinions and negotiate with others in conversations using learned phrases (e.g., *I think X.*), as well as open responses, in order to gain and/or hold the floor.	Negotiate with or persuade others in conversations using an expanded set of learned phrases (e.g., *I agree with X, but...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, and so on.	Negotiate with or persuade others in conversations using a variety of learned phrases (e.g., *That's an interesting idea. However,...*), as well as open responses, in order to gain and/or hold the floor, provide counterarguments, elaborate on an idea, and so on.
Applying ELD Standards to	In making mathematical arguments and critiquing the reasoning of others, students need to connect and/or counter others' ideas, using mathematical		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
4. Adapting language choices			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Recognize that language choices (e.g., vocabulary) vary according to social setting (e.g., playground versus classroom), with substantial support from peers or adults.	Adjust language choices (e.g., vocabulary, use of dialogue, and the like) according to purpose (e.g., persuading, entertaining), social setting, and audience (e.g., peers versus adults), with moderate support from peers or adults.	Adjust language choices according to purpose (e.g., persuading, entertaining), task, and audience (e.g., peer-to-peer versus peer-to-teacher), with light support from peers or adults.
4	Adjust language choices according to social setting (e.g., playground, classroom) and audience (e.g., peers, teacher), with substantial support.	Adjust language choices according to purpose (e.g., persuading, entertaining), task (e.g., telling a story versus explaining a science experiment), and audience, with moderate support.	Adjust language choices according to purpose, task (e.g., facilitating a science experiment), and audience, with light support.
5	Recognize that language choices (e.g., vocabulary) vary according to social setting (e.g., playground versus classroom), with substantial support from peers or adults.	Adjust language choices according to purpose (e.g., persuading, entertaining), task (e.g., telling a story versus explaining a science experiment), and audience, with moderate support.	Adjust language choices according to purpose, task (e.g., facilitating a science experiment), and audience, with light support.
Applying ELD Standards to Mathematics	Students adjust their language choices according to audience, purpose, and task (e.g., providing evidence to support reasoning used to defend mathematical arguments, interpretations, and procedures).		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
5. Listening actively			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Demonstrate active listening to read-alouds and oral presentations by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
4	Demonstrate active listening of read-alouds and oral presentations by asking and answering basic questions, with prompting and substantial support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
5	Demonstrate active listening to read-alouds and oral presentations by asking and answering basic questions, with oral sentence frames and substantial prompting and support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with occasional prompting and moderate support.	Demonstrate active listening of read-alouds and oral presentations by asking and answering detailed questions, with minimal prompting and light support.
Applying ELD Standards to Mathematics	Students listen to a variety of orally expressed mathematical information, such as explanations, procedures, or word problems, and demonstrate understanding by asking and answering questions.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
6. Reading/viewing closely			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Describe ideas, phenomena (e.g., insect metamorphosis), and text elements (e.g., main idea, characters, setting) based on understanding of a select set of grade-level texts and viewing of multimedia, with substantial support.	Describe ideas, phenomena (e.g., how cows digest food), and text elements (e.g., main idea, characters, events) in greater detail based on understanding of a variety of grade-level texts and viewing of multimedia, with moderate support.	Describe ideas, phenomena (e.g., volcanic eruptions), and text elements (e.g., central message, character traits, major events) using key details based on understanding of a variety of grade-level texts and viewing of multimedia, with light support.
4	a. Describe ideas, phenomena (e.g., volcanic eruptions), and text elements (main idea, characters, events, and the like) based on close reading of a select set of grade-level texts, with substantial support. b. Use knowledge of frequently used affixes (e.g., *un-, mis-*) and linguistic context, reference materials, and visual cues to determine the meaning of unknown words on familiar topics.	a. Describe ideas, phenomena (e.g., animal migration), and text elements (main idea, central message, and the like) in greater detail based on close reading of a variety of grade-level texts, with moderate support. b. Use knowledge of morphology (e.g., affixes, roots, and base words), linguistic context, and reference materials to determine the meaning of unknown words on familiar topics.	a. Describe ideas, phenomena (e.g., pollination), and text elements (main idea, character traits, event sequence, and the like) in detail based on close reading of a variety of grade-level texts, with light support. b. Use knowledge of morphology (e.g., affixes, roots, and base words) and linguistic context to determine the meaning of unknown and multiple-meaning words on familiar and new topics.

Sample Integration of Mathematical and ELD Standards in the Classroom	5.OA.3: Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.* When students generate numerical patterns based on rules—such as "multiply by 2" and "multiply by 6," both with a starting number of 1—they closely read and interpret the meaning of each rule. Their close reading of the rules and of the numerical patterns supports them to describe, in writing, the relationship between corresponding terms (MP.2): for example, the terms in the second sequence are three times the corresponding terms in the first sequence. Students also graph ordered pairs consisting of the corresponding terms on a coordinate plane (MP.4) to illustrate and explain the relationship between the two rules. As students examine the graphs and written descriptions made by other students, they deepen both their understanding of the relationships between corresponding terms and their understanding of how to effectively use graphs to investigate and communicate ideas. Students develop illustrations labeled with key mathematical terms, and develop written descriptions of their observations. With peers, in pairs or small groups, the students examine and explain one another's descriptions and illustrations, using posted "success criteria" that promote their use of mathematical language and textual evidence. When solving problems, the students also refer to mathematical terminology posted on the Math Terms Wall. The Math Terms Wall includes terms that have a different meaning in mathematics than they do in English language arts or everyday language (e.g., *product, equal, difference, proper/improper*).
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Distinguish correct logic or reasoning from that which is flawed and, if there is a flaw, explain what it is. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	3.NF.3d: Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. Students use visual fraction models and a variety of examples to show equivalence of fractions and to compare fractions (MP.2). Working in heterogeneous language-proficiency groups, students prepare presentations that (1) address comparisons such as the following and (2) justify their reasoning. a) "Write a mathematics sentence that compares one-third of a large pizza and one-fourth of a same-sized pizza." b) "How does three-sixths of a medium-sized pizza compare to two-fourths of a same-sized pizza?" c) "Use models to compare two-thirds of a large pizza and four-sixths of a small pizza. Explain why two-thirds is *not* equivalent to four-sixths *in this situation*." The teacher leads the students through co-constructing some examples of language that the students might use to justify their reasoning, and creates an anchor chart for students to use (including phrases such as "We know this because ___"; "Our thinking was as follows ___"; "We checked our answer for accuracy by ___"). Before the first presentation, the teacher tells the students to listen for the language that the presenters use to justify their response, and models two responses for the class. After each presentation, the teacher asks partners to work together to identify the language that the groups used to justify their reasoning, and to refer to the anchor chart that the class prepared earlier.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	4.NBT.5: Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. By using different strategies (MP.2) and providing a variety of representations to illustrate and explain whole-number multiplication, students provide their audience with opportunities to understand the key terms, as well as the strategies and representations, related to multiplication. When showing the class the different ways that she calculated the product of 53 and 27, a student uses place value to write 53 as 50 + 3 and to write 27 as 20 + 7. Then, she uses a rectangular area model that illustrates (50 + 3) × (20 + 7) by showing the four partitions with side lengths of 50 × 20, 50 × 7, 3 × 20, and 3 × 7. The student explains the model using terms such as *place value* and *distributive property* and represents it with the equation 53 × 27 = 1000 + 350 + 60 + 21 = 1431. After the student's explanation, the teacher asks the students to work in pairs to answer the questions "How do the words *place value* and *distributive property* help you understand the explanation?" and "How do the area models help you understand the explanation?" To support students at the Emerging level of English proficiency, the teacher works with the students to jointly construct their explanation, attending specifically to the terms *place value* and *distributive property* and the information those terms give the audience.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	4.OA.5: Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.* In pairs, students plan and deliver oral presentations on number or shape patterns. Each pair of students is given a rule to generate a number or shape pattern, and the pairs work to generate the pattern and to note features of the pattern that were not mentioned in the pattern rule (MP.7). English learners at the Emerging or early Expanding level are paired with students of higher English proficiency, in order to support them in their explanations of their findings about the patterns. To further support students at the Emerging or early Expanding level, the teacher provides time and a structure for the students to practice their presentations several times before delivering them.
Sample-Specific Standards for Mathematical Practice	MP.7 Look for and make use of structure.

5	a. Write short literary and informational texts (e.g., a description of a camel) collaboratively (e.g., joint construction of texts with an adult or with peers) and sometimes independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an informative report on different kinds of camels) collaboratively (e.g., joint construction of texts with an adult or with peers) and with increasing independence by using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an explanation of how camels survive without water for a long time) collaboratively (e.g., joint construction of texts with an adult or with peers) and independently by using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).
Applying ELD Standards to Mathematics	a. Students write detailed informational text when they model relationships and solve problems in context, justifying steps in the process and verifying conclusions. b. Students summarize and write concisely in a variety of mathematical contexts, with particular attention to modeling. Students analyze relationships and represent them symbolically, using appropriate quantities.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Supporting opinions			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Support opinions by providing good reasons and some textual evidence or relevant background knowledge (e.g., referring to textual evidence or knowledge of content).	Support opinions by providing good reasons and increasingly detailed textual evidence (e.g., providing examples from the text) or relevant background knowledge about the content.	Support opinions or persuade others by providing good reasons and detailed textual evidence (e.g., specific events or graphics from text) or relevant background knowledge about the content.
4	a. Support opinions by expressing appropriate/accurate reasons using textual evidence (e.g., referring to text) or relevant background knowledge about content, with substantial support. b. Express ideas and opinions or temper statements using basic modal expressions (e.g., *can, will, maybe*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using some textual evidence (e.g., paraphrasing facts) or relevant background knowledge about content, with moderate support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *maybe/probably, can/must*).	a. Support opinions or persuade others by expressing appropriate/accurate reasons using detailed textual evidence (e.g., quotations or specific events from text) or relevant background knowledge about content, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *probably/certainly, should/would*) and phrasing (e.g., *In my opinion...*).

Sample Integration of Mathematical and ELD Standards in the Classroom	4.OA.3: Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. Students use the four operations to solve the following multistep word problem: "Three fourth-grade classes have a total of 83 students. One day, exactly two students from each class are absent. If there are about the same number of students in each class, about how many students are in attendance in one class? Write an equation to represent the situation, describe how to solve the problem, and explain why your answer is reasonable." As students of different English language proficiency levels work in pairs, they write an equation, such as $83/3 - 2 = s$, that uses a variable to represent the unknown number of students in one of the classes (MP.4). Students then solve their equations and present their solutions to other pairs of students, referring to the original word problem and their equations to persuade others about the reasonableness of their solutions, demonstrating an understanding of the content (MP.2). English learners at the Emerging or early Expanding level should work in pairs with students of higher English proficiency to support their interpretation of the word problem. In sharing their work, they use sentence starters such as: "My equation is ___"; "I agree with ___ because ___"; "This is a reasonable answer because..."; "I know my answer is accurate because..."
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

			reluctantly).
Applying ELD Standards to Mathematics	Students use a variety of general academic and mathematics-specific words and phrases when writing or speaking about mathematics content.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning. In the elementary grades, students give carefully formulated explanations to each other.		
Sample Integration of Mathematical and ELD Standards in the Classroom	5.NBT.2: Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. Working in pairs, students investigate the following pattern (MP.7) related to powers of 10: "Describe and explain the pattern of zeros in these products: 15×10; 15×10^2; 15×10^3; 15×10^4; and 15×10^5. Using the pattern, describe the products 15×10^{25} and 0.15×10^{25}." Students create diagrams to illustrate the pattern, and explain their conclusions. In their explanations, students carefully choose words to precisely describe the placement of the decimal point and the powers of ten with which they are working. For example, students must be precise when discussing "fifteen" and "fifteen hundredths." English learners at the Emerging or early Expanding level are paired with students of higher English proficiency. As needed, they refer to a word wall describing the different place values: *ones, tens, hundreds, thousands,* and *ten thousands,* and *tenths, hundredths, thousandths,* and *ten thousandths.*		
Sample-Specific Standards for Mathematical Practice	MP.7 Look for and make use of structure.		

Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how text is structured (e.g., what information is needed first, what information is needed using mathematical symbols or words), so that their communication is clear to their audiences.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	4.NF.4c: Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?* English learners at the Emerging or early Expanding level are paired with students of higher English proficiency to solve word problems involving multiplication of a fraction by a whole number. The teacher asks the pairs of students to use visual fraction models and equations to represent the problem and then write mathematical explanations that may be shared with another pair of students. To support her students in structuring their explanations well, the teacher shows the students a sample explanation on chart paper, and then leads the class through labeling the structure: a brief description of the problem, followed by an explanation of the students' approach, an explanation of the visual fraction model, and a justification of the approach and solution. She works with her students to identify sentence stems in the sample explanation that they could adopt in their own writing, and she highlights these stems on the sample. She then posts the sample for students to refer to. Students complete their mathematical explanations with their partners.
Sample-Specific Standards for Mathematical Practice	N/A

4	a. Apply basic understanding of language resources for referring the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *first, yesterday*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *since, next, for example*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns, synonyms, or nominalizations refer back to nouns in text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *for instance, in addition, at the end*) to comprehending texts and writing cohesive texts.
5	a. Apply basic understanding of language resources for referring the reader back or forward in text (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing basic texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using a select set of everyday connecting words or phrases (e.g., *first/next, at the beginning*) to comprehending texts and writing basic texts.	a. Apply growing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns or synonyms refer back to nouns in text) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, in the first place, as a result*) to comprehending texts and writing texts with increasing cohesion.	a. Apply increasing understanding of language resources for referring the reader back or forward in text (e.g., how pronouns, synonyms, or nominalizations refer back to nouns in text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *consequently, specifically, however*) to comprehending texts and writing cohesive texts.
Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how ideas, events, and concepts in a spoken or written text are linked or refer to each other.		

3	Use frequently used verbs, different verb types (e.g., doing, saying, being/having, thinking/feeling), and verb tenses appropriate to the text type and discipline to convey time (e.g., simple past for recounting an experience).	Use a growing number of verb types (e.g., doing, saying, being/having, thinking/feeling) and verb tenses appropriate to the text type and discipline to convey time (e.g., simple past for retelling, simple present for a science description).	Use a variety of verb types (e.g., doing, saying, being/having, thinking/feeling) and verb tenses appropriate to the text type and discipline to convey time (e.g., simple present for a science description, simple future to predict).
4	Use various verbs/verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the text type and discipline (e.g., simple past for recounting an experience) for familiar topics.	Use various verbs/verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task, text type, and discipline (e.g., simple past for retelling, timeless present for science explanation) for an increasing variety of familiar and new topics.	Use various verbs/verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task and text type (e.g., timeless present for science explanation, mixture of past and present for historical information report) for a variety of familiar and new topics.
5	Use frequently used verbs (e.g., take, like, eat) and various verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the text type and discipline (e.g., simple past for recounting an experience) on familiar topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task, text type, and discipline (e.g., simple past for recounting an experience, timeless present for a science description) on an increasing variety of topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling) and tenses appropriate to the task and text type (e.g., timeless present for science description, mixture of past and present for narrative or history explanation) on a variety of topics.
Applying ELD Standards to Mathematics	Students use a variety of verb types and appropriate verb tenses to express their understanding of mathematical concepts and procedures with precision.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Expand noun phrases in simple ways (e.g., adding an adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a growing number of ways (e.g., adding comparative/superlative adjectives to nouns) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a variety of ways (e.g., adding comparative/ superlative adjectives to noun phrases, simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.
4	Expand noun phrases in simple ways (e.g., adding an adjective) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in a variety of ways (e.g., adding adjectives to noun phrases or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in an increasing variety of ways (e.g., adding general academic adjectives and adverbs to noun phrases or more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.
5	Expand noun phrases in simple ways (e.g., adding an adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a variety of ways (e.g., adding comparative/ superlative adjectives to noun phrases or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in an increasing variety of ways (e.g., adding comparative/superlative and general academic adjectives to noun phrases or more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others.
Sample Integration of Mathematical and ELD Standards in the Classroom	5.MD.2: Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.* When making and analyzing a data set of measurements displayed on a line plot, students observe relationships within the data set that require understanding and use of adverbs and adverbial phrases. Students use a line plot displaying the distances that runners traveled in five minutes, to the nearest quarter mile. The teacher asks the students to identify four pieces of information: (1) the greatest distance run (MP.2); (2) which runners ran fastest, assuming each runner ran at an approximately constant rate; (3) how much farther the fastest runner(s) ran than the slowest runner(s); and (4) which runner(s) would have been at the middle of the group of runners, and how far they would have run, if they all ran at the same time. After each identification, the students work together to write their procedure and explain their reasoning. In order to support students at the Emerging and early Expanding levels of English proficiency, the teacher has ensured that each is paired with a language broker, another student who is bilingual in English and the student's home language. After the first identification, the teacher works with the students to co-construct an explanation of their procedure and a justification of their reasoning. As the class co-constructs the text, the teacher both models and asks questions regarding expanding the writing to include more adverbials and details appropriate to a mathematical explanation (e.g., moving from "We examined the line plot" to "We examined the line plot closely before we chose an approach"). Through the next three identifications, the teacher gradually releases support, asking students to complete the entire task including expanding the writing in pairs and then independently. During independent work time, the teacher pulls a small group of students at the Emerging and early Expanding levels of English proficiency and continues the task by leading the students through more co-construction.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

5	Combine clauses in a few basic ways to make connections between and join ideas (e.g., You must X because X) or to provide evidence to support ideas or opinions (e.g., creating compound sentences using *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion came*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), or to provide reasons to support ideas (e.g., *X is an extremely good book because _____*).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express cause/effect (e.g., *The deer ran because the mountain lion approached them*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), to link two ideas that happen at the same time (e.g., *The cubs played while their mother hunted*), or to provide reasons to support ideas (e.g., *The author persuades the reader by _____*).
Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. MP.6 Attend to precision. • Try to communicate precisely to others.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 3, 4, and 5			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
3	Condense clauses in simple ways *(e.g., changing: It's green. It's red.* → *It's green and red*) to create precise and detailed sentences.	Condense clauses in a growing number of ways (e.g., through embedded clauses as in, *It's a plant. It's found in the rain forest.* → *It's a green and red plant that's found in the tropical rain forest*) to create precise and detailed sentences.	Condense clauses in a variety of ways (e.g., through embedded clauses and other condensing as in, *It's a plant. It's green and red. It's found in the tropical rain forest.* → *It's a green and red plant that's found in the tropical rain forest*) to create precise and detailed sentences.
4	Condense clauses in simple ways (e.g., through simple embedded clauses, as in, The woman is a doctor. She helps children. → The woman is a doctor *who helps children*) to create precise and detailed sentences.	Condense clauses in an increasing variety of ways (e.g., through a growing number of embedded clauses and other condensing, as in, The dog ate quickly. The dog choked. → The dog ate so quickly *that it choked*) to create precise and detailed sentences.	Condense clauses in a variety of ways (e.g., through various types of embedded clauses and other ways of condensing as in, There was a Gold Rush. It began in the 1850s. It brought a lot of people to California. → The Gold Rush *that began in the 1850s* brought a lot of people to California) to create precise and detailed sentences.
5	Condense clauses in simple ways (e.g., through simple embedded clauses as in, *The book is on the desk. The book is mine.* → *The book that is on the desk is mine*) to create precise and detailed sentences.	Condense clauses in an increasing variety of ways (e.g., through a growing number of types of embedded clauses and other condensing as in, *The book is mine. The book is about science. The book is on the desk.* → *The science book that's on the desk is mine*) to create precise and detailed sentences.	Condense clauses in a variety of ways (e.g., through various types of embedded clauses and some nominalizations as in, *They were a very strong army. They had a lot of enemies. They crushed their enemies because they were strong.* → Their strength helped them crush their numerous enemies) to

	Kyra spends on her bike and to summarize their reasoning in a succinct way.
Sample-Specific Standards for Mathematical Practice	N/A

Standards to Mathematics	display understanding of important mathematical concepts. While focusing on specific mathematical content, students share perspectives, ask and answer questions, examine specific cases, and address misconceptions.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	7.NS.1a: Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.* In class and group discussions, students share ideas about a variety of real-world situations in which opposite quantities combine to make 0. For example, students build on one another's understanding that "a hydrogen atom has 0 charge because its two constituents are oppositely charged." They suggest alternative situations, such as the temperature rising and then falling by the same amount, leading to a change of 0 (MP.2). They also ask relevant questions, affirm others, add relevant information, and paraphrase key ideas. The teacher models for students and provides students with sentence starters to support their contributions to the conversation, such as "Will you explain that again?," "I agree with ___ that ___," or "Maybe we could ___." To support students at the Expanding level of English proficiency, the teacher engages in more substantial verbal support, such as recasting what the student says using domain specific terminology or full sentences that are structured according to the rules of academic English. The teacher also offers her students the opportunity to practice with a partner before sharing out to the whole class.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Sample Integration of Mathematical and ELD Standards in the Classroom	8.F.5: Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. Students often analyze and create graphs when describing a functional relationship between two quantities (MP.2). Collaboratively in small groups, students discuss and then write descriptions of a relationship represented in a graph, such as to indicate where a function is increasing or decreasing, and provide justification as to whether is it a linear or nonlinear relationship. Students also draw a graph to match a function that was described verbally by other students or the teacher.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Compare the effectiveness of plausible arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	8.EE.6: Use similar triangles to explain why the slope *m* is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at *b*. Students investigate the slope of a line on the coordinate plane by drawing similar triangles in which two of the three vertices fall on the line. Students are encouraged to justify their methods for drawing the triangles and the conclusions they reach about the slope of the line based on the triangles using a variety of learned phrases (e.g., "I agree, but if you look at this equation ___"). The teacher supports students by directing them toward a word wall, which contains definitions and diagrams of important words, such as *line*, *slope*, and *vertex*. After the class has agreed that the slope of the line is the same between any two distinct points, based on their observations about the similar triangles, students then extend their understanding to derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at *b*.
Sample-Specific Standards for Mathematical Practice	N/A

Sample Integration of Mathematical and ELD Standards in the Classroom	7.RP.2d: Explain what a point *(x, y)* on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and 1, *r*) where *r* is the unit rate. When analyzing and describing real-world proportional relationships shown on a graph (MP.2), students work collaboratively and individually to explain what a point (*x, y*) on the graph means in terms of the situation, paying special attention to the points (0, 0) and (1, *r*), where *r* is the unit rate. For example, when viewing a graph that represents how far a car travels at a speed of 50 miles an hour, students discuss with one another to collaboratively describe a point (*x, y*) as the distance, *y*, that the car has traveled in *x* hours. Students adjust their language choices by using appropriate terminology when presenting their findings to the class and when further explaining what the points (0, 0) and (1, 50) represent in the situation.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Sample Integration of Mathematical and ELD Standards in the Classroom	7.G.6: Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. When presented with problems involving area, volume, and surface area of two- and three-dimensional objects (composed of triangles, quadrilaterals, polygons, cubes, and right prisms), students may make or analyze sketches (MP.4) or other representations and use formulas or other methods to determine the needed measurements (MP.7). As students share their work with one another and listen to the reasoning of their classmates, especially regarding complex problems about two- and three-dimensional objects, they ask and answer questions to learn and to show understanding. The teacher provides students with sentence frames, such as "How did you determine ___?" or "First I ___, and then I ___," to support their engagement in these conversations and to scaffold their acquisition of domain-specific vocabulary.
Sample-Specific Standards for Mathematical Practice	MP.4 Model with mathematics. MP.7 Look for and make use of structure.

7	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-appropriate texts and viewing of multimedia, with substantial support. b. Express inferences and conclusions drawn based on close reading of grade-appropriate texts and viewing of multimedia using some frequently used verbs (e.g., *shows that, based on*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with moderate support. b. Express inferences and conclusions drawn based on close reading of grade-appropriate texts and viewing of multimedia using a variety of verbs (e.g., *suggests that, leads to*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, problem/solution) based on close reading of a variety of grade-level texts and viewing of multimedia, with light support. b. Express inferences and conclusions drawn based on close reading of grade-level texts and viewing of multimedia using a variety of precise academic verbs (e.g., *indicates that, influences*). c. Use knowledge of morphology (e.g., affixes, roots, and base words), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Analyze situations by breaking them into cases. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	6.SP.5: Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered. When examining and analyzing data sets and situations, students model the situations (MP.4) based on careful reading and understanding of the context. For example, students investigate a data set regarding wingspans of condors. To understand how wingspans of condors are typically measured, students first read about wingspans of birds. Students work together to draw inferences about common wingspans of condors by describing the measures of center of the data set. The teacher provides sentence frames for students at different English language proficiency levels to use to explain and justify their reasoning as they describe the data in relation to the context (MP.2), using academic language (e.g., *based on ___, leads to ___, indicates that ___*). Students also derive meanings of familiar and unfamiliar terms by using their knowledge of morphology (e.g., *uni-, bi-, tri-*). While most of the class works in pairs, the teacher works with a small group of students at the Emerging and early Expanding levels of English proficiency. In this group, the teacher reads the text to the students first, highlighting specific vocabulary. Then the teacher leads a detailed reading of the text, following a process that includes: the teacher identifying a sentence; the teacher paraphrasing its basic meaning in words the students will understand (using illustrations or pictures if necessary); the students locating the words that show the meaning of the paraphrase while the teacher affirms and supports them in understanding the meaning.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

Standards to Mathematics	describe or explain how well the writers or speakers used particular vocabulary or phrasing, for example, to provide a definition or explanation.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	6.RP.1: Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."* Students explain, as well as listen to others' explanations, about the concept of ratio, in order to gain understanding of important concepts. For example, students consider the relationship between the numbers of dogs and dogs' tails in the animal shelter. Students work together in pairs or groups and use ratio language to describe the relationship as 1:1 because each dog has one tail. Students then generate other ratios regarding the animals in the animal shelter and share their work with one another. As they listen to the thinking of their classmates, students determine how well their classmates present and explain their ideas and reasoning, paying close attention to the language resources used (e.g., the sentence structure "The ratio of _____ to _____ was ____, because for every ____ there was ____.").
Sample-Specific Standards for Mathematical Practice	N/A

Mathematics	or phrases with related meanings (e.g., *divide* versus *partition*) affects the audience's understanding.
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Analyze situations by breaking them into cases. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	8.SP.1: Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. In learning about bivariate measurement data, students analyze and interpret scatter plots to investigate patterns of association between two quantities (MP.2). English learners at the Emerging or early Expanding level are paired with students of higher English proficiency to engage in explaining the data. The pairs encounter a variety of examples and situations that illustrate properties and concepts of relationships, such as clustering, outliers, positive or negative association, linear association, and nonlinear association. As students read or listen to descriptions or explanations of the thinking of others in the class, they pay attention to their classmates' word choices or examples, and they think about and discuss how different words convey meanings.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

	MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.
Sample Integration of Mathematical and ELD Standards in the Classroom	8.G.6: Explain a proof of the Pythagorean Theorem and its converse. When developing and orally presenting formal or informal proofs, students plan how to use algebraic and/or geometric examples and models to support their explanation. For example, in order to explain a proof of the Pythagorean Theorem and its converse, one student provides specific examples of right triangles, such as 3-4-5 or 5-12-13, and shows the relationships among the sides (e.g., $3^2 + 4^2 = 5^2$, or $5^2 + 12^2 = 13^2$). The student then introduces the converse by presenting a triangle and asking, "How do we know whether or not it is a right triangle?" The student writes an equation to generalize the situations: if a triangle with legs *a* and *b* and hypotenuse *c* is a right triangle, then $a^2 + b^2 = c^2$, and if a triangle has sides *a*, *b*, and *c* such that $a^2 + b^2 = c^2$, then it is a right triangle. Using a coordinate plane or geometric shapes (MP.4), the student then shows the steps justifying the reasons (MP.2) for both the Pythagorean Theorem and its converse. The teacher expects all of the students to present, either to the whole class or to each other in groups. To support students at the Emerging and early Expanding levels, the teacher first pairs each student with a language broker, another student who speaks English and the student's home language proficiently. In their partners, the students get to practice their presentation, while their partner provides feedback on the presentation, including terminology and sentence structure. The teacher gives the students the option of writing down notes in preparation for presenting.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

8	a. Write short literary and informational texts (e.g., an argument about whether the government should fund research using stem cells) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument about whether the government should fund research using stem cells) collaboratively (e.g., with peers) and independently using appropriate text organization. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument about whether the government should fund research using stem cells) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).
Applying ELD Standards to Mathematics	a. Students write detailed informational text when they model relationships and solve problems in context, justifying steps in the process and verifying conclusions. b. Students summarize and write concisely in a variety of mathematical contexts, with particular attention to modeling. Students analyze relationships and represent them symbolically, using appropriate quantities.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Justifying/arguing			
Grade	**Emerging**	**Expanding**	**Bridging**
6	a. Justify opinions by providing some textual evidence (e.g., quoting from the text) or relevant background knowledge, with substantial support. b. Express attitude and opinions or temper statements with some basic modal expressions (e.g., *can, has to*).	a. Justify opinions or persuade others by providing relevant textual evidence (e.g., quoting from the text or referring to what the text says) or relevant background knowledge, with moderate support. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *maybe/probably, can/could, must*).	a. Justify opinions or persuade others by providing detailed and relevant textual evidence (e.g., quoting from the text directly or referring to specific textual evidence) or relevant background knowledge, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *probably/certainly/definitely , should/would, might) and phrasing (e.g., In my opinion...*).
7	a. Justify opinions by providing some textual evidence or relevant background knowledge, with substantial support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions or persuade others by providing relevant textual evidence or relevant background knowledge, with moderate support. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would/should*).	a. Justify opinions or persuade others by providing detailed and relevant textual evidence or relevant background knowledge, with light support. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *possibly/potentially/ absolutely, should/might*).

7	a. Use a select number of general academic words (e.g., *cycle, alternative*) and domain-specific words (e.g., *scene, chapter, paragraph, cell*) to create some precision while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in basic ways (e.g., *She likes X. He walked to school*).	a. Use a growing set of academic words (e.g., *cycle, alternative, indicate, process*), domain-specific words (e.g., *scene, soliloquy, sonnet, friction, monarchy, fraction*), synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., *She likes walking to school. That's impossible*).	a. Use an expanded set of general academic words (e.g., *cycle, alternative, indicate, process, emphasize, illustrate*), domain-specific words (e.g., *scene, soliloquy, sonnet, friction, monarchy, fraction*), synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *destroy → destruction, probably → probability, reluctant → reluctantly*).
8	a. Use a select number of general academic words (e.g., *specific, contrast*) and domain-specific words (e.g., *scene, cell, fraction*) to create some precision while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in basic ways (e.g., *She likes X. He walked to school*).	a. Use a growing set of academic words (e.g., *specific, contrast, significant, function*), domain-specific words (e.g., *scene, irony, suspense, analogy, cell membrane, fraction*), synonyms, and antonyms to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., *She likes walking to school. That's impossible*).	a. Use an expanded set of general academic words (e.g., *specific, contrast, significant, function, adequate, analysis*), domain-specific words (e.g., *scene, irony, suspense, analogy, cell membrane, fraction*), synonyms, antonyms, and figurative language to create precision and shades of meaning while speaking and writing. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *destroy → destruction, probably → probability, reluctant → reluctantly*).

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works A. Structuring Cohesive Texts			
1. Understanding text structure			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Apply basic understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how arguments are organized around ideas) to comprehending texts and writing basic texts.	Apply growing understanding of how different text types are organized to express ideas (e.g., how a narrative is organized sequentially with predictable stages versus how arguments are structured logically around reasons and evidence) to comprehending texts and writing texts with increasing cohesion.	Apply increasing understanding of how different text types are organized to express ideas (e.g., how a historical account is organized chronologically versus how arguments are structured logically around reasons and evidence) to comprehending texts and writing cohesive texts.
7	Apply understanding of how different text types are organized to express ideas (e.g., how narratives are organized sequentially) to comprehending texts and to writing brief arguments, informative/ explanatory texts and narratives.	Apply understanding of the organizational features of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing increasingly clear and coherent arguments, informative/explanatory texts and narratives.	Apply understanding of the organizational structure of different text types (e.g., how narratives are organized by an event sequence that unfolds naturally versus how arguments are organized around reasons and evidence) to comprehending texts and to writing clear and cohesive arguments, informative/explanatory texts and narratives.

	mathematical explanations based on the class's analysis, which are then posted around the room for students to refer to when they are writing their own explanations. To support students at the Emerging level of English proficiency, the teacher works with a small group of students to jointly construct their mathematical explanations, taking ideas from students while asking probing questions and thinking aloud to ensure the text follows the structure and contains some of the language features of a mathematical explanation.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

7	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text) to comprehending texts and writing brief texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *at the end, next*) to comprehending texts and writing brief texts.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text, how using synonyms helps avoid repetition) to comprehending texts and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, as a result, on the other hand*) to comprehending texts and writing texts with increasing cohesion.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns, synonyms, or nominalizations are used to refer backward in a text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *for instance, in addition, consequently*) to comprehending texts and writing texts with increasing cohesion.
8	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text) to comprehending and writing brief texts. b. Apply basic understanding of how ideas, events, or reasons are linked throughout a text using everyday connecting words or phrases (e.g., *at the end, next*) to comprehending and writing brief texts.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns refer back to nouns in text, how using synonyms helps avoid repetition) to comprehending and writing texts with increasing cohesion. b. Apply growing understanding of how ideas, events, or reasons are linked throughout a text using a variety of connecting words or phrases (e.g., *for example, as a result, on the other hand*) to comprehending and writing texts with increasing cohesion.	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., how pronouns, synonyms, or nominalizations are used to refer backward in a text) to comprehending texts and writing cohesive texts. b. Apply increasing understanding of how ideas, events, or reasons are linked throughout a text using an increasing variety of academic connecting and transitional words or phrases (e.g., *for instance, in addition, consequently*) to comprehending and writing texts with increasing cohesion.
Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how ideas, events, and concepts in a spoken or written text are linked or refer to each other.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
3. Using verbs and verb phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Use a variety of verb types (e.g., doing, saying, being/having, thinking/feeling), tenses (e.g., present, past, future, simple, progressive) appropriate to the text type and discipline (e.g., simple past and past progressive for recounting an experience) on familiar topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling, reporting), tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., simple present for literary analysis) on an increasing variety of topics.	Use various verb types (e.g., doing, saying, being/having, thinking/feeling, reporting), tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., the present perfect to describe previously made claims or conclusions) on a variety of topics.
7	Use a variety of verbs in different tenses (e.g., present, past, future, simple, progressive) appropriate to the text type and discipline (e.g., simple past and past progressive for recounting an experience) on familiar topics.	Use a variety of verbs in different tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., simple present for literary analysis) on an increasing variety of topics.	Use a variety of verbs in different tenses (e.g., present, past, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., the present perfect to describe previously made claims or conclusions) on a variety of topics.
8	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline (e.g., simple past and past progressive for recounting an experience) on familiar topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect) appropriate to the task, text type, and discipline (e.g., the present perfect to describe previously made claims or conclusions) on an increasing variety of topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect), voices (active and passive), and moods (e.g., declarative, interrogative, subjunctive) appropriate to the task, text type, and discipline (e.g., the passive voice in simple past to describe the methods of a scientific experiment) on a variety of topics.

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Expand noun phrases in simple ways (e.g., adding a sensory adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in a variety of ways (e.g., adding comparative/ superlative adjectives to noun phrases or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.	Expand noun phrases in an increasing variety of ways (e.g., adding comparative/superlative and general academic adjectives to noun phrases or more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, things, and the like.
7	Expand noun phrases in basic ways (e.g., adding a sensory adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, and things.	Expand noun phrases in a growing number of ways (e.g., adding adjectives to nouns or simple clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, and things.	Expand noun phrases in an increasing variety of ways (e.g., more complex clause embedding) in order to enrich the meaning of sentences and add details about ideas, people, and things.
8	Expand noun phrases in basic ways (e.g., adding a sensory adjective to a noun) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in a growing number of ways (e.g., adding prepositional or adjective phrases) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.	Expand noun phrases in an increasing variety of ways (e.g., embedding relative or complement clauses) in order to enrich the meaning of sentences and add details about ideas, people, things, and so on.
Applying ELD Standards to Mathematics	In mathematics, oral and written problems may have long noun phrases. Students need to be able to identify what the main noun is and to use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments by		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar activity or process.	Expand sentences with an increasing variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
7	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar activity or process.	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
8	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar activity or process.	Expand sentences with adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a familiar or new activity or process.	Expand sentences with increasingly complex adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
Applying ELD Standards to Mathematics	Students use modifying words and phrases to express their understanding of mathematical concepts with precision.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 6, 7, and 8			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
6. Connecting ideas			
Grade	**Emerging**	**Expanding**	**Bridging**
6	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so*).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday because he had an exam on Monday*), to make a concession (e.g., *She studied all night even though she wasn't feeling well*), or to link two ideas that happen at the same time (e.g., *The students worked in groups while their teacher walked around the room*).
7	Combine clauses in a few basic ways to make connections between and join ideas (e.g., creating compound sentences using *and, but, so;* creating complex sentences using because).	Combine clauses in an increasing variety of ways (e.g., creating compound and complex sentences) to make connections between and join ideas, for example, to express a reason (e.g., *He stayed at home on Sunday in order to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a wide variety of ways (e.g., creating compound, complex, and compound–complex sentences) to make connections between and join ideas, for example, to show the relationship between multiple events or ideas (e.g., *After eating lunch, the students worked in groups while their teacher walked around the room*) or to evaluate an argument (e.g., *The author claims X, although there is a lack of evidence to support this claim*).

Sample Integration of Mathematical and ELD Standards in the Classroom	6.G.2: Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. As students develop formulas, they may begin with concrete examples that lead to more general equations that model situations (MP.4). In the context of solving real-world and mathematical problems involving right rectangular prisms with fractional edge lengths, students may find the volume by packing the prism with unit cubes of the appropriate unit fraction edge lengths. They may relate this method to finding volume (from earlier grades) and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Students may explain the connections between the models to justify applying the formulas $V = lwh$ and $V = bh$ (MP.2). For example, students explain whether or not a shoe box that is 7 1/2 inches wide, 10 inches long, and 5 1/4 inches high could hold a collection of sea shells currently contained in a box that is 6 1/2 inches × 6 inches × 9 1/4 inches. The teacher provides sentence frames, when appropriate, to support students in deepening their mathematical thinking and in extending their use of mathematical language by combining clauses (e.g., "We wanted to find the difference, so we ___. We started with _____, and then we _____. We knew that _____, so we _____. We decided to _____ because _____."). To support students at the Emerging level of English proficiency, the teacher works with a small group to jointly construct mathematical explanations, working toward combining clauses. After the teacher and students have worked together to join clauses, the teacher asks pairs of students to work together to join two statements into one clause using a conjunction that makes sense.
Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics.

8	Condense ideas in simple ways (e.g., by compounding verbs, adding prepositional phrases, or through simple embedded clauses or other ways of condensing as in, This is a story about a girl. The girl changed the world. → This is a story about a girl *who changed the world*) to create precise and detailed sentences.	Condense ideas in an increasing variety of ways (e.g., through various types of embedded clauses and other ways of condensing, as in, Organic vegetables are food. They're made without chemical fertilizers. They're made without chemical insecticides. → Organic vegetables are foods *that are made without chemical fertilizers or insecticides*) to create precise and detailed sentences.	Condense ideas in a variety of ways (e.g., through various types of embedded clauses, ways of condensing, and nominalization as in, They *destroyed* the rain forest. Lots of animals *died*. → The destruction of the rain forest led to *the death of many animals*) to create precise and detailed sentences.
Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		
Sample Integration of Mathematical and ELD Standards in the Classroom	7.EE.4: Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. Working collaboratively, students use variables to write an equation and solve the following word problem: "Vince baked a cake and several batches of cookies this weekend. He used 4 cups of flour to bake the cake, and he used 1/4 cup of flour in each batch of cookies. He used 6 cups of flour altogether for the cake and the cookies. How many batches of cookies did he bake?" As students make sense of the word problem and put it in their own words, they may condense the wording of the problem: for example, "Vince used 6 cups of flour to bake a cake and cookies. He used 4 cups of flour for the cake and 1/4 cup of flour for each batch of cookies." Students may use this condensed wording to help them determine the unknown in the word problem and to write an equation modeling the situation (MP.4). After students have solved the problem, they may use similar condensed clauses to explain their thinking to other groups of students.		
Sample-Specific Standards for Mathematical	MP.4 Model with mathematics.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
1. Exchanging information and ideas			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Engage in conversational exchanges and express ideas on familiar current events and academic topics by asking and answering *yes-no* questions and *wh-* questions and responding using phrases and short sentences.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, providing additional, relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, and providing coherent and well-articulated comments and additional information.
11–12	Engage in conversational exchanges and express ideas on familiar current events and academic topics by asking and answering *yes-no* questions and *wh-* questions and responding using phrases and short sentences.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, providing additional, relevant information, and paraphrasing key ideas.	Contribute to class, group, and partner discussions, sustaining conversations on a variety of age and grade-appropriate academic topics by following turn-taking rules, asking and answering relevant, on-topic questions, affirming others, and providing coherent and well-articulated comments and additional information.
Applying ELD Standards to Mathematics	Working collaboratively provides students opportunities to both develop and display understanding of important mathematical concepts. While focusing on specific mathematical content, students share perspectives, ask and answer questions, examine specific cases, and address misconceptions.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
2. Interacting via written English			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Collaborate with peers to engage in short, grade-appropriate written exchanges and writing projects, using technology as appropriate.	Collaborate with peers to engage in increasingly complex grade-appropriate written exchanges and writing projects, using technology as appropriate.	Collaborate with peers to engage in a variety of extended written exchanges and complex grade-appropriate writing projects, using technology as appropriate.
11–12	Collaborate with peers to engage in short, grade-appropriate written exchanges and writing projects, using technology as appropriate.	Collaborate with peers to engage in increasingly complex grade-appropriate written exchanges and writing projects, using technology as appropriate.	Collaborate with peers to engage in a variety of extended written exchanges and complex grade-appropriate writing projects, using technology as appropriate.
Applying ELD Standards to Mathematics	Students often support their writing in mathematics with graphs, sketches and drawings, or geometric constructions. Sharing their work, students may make generalizations or justify their thinking with step-by-step reasoning.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Compare the effectiveness of plausible arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways A. Collaborative			
3. Supporting opinions and persuading others			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Negotiate with or persuade others in conversations using learned phrases (e.g., *Would you say that again? I think...*), as well as open responses to express and defend opinions.	Negotiate with or persuade others in conversations (e.g., to provide counter-arguments) using a growing number of learned phrases (*I see your point, but...*) and open responses to express and defend nuanced opinions.	Negotiate with or persuade others in conversations in appropriate registers (e.g., to acknowledge new information in an academic conversation but then politely offer a counterpoint) using a variety of learned phrases, indirect reported speech (e.g., *I heard you say X, and I haven't thought about that before. However...*), and open responses to express and defend nuanced opinions.
11–12	Negotiate with or persuade others in conversations (e.g., ask for clarification or repetition) using learned phrases (e.g., *Could you repeat that please? I believe...*) and open responses to express and defend opinions.	Negotiate with and persuade others (e.g., by presenting counter-arguments) in discussions and conversations using learned phrases (e.g., *You make a valid point, but my view is...*) and open responses to express and defend nuanced opinions.	Negotiate with or persuade others in discussions and conversations in appropriate registers (e.g., to acknowledge new information and politely offer a counterpoint) using a variety of learned phrases (e.g., *You postulate that X. However, I've reached a different conclusion on this issue.*) and open responses to express and defend nuanced opinions.
Applying ELD Standards to Mathematics	In making mathematical arguments and critiquing the reasoning of others, students need to connect and/or counter others' ideas, using mathematical justification.		

Sample-Specific Standards for Mathematical Practice	MP.2 Reason abstractly and quantitatively.

Sample Integration of Mathematical and ELD Standards in the Classroom	S-ID.5: Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data. In analyzing and describing data, students use language to present results and interpretations accurately to their classmates or others. In summarizing data in frequency tables, students interpret relative frequencies in the context of the data, and recognize possible associations and trends by looking for patterns in the data. They must communicate this in ways that are understood by their audience. Students may refer to a word wall, created with guidance from the teacher, that includes definitions and diagrams of key terms, such as *relative frequency*, *joint relative frequency*, *marginal relative frequency*, and *conditional relative frequency*.
Sample-Specific Standards for Mathematical Practice	N/A

Sample Integration of Mathematical and ELD Standards in the Classroom	F-IF.9: Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). *For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.* Whether listening to classmates or teachers, students encounter a variety of complex situations, and they must ask and answer questions to learn and to show understanding. For example, when considering two functions represented in different ways, students must be able to compare different properties of the functions. Given a graph of one quadratic function and an algebraic expression for another, students are asked to determine which has the larger maximum. Using a think-pair-share protocol, English learners at the Emerging or early Expanding level of English language proficiency are paired with those at late Expanding or Bridging level, to collaborate to develop and share ideas about the graphs, asking and answering each other questions to clarify their understanding. Each student in a pair then has to explain the thinking of his or her partner. As part of the protocol, students rehearse what they will share with the class, including one question that was answered during the discussion as well as a question the pair was unable to answer, if any.
Sample-Specific Standards for Mathematical Practice	N/A

11–12	a. Explain ideas, phenomena, processes, and text relationships (e.g., compare/contrast, cause/effect, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using phrases, short sentences, and a select set of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia, using familiar verbs (e.g., *seems that*). c. Use knowledge of morphology (e.g., common prefixes and suffixes), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-appropriate texts, presented in various print and multimedia formats, using increasingly detailed sentences, and a range of general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-appropriate texts and viewing of multimedia using a variety of verbs and adverbials (e.g., *indicates that, suggests, as a result*). c. Use knowledge of morphology (e.g., affixes, Greek and Latin roots), context, reference materials, and visual cues to determine the meaning of unknown and multiple-meaning words on familiar and new topics.	a. Explain ideas, phenomena, processes, and relationships within and across texts (e.g., compare/contrast, cause/effect, themes, evidence-based argument) based on close reading of a variety of grade-level texts, presented in various print and multimedia formats, using a variety of detailed sentences and precise general academic and domain-specific words. b. Explain inferences and conclusions drawn from close reading of grade-level texts and viewing of multimedia using a variety of verbs and adverbials (e.g., *creates the impression that, consequently*). c. Use knowledge of morphology (e.g., derivational suffixes), context, reference materials, and visual cues to determine the meaning, including figurative and connotative meanings, of unknown and multiple-meaning words on a variety of new topics.
Applying ELD Standards to Mathematics	a. In mathematics, close reading and viewing are often required in order to determine key details in the context of examining, interpreting, and creating graphs and other models in real-world problem situations. Students use these details when explaining ideas, concepts, and procedures. b. As students analyze situations and draw inferences and conclusions based on data, graphs, or other models, they explain and justify their reasoning. c. Students need to be able to use their morphological knowledge and context (e.g., the words or symbols around an unknown word) to derive the meaning of multiple-meaning words or unknown words in mathematics.		
Corresponding Standards for	MP.1 Make sense of problems and persevere in solving them.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
7. Evaluating language choices			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing evidence to support claims or connecting points in an argument) or create other specific effects, with substantial support.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with moderate support.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with light support.
11–12	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing evidence to support claims or connecting points in an argument) or create other specific effects.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with moderate support.	Explain how successfully writers and speakers structure texts and use language (e.g., specific word or phrasing choices) to persuade the reader (e.g., by providing well-worded evidence to support claims or connecting points in an argument in specific ways) or create other specific effects, with light support.
Applying ELD Standards to Mathematics	When critiquing others' presentations on mathematical topics, students can describe or explain how well the writers or speakers used particular vocabulary or phrasing, for example, to provide a definition or explanation.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. MP.6 Attend to precision. • Try to communicate precisely to others.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways B. Interpretive			
8. Analyzing language choices			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., describing a character or action as *aggressive* versus *bold*) produces nuances and different effects on the audience.	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., using figurative language or words with multiple meanings to describe an event or character) produces nuances and different effects on the audience.	Explain how a writer's or speaker's choice of a variety of different types of phrasing or words (e.g., hyperbole, varying connotations, the cumulative impact of word choices) produces nuances and different effects on the audience.
11–12	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., describing a character or action as *aggressive* versus *bold*) produces nuances or different effects on the audience.	Explain how a writer's or speaker's choice of phrasing or specific words (e.g., using figurative language or words with multiple meanings to describe an event or character) produces nuances and different effects on the audience.	Explain how a writer's or speaker's choice of a variety of different types of phrasing or words (e.g., hyperbole, varying connotations, the cumulative impact of word choices) produces nuances and different effects on the audience.
Applying ELD Standards to Mathematics	When reading or listening to others' presentations on mathematical topics, students can distinguish how the writer's or speaker's selection of particular words or phrases with related meanings (e.g., *divide* versus *partition*) affects the audience's understanding.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve arguments. • Analyze situations by breaking them into cases. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
9. Presenting			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Plan and deliver brief oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas.	Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas by using growing understanding of register.	Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that express complex and abstract ideas well supported by evidence and sound reasoning, and are delivered using an appropriate level of formality and understanding of register.
11–12	Plan and deliver brief oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas.	Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that present evidence and facts to support ideas using growing understanding of register.	Plan and deliver a variety of oral presentations and reports on grade-appropriate topics that express complex and abstract ideas, well supported by evidence and reasoning, and are delivered using an appropriate level of formality and understanding of register.
Applying ELD Standards to Mathematics	Students share their thinking and findings by explaining or describing the mathematics content, providing supporting evidence, and, in many cases, using graphics or demonstrations as part of an oral presentation.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Analyze situations by breaking them into cases. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Integrating CA ELD Standards Augmentation for Mathematics Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
10. Writing			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Write short literary and informational texts (e.g., an argument about water rights) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences by using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument about water rights) collaboratively (e.g., with peers) and independently by using appropriate text organization and growing understanding of register. b. Write increasingly concise summaries of texts and experiences by using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument about water rights) collaboratively (e.g., with peers) and independently using appropriate text organization and register. b. Write clear and coherent summaries of texts and experiences by using complete and concise sentences and key words (e.g., from notes or graphic organizers).
11–12	a. Write short literary and informational texts (e.g., an argument about free speech) collaboratively (e.g., with peers) and independently. b. Write brief summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer literary and informational texts (e.g., an argument about free speech) collaboratively (e.g., with peers) and independently using appropriate text organization and growing understanding of register. b. Write increasingly concise summaries of texts and experiences using complete sentences and key words (e.g., from notes or graphic organizers).	a. Write longer and more detailed literary and informational texts (e.g., an argument about free speech) collaboratively (e.g., with peers) and independently using appropriate text organization and register. b. Write clear and coherent summaries of texts and experiences using complete and concise sentences and key words (e.g., from notes or graphic organizers).
Applying ELD Standards to	a. Students write detailed informational text when they model relationships and solve problems in context, justifying steps in the process and verifying		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
11. Justifying/arguing			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Justify opinions by articulating some relevant textual evidence or background knowledge, with visual support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions and positions or persuade others by making connections between ideas and articulating relevant textual evidence or background knowledge. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would*).	a. Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *possibly/potentially/ certainly/absolutely, should/might*).
11–12	a. Justify opinions by articulating some textual evidence or background knowledge with visual support. b. Express attitude and opinions or temper statements with familiar modal expressions (e.g., *can, may*).	a. Justify opinions and positions or persuade others by making connections between ideas and articulating relevant textual evidence or background knowledge. b. Express attitude and opinions or temper statements with a variety of familiar modal expressions (e.g., *possibly/likely, could/would*).	a. Justify opinions or persuade others by making connections and distinctions between ideas and texts and articulating sufficient, detailed, and relevant textual evidence or background knowledge, using appropriate register. b. Express attitude and opinions or temper statements with nuanced modal expressions (e.g., *possibly/potentially/ certainly/absolutely, should/might*).
Applying ELD Standards to Mathematics	Students may be required to make decisions based on evidence, including use of reasonable estimates of known quantities to find unknown quantities. Students explain procedures, justify solutions grounded in mathematical concepts, and use specified parameters to model situations.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part I: Interacting in Meaningful Ways C. Productive			
12. Selecting language resources			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	a. Use familiar general academic (e.g., *temperature, document*) and domain-specific (e.g., *characterization, photosynthesis, society, quadratic functions*) words to create clear spoken and written texts. b. Use knowledge of morphology to appropriately select basic affixes (e.g., The skull protects the brain).	a. Use an increasing variety of grade-appropriate general academic (e.g., *dominate, environment*) and domain-specific (e.g., *characterization, photosynthesis, society, quadratic functions*) academic words accurately and appropriately when producing increasingly complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a growing number of ways to manipulate language (e.g., diplomat*ic*, stems are branch*ed* or *un*branched).	a. Use a variety of grade-appropriate general (e.g., *anticipate, transaction*) and domain-specific (e.g., *characterization, photosynthesis, society, quadratic functions*) academic words and phrases, including persuasive language, accurately and appropriately when producing complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *humiliate* to *humiliation* or *incredible* to *incredibly*).
11–12	a. Use familiar general academic (e.g., *temperature, document*) and domain-specific (e.g., *cell, the Depression*) words to create clear spoken and written texts. b. Use knowledge of morphology to appropriately select basic	a. Use an increasing variety of grade-appropriate general academic (e.g., *fallacy, dissuade*) and domain-specific (e.g., *chromosome, federalism*) academic words accurately and appropriately when producing increasingly complex written and spoken texts. b. Use knowledge of morphology to appropriately select	a. Use a variety of grade-appropriate general (e.g., *alleviate, salutary*) and domain-specific (e.g., *soliloquy, microorganism*) academic words and phrases, including persuasive language, accurately and appropriately when producing complex written and spoken texts. b. Use knowledge of morphology to appropriately select affixes in a variety of ways to manipulate language (e.g., changing *inaugurate* to *inauguration*).

Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning. • In high school, students have learned to examine claims and make explicit use of definitions.
Sample Integration of Mathematical and ELD Standards in the Classroom	A-SSE.3c: Use the properties of exponents to transform expressions for exponential functions. *For example, the expression 1.15^t can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.* In real-world contexts, students may examine an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression, using the properties of exponents to transform expressions for exponential functions (MP.7). Students read a text that describes a situation where, given a specific annual interest rate, students must use the properties of exponents to approximate the equivalent monthly interest rate. Individually and collaboratively, students read the text, write an expression to represent the annual interest rate, and then use the expression to write an equivalent expression that represents the monthly interest rate. As students work with the expressions, they consider how to create clear and cohesive explanations of their reasoning to present to each other and to the teacher. For example, the expression 1.15^t, which represents an annual interest rate of 15%, can be rewritten as $(1.15^{1/12})^{12t} \approx 1.012^{12t}$. This rewritten expression shows that the equivalent monthly interest rate is approximately 1.2%.
Sample-Specific Standards for Mathematical Practice	MP.7 Look for a make use of structure.

11–12	a. Apply knowledge of familiar language resources for referring to make texts more cohesive (e.g., using pronouns or synonyms to refer back to characters or concepts introduced earlier) to comprehending. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *first, second, finally*) to comprehending and writing brief texts.	a. Apply knowledge of a growing number of language resources for referring to make texts more cohesive (e.g., using nominalizations to refer back to an action or activity described earlier) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *meanwhile, however, on the other hand*) to comprehending texts and to writing increasingly cohesive texts for specific purposes and audiences.	a. Apply knowledge of a variety of resources for referring to make texts more cohesive (e.g., using nominalization, paraphrases, or summaries to reference or recap an idea or explanation provided earlier) to comprehending grade-level texts and to writing clear and cohesive texts for specific purposes and audiences. b. Apply knowledge of familiar language resources for linking ideas, events, or reasons throughout a text (e.g., using connecting/transition words and phrases, such as *on the contrary, in addition, moreover*) to comprehending grade-level texts and writing cohesive texts for specific purposes and audiences.
Applying ELD Standards to Mathematics	As students explain procedures, justify solutions grounded in mathematical concepts, and describe concepts, they use their understandings about how ideas, events, and concepts in a spoken or written text are linked or refer to each other.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to use clear definitions in discussion with others and in their own reasoning.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
3. Using verbs and verb phrases			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline to create short texts on familiar academic topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect) appropriate to the text type and discipline to create a variety of texts that explain, describe, and summarize concrete and abstract thoughts and ideas.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect), and mood (e.g., subjunctive) appropriate to the text type and discipline to create a variety of texts that describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view.
11–12	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive) appropriate to the text type and discipline to create short texts on familiar academic topics.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect) appropriate to the text type and discipline to create a variety of texts that explain, describe, and summarize concrete and abstract thoughts and ideas.	Use a variety of verbs in different tenses (e.g., past, present, future, simple, progressive, perfect), and mood (e.g., subjunctive) appropriate to the text type and discipline to create a variety of texts that describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view.
Applying ELD Standards to Mathematics	Students use a variety of verb types and appropriate verb tenses to express their understanding of mathematical concepts and procedures with precision.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
4. Using nouns and noun phrases			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Expand noun phrases to create increasingly detailed sentences (e.g., adding adjectives for precision) about personal and familiar academic topics.	Expand noun phrases in a growing number of ways (e.g., adding adjectives to nouns; simple clause embedding) to create detailed sentences that accurately describe, explain, and summarize information and ideas on a variety of personal and academic topics.	Expand noun phrases in a variety of ways (e.g., more complex clause embedding) to create detailed sentences that accurately describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view on a variety of academic topics.
11–12	Expand noun phrases to create increasingly detailed sentences (e.g., adding adjectives for precision) about personal and familiar academic topics.	Expand noun phrases in a growing number of ways (e.g., adding adjectives to nouns, simple clause embedding) to create detailed sentences that accurately describe, explain, and summarize information and ideas on a variety of personal and academic topics.	Expand noun phrases in a variety of ways (e.g., complex clause embedding) to create detailed sentences that accurately describe concrete and abstract ideas, explain procedures and sequences, summarize texts and ideas, and present and critique points of view on a variety of academic topics.
Applying ELD Standards to Mathematics	In mathematics, oral and written problems may have long noun phrases. Students need to be able to identify what the main noun is and to use the detailed information around the noun in order to understand the problem. They also need to be able to provide more detail in their explanations and arguments by expanding noun phrases themselves.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works B. Expanding and Enriching Ideas			
5. Modifying to add details			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar activities or processes.	Expand sentences with a growing variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar or new activities or processes.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
11–12	Expand sentences with simple adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar activities or processes.	Expand sentences with a growing variety of adverbials (e.g., adverbs, adverb phrases, prepositional phrases) to provide details (e.g., time, manner, place, cause) about familiar or new activities or processes.	Expand sentences with a variety of adverbials (e.g., adverbs, adverb phrases and clauses, prepositional phrases) to provide details (e.g., time, manner, place, cause) about a variety of familiar and new activities and processes.
Applying ELD Standards to Mathematics	Students use modifying words and phrases to express their understanding of mathematical concepts with precision.		
Corresponding Standards for Mathematical Practice	MP.1 Make sense of problems and persevere in solving them. MP.3 Construct viable arguments and critique the reasoning of others. • Justify their conclusions, communicate them to others, and respond to the arguments of others. MP.6 Attend to precision. • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
6. Connecting ideas			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Combine clauses in a few basic ways (e.g., creating compound sentences using *and, but, so;* creating complex sentences using *because*) to make connections between and to join ideas (e.g., *I want to read this book because it describes the solar system).*	Combine clauses in a growing number of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to express a reason (e.g., *He stayed at home on Sunday in order to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a variety of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to make a concession (e.g., *While both characters strive for success,* they each take different approaches through which to reach their goals.), or to establish cause (e.g., Women's lives were changed forever after World War II *as a result of joining the workforce).*
11–12	Combine clauses in a few basic ways (e.g., creating compound sentences using *and, but, so;* creating complex sentences using *because*) to make connections between and join ideas (e.g., *I want to read this book because it tells the history of Pi*).	Combine clauses in a growing number of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to express a reason (e.g., *He stayed at home on Sunday in order to study for Monday's exam*) or to make a concession (e.g., *She studied all night even though she wasn't feeling well*).	Combine clauses in a variety of ways to create compound and complex sentences that make connections between and link concrete and abstract ideas, for example, to make a concession (e.g., *While both characters strive for success, they each take different approaches to reach their goals*), or to establish cause (e.g., *Women's lives were changed forever after World War II as a result of joining the workforce*).
Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are connected.		

Integrating CA ELD Standards into Mathematics Teaching and Learning Grades 9–10 and 11–12			
CA ELD Standards Part II: Learning About How English Works C. Connecting and Condensing Ideas			
7. Condensing ideas			
Grades	**Emerging**	**Expanding**	**Bridging**
9–10	Condense ideas in a few basic ways (e.g., by compounding verb or prepositional phrases) to create precise and detailed simple, compound, and complex sentences (e.g., *The students asked survey questions and recorded the responses*).	Condense ideas in a growing number of ways (e.g., through embedded clauses or by compounding verbs or prepositional phrases) to create more precise and detailed simple, compound, and complex sentences (e.g., *Species that could not adapt to the changing climate eventually disappeared*).	Condense ideas in a variety of ways (e.g., through a variety of embedded clauses, or by compounding verbs or prepositional phrases, nominalization) to create precise simple, compound, and complex sentences that condense concrete and abstract ideas (e.g., *Another issue that people may be concerned with is the amount of money that it will cost to construct the new building*).
11–12	Condense ideas in a few basic ways (e.g., by compounding verb or prepositional phrases) to create precise and detailed simple, compound, and complex sentences (e.g., *The students asked survey questions and recorded the responses*).	Condense ideas in a growing number of ways (e.g., through embedded clauses or by compounding verb or prepositional phrases) to create more precise and detailed simple, compound, and complex sentences (e.g., *Species that could not adapt to the changing climate eventually disappeared*).	Condense ideas in a variety of ways (e.g., through a variety of embedded clauses, or by compounding verb or prepositional phrases, nominalization) to create precise simple, compound, and complex sentences that condense concrete and abstract ideas (e.g., *The epidemic, which ultimately affected hundreds of thousands of people, did not subside for another year*).
Applying ELD Standards to Mathematics	When explaining their own thinking, or when listening to or reading the explanations or arguments of others, students need to understand how ideas are condensed.		

III. Integrating CA ELD Standards into Science Teaching and Learning

The charts in this section are organized into the elements described in the table below. For each element, the table explains what the element is and is not, along with guidance for how to use it.

Chart Element	What It Is	How to Use It	What It Is Not
CA ELD Standards	The full text of each CA ELD Standard for each grade and for each of the three proficiency levels (CDE, 2014)	Consider how the standard applies to science teaching and learning in classrooms with EL students	***Not:*** Complete information on the organization, structure, or use of the CA ELD Standards
Applying ELD Standards to Science	Additional information to *supplement* the text of each CA ELD Standard, describing how the standard applies to science teaching and learning	Consider how the additional information helps to apply the standard to science teaching and learning in classrooms with EL students	***Not:*** A full version of the standard, rewritten so that it applies to science teaching and learning
Corresponding Science & Engineering Practices	The Science and Engineering Practices (SEPs) that correspond to the Performance Expectations (PEs) selected for the Sample Science/ELD Classroom Close-up	Consider how each SEP applies to designing science units or lessons that correspond to the standard and to the PEs listed. Consider how additional PEs and SEPs might apply in order to integrate this standard into science teaching and learning.	***Not:*** All possible PEs or SEPs that correspond to the standard. The correspondence study cited in the Introduction to this resource typically found several PEs that correspond to each CA ELD Standard.
Sample Integration of Science and ELD Standards in the Classroom	An illustrative *sample* activity or activities that EL students at one grade level in the grade-level grouping could engage in, with a focus on the CA ELD Standard, SEPs, and PEs listed for that grade level	Consider how the sample activity or activities can be adapted for: • science instruction at other grade levels in the grouping; or • EL students at Emerging, Expanding, or Bridging levels of English language proficiency. Standards in Part II should always be used in tandem with standards in Part I. The Part II samples are isolated only for purposes of the organization of the resource.	***Not:*** All knowledge or skills described in the CA ELD Standard, SEPs, or PEs listed; content or strategies for students at all grade levels or all English language proficiency levels; all possible processes, strategies, tasks, or activities related to the sample; a lesson plan; a description of an actual or complete classroom or lesson.
Sample-Specific Science &	Additional SEPs that correspond to the	Consider how each of these SEPs applies to these	***Not:*** All of the PEs or SEPs that correspond to

Index of Science Charts Organized by ELD Standard

Grades K, 1, and 2			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	K	K-ESS3-2*	210
PI.2	1	1-LS1-2 1-LS3-1	212
PI.3	2	2-PS1-4	214
PI.4	2	2-LS2-1	215
PI.5	K	K-ESS2-2	218
PI.6	2	2-ESS1-1	220
PI.7	1	1-ESS1-1	222
PI.8	2	2-PS1-1	224
PI.9	2	2-PS1-2*	226
PI.10	K	K-LS1-1	228
PI.11	2	2-ESS2-2	230
PI.12	K	K-PS2-2*	232
PII.1	K–2	K-2-ETS1-2	234
PII.2	K–2	K-2-ETS1-2	236
PII.3	K–2	K-2-ETS1-3	239
PII.4	K	K-PS3-2* K-2-ETS1-2	241
PII.5	1	1-LS1-2	243
PII.6	1	1-LS1-1*	245
PII.7	1	1-ESS1-1	247

Grades 3, 4, and 5			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	3	3-PS2-3 3-PS2-4	249
PI.2	4	4-ESS3-1	251
PI.3	5	5-LS2-1	253
PI.4	4	4-ESS3-1 3-5-ETS1-2	255
PI.5	3	3-PS2-3 3-PS2-4	257
PI.6	4	4-ESS2-2 4-ESS3-1	260
PI.7	5	5-PS1-1	262
PI.8	4	4-PS4-2	264
PI.9	3	3-LS1-1 3-LS4-2	266
PI.10	4	4-PS3-2 4-PS4-2 4-PS4-3* 4-LS1-1	269
PI.11	3	3-ESS2-1 3-ESS3-1*	271
PI.12	5	5-ESS1-1 5-ESS1-2	273
PII.1	4	4-LS1-1	275
PII.2	4	4-ESS1-1 4-ESS2-1	278
PII.3	5	5-LS2-1	280
PII.4	4	4-ESS3-2*	282
PII.5	4	4-PS3-1	284
PII.6	4	4-PS3-2	286
PII.7	3	3-LS4-3	288

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Index of Science Charts Organized by Grade Level

Grades K, 1, and 2			
ELD Standard	Grade Level	Sample Standard	Page #
PII.1	K–2	K-2-ETS1-2	234
PII.2	K–2	K-2-ETS1-2	236
PII.3	K–2	K-2-ETS1-3	239
PI.1	K	K-ESS3-2*	210
PI.5	K	K-ESS2-2	218
PI.10	K	K-LS1-1	228
PI.12	K	K-PS2-2*	232
PII.4	K	K-PS3-2* K-2-ETS1-2	241
PI.2	1	1-LS-2 1-LS3-1	212
PI.7	1	1-ESS1-1	222
PII.5	1	1-LS1-2	243
PII.6	1	1-LS1-1*	245
PII.7	1	1-ESS1-1	247
PI.3	2	2-PS1-4	214
PI.4	2	2-LS2-1	215
PI.6	2	2-ESS1-1	220
PI.8	2	2-PS1-1	224
PI.9	2	2-PS1-2*	226
PI.11	2	2-ESS2-2	230

Grades 3, 4, and 5			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	3	3-PS2-3 3-PS2-4	249
PI.5	3	3-PS2-3 3-PS2-4	257
PI.9	3	3-LS1-1 3-LS4-2	266
PI.11	3	3-ESS2-1 3-ESS3-1*	271
PII.7	3	3-LS4-3	288
PI.2	4	4-ESS3-1	251
PI.4	4	4-ESS3-1 3-5-ETS1-2	255
PI.6	4	4-ESS2-2 4-ESS3-1	260
PI.8	4	4-PS4-2	264
PI.10	4	4-PS3-2 4-PS4-2 4-PS4-3* 4-LS1-1	269
PII.1	4	4-LS1-1	275
PII.2	4	4-ESS1-1 4-ESS2-1	278
PII.4	4	4-ESS3-2*	282
PII.5	4	4-PS3-1	284
PII.6	4	4-PS3-2	286
PI.3	5	5-LS2-1	253
PI.7	5	5-PS1-1	262
PI.12	5	5-ESS1-1 5-ESS1-2	273
PII.3	5	5-LS2-1	290

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Index of Science Charts Organized by ELD Standard Across Grade Levels (K–12)

ELD Standards PI.1–PI.4			
ELD Standard	Grade Level	Sample Standard	Page #
PI.1	K	K-ESS3-2*	210
PI.1	3	3-PS2-3 3-PS2-4	249
PI.1	6	MS-LS1-3	290
PI.1	9–12	HS-ESS2-1	335
PI.2	1	1-LS1-2 1-LS3-1	212
PI.2	4	4-ESS3-1	251
PI.2	6	MS-LS1-5	292
PI.2	9–12	HS-ESS1-2	336
PI.3	2	2-PS1-4	214
PI.3	5	5-LS2-1	253
PI.3	6	MS-PS3-5	294
PI.3	9–12	HS-PS4-3	339
PI.4	2	2-LS2-1	215
PI.4	4	4-ESS3-1 3-5-ETS1-2	255
PI.4	6	MS-ESS2-6	296
PI.4	9–12	HS-LS2-6	341

ELD Standards PI.5–PI.8			
ELD Standard	Grade Level	Sample Standard	Page #
PI.5	K	K-ESS2-2	218
PI.5	3	3-PS2-3 3-PS2-4	257
PI.5	7	MS-PS1-2	298
PI.5	9–12	HS-ESS2-5	343
PI.6	2	2-ESS1-1	220
PI.6	4	4-ESS2-2 4-ESS3-1	260
PI.6	7	MS-LS2-1	302
PI.6	9–12	HS-PS4-4	346
PI.7	1	1-ESS1-1	222
PI.7	5	5-PS1-1	262
PI.7	7	MS-PS1-3	304
PI.7	9–12	HS-ESS3-3	348
PI.8	2	2-PS1-1	224
PI.8	4	4-PS4-2	264
PI.8	6, 7, 8[11]	MS-ETS1-3	306
PI.8	9–12	HS-PS1-4	350

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

[11] This PE is at all grade levels in the integrated model. The sample is related to a grade 6 PE.

ELD Standards PII.3–PII.5			
ELD Standard	Grade Level	Sample Standard	Page #
PII.3	K–2	K-2-ETS1-3	239
PII.3	5	5-LS2-1	280
PII.3	8	MS-LS4-1	323
PII.3	9–12	HS-PS2-1	366
PII.4	K	K-PS3-2* K-2-ETS1-2	241
PII.4	4	4-ESS3-2*	282
PII.4	8	MS-LS4-2	325
PII.4	9–12	HS-LS1-2	368
PII.5	1	1-LS1-2	243
PII.5	4	4-PS3-1	284
PII.5	7	MS-ESS2-2	327
PII.5	9–12	HS-ESS2-1	370

ELD Standards PII.6–PII.7			
ELD Standard	Grade Level	Sample Standard	Page #
PII.6	1	1-LS1-1*	245
PII.6	4	4-PS3-2	286
PII.6	6	MS-PS3-4	329
PII.6	9–12	HS-ESS3-1	372
PII.7	1	1-ESS1-1	247
PII.7	3	3-LS4-3	288
PII.7	7	MS-LS2-5*	332
PII.7	9–12	HS-LS2-3	374

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Applying ELD Standards to Science	Students engage in class, small-group, and partner conversations where they ask and respond to questions, build on others' ideas, and work collaboratively to define problems, plan and carry out investigations, construct explanations, and design solutions.
Corresponding Science & Engineering Practices	1. Asking questions (K-ESS3-2*)
Sample Integration of Science and ELD Standards in the Classroom	Students have been collecting local weather data on a daily calendar. They work as a whole group near a large chart that shows labeled images of various types of severe weather (different from those on the daily calendar) and view a video of severe weather (such as heavy rain and wind, blizzard, or heavy snowstorm). Students explore the phenomena, asking questions about the purpose of weather forecasting and how to respond to severe weather in their locality (K-ESS3-2*). For example: "What if the forecast were this type of weather for our community?"; "What would be problems for our community if we had this type of weather?"; "What things could we do to prepare for this type of weather?"; "How can forecasting the weather help us prepare and be ready for severe weather?" The teacher supports English learners at the Emerging and Expanding levels of English language proficiency in asking and answering these questions, by providing sentence frames (e.g., "If ____, then we could ___."; "We should ___ if ___."). The teacher encourages students to refer to the labeled images of weather when they ask and answer questions. When necessary, the teacher asks probing questions and recasts students' responses, affirming their ideas and helping them use vocabulary and structure their statements in ways appropriate for a science discussion.
Sample-Specific Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering)

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (1-LS3-1) 8. Obtaining, evaluating and communicating information (1-LS1-2)
Sample Integration of Science and ELD Standards in the Classroom	The teacher writes a focus question, such as "What behaviors do parents or offspring exhibit to help their offspring survive?" on the board. Small groups of students rotate through assisted stations to read grade-appropriate texts or use media to obtain scientific and technical information to determine patterns in evidence about parents' and offspring's behaviors that help offspring survive (e.g., chirping, crying, calling) and the responses of parents (e.g., feeding, comforting, and protecting the young) (1-LS1-2). They engage in oral and written exchanges to build evidence that young plants and animals are similar to, but not exactly like, their parents (1-LS3-1), and use thinking maps, drawing, and writing to provide detail about parents' and offspring's interactions and their characteristics.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data

Applying ELD Standards to Science	Students participate in collaborative conversations where they engage in the design and use of models about a phenomenon, process solutions, and collect evidence. During these conversations, they construct claims and support them with reasons and evidence, working collaboratively and taking turns to critique explanations or solutions proposed by their peers, citing relevant evidence. In order to persuade others that their arguments are reasonable and supported by evidence, they may gain and/or hold the floor, provide counterarguments respectfully, or elaborate on a peer's ideas.
Corresponding Science & Engineering Practices	7. Engaging in argument from evidence (2-PS1-4)
Sample Integration of Science and ELD Standards in the Classroom	Students work in small groups to construct an argument that some changes caused by heating or cooling can be reversed and some cannot (2-PS1-4). The students have observed plants growing both in the classroom and outdoors, and they ask questions about the changes that they see (e.g., the effect of frost and heat on leaves of plants). They have built charts to track plant growth, and they collectively record any changes that are due to extreme temperature conditions. The students build on these experiences by observing, comparing, and recording findings, from video footage, readings, and demonstrations, on the effects of temperature on other materials (e.g., eggs, butter, paper), in order to formulate claims about reversal of changes on materials by heating and cooling, based on the evidence.
Sample-Specific Science & Engineering Practices	1. Asking questions 4. Analyzing and interpreting data 5. Using mathematics and computational thinking

Sample-Specific Science & Engineering Practices	1. Asking questions 4. Analyzing and interpreting data 8. Obtaining, evaluating, and communicating information

Sample Integration of Science and ELD Standards in the Classroom	Students use and share pictures and drawings, and observe and listen to read-alouds about natural events, to construct an argument, supported by evidence, about how plants and animals (including humans) can change the environment to meet their needs (K-ESS2-2). They sequence events and compare predictions (based on prior experiences, such as having picked fruit from a tree to eat or having collected and used water from different sources for different purposes) to what occurred (observable events), such as seeing birds gathering materials to build nests and drinking water from puddles, squirrels storing food, and tree roots breaking the concrete of sidewalks. As they work as a class and in small groups, they ask questions of one another and respond to others in order to identify details and patterns that support their claims.
Sample-Specific Science & Engineering Practices	1. Asking questions 8. Obtaining, evaluating, and communicating information

Applying ELD Standards to Science	Students obtain and combine information from print and digital sources to explain phenomena and to support analysis, reflection, and research. They observe experiences and read closely to evaluate the need for further information and the quality of the information source, and to explain and predict phenomena.
Corresponding Science & Engineering Practices	6. Constructing explanations (for science) and designing solutions (for engineering) (2-ESS1-1)
Sample Integration of Science and ELD Standards in the Classroom	Students read a text comparing time periods (e.g., an instant vs. their age vs. centuries). They work as a class and in small groups to make observations (firsthand or from media) to construct an evidence-based account for Earth events that occur quickly (e.g., earthquakes) or slowly (e.g., rock erosion) (2-ESS1-1). The students participate in collaborative investigations, such as tumbling various types of rocks in plastic tubs with water to see if any changes occur, and compare these investigations to a water-table model of erosion (using different soil types and/or different amounts of water) and/or video footage of mudslides, volcanoes, earthquakes, and beach erosion. Using key academic vocabulary that the teacher has posted on a word wall, students have conversations in which they provide detailed descriptions and analysis of their observations of text and images, as well as class collaborative and individually recorded ideas, to formulate clarification questions, provide summaries, and share results. The teacher provides various supports during these activities for the students at the Emerging level of English proficiency. For example, during the reading activity, the teacher shows pictures and other labeled graphic representations of the concepts to help students understand. After the reading activity during designated ELD time, the teacher works with the students to "unpack" the meaning of a key complex sentence within the text.
Sample-Specific Science & Engineering Practices	2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data

Sample Integration of Science and ELD Standards in the Classroom	Students use observations and daily firsthand recordkeeping of the sun (where it is in the sky at different times of the day; the changes in a shadow throughout the day) and moon (where it is in the night sky in relation to the student's house), and use media and observations about the stars to describe patterns that can be predicted (1-ESS1-1). They share the recorded information, via charts, pictures, and writings, to compare predictions and analyze the patterns of these phenomena. They use sentence frames to analyze the patterns: for example, "Today at ___, the sun will be ____ in the sky." As students report patterns of motion of the sun, moon, and stars in the sky, they select specific language needed for clarity, and can analyze other writers' use of language. For example, students can describe the choice of verbs in a statement describing what happens when the sun and the moon move across the sky: they "appear to *rise* in one part of the sky, and *move across* the sky, to *set* in another part of the sky." To support students at the Emerging level of English proficiency, the teacher selects key verbs and spends time teaching the meaning of these verbs in vocabulary lessons. The teacher also asks students specific questions, such as "What verbs does the author use?" and, when necessary, verbally supports students when they respond.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 8. Obtaining, evaluating, and communicating information

Sample Integration of Science and ELD Standards in the Classroom	As small groups of students engage in analysis of different kinds of materials, they record the observable properties of the materials and communicate their findings with others (2-PS1-1). For example, as students observe different textured soil materials, they may cluster them by the texture, color, size, and type of materials that the materials contain. During the process, they may encounter multiple ways to describe the texture of a rough, sandy soil as they compare it to the texture of planting soil, which is softer; when given varied types of sand grains, they may need to further identify words with similar meanings in order to more accurately describe their samples. During a gallery walk to view how other groups have organized their information, students identify words that their groups had not used, to add to their group's glossary.
Sample-Specific Science & Engineering Practices	4. Analyzing and interpreting data 8. Obtaining, evaluating, and communicating information

	summary concluding statements, using sentence starters such as "The finer the grain size, the more _____." or "The larger the grain size, the more ____."
Sample-Specific Science & Engineering Practices	3. Planning and carrying out investigations 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information

* The Performance Expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.

Applying ELD Standards to Science	Students write a variety of science texts, such as explanatory reports or descriptive paragraphs, and create charts, tables, and diagrams as relevant to the task.
Corresponding Science & Engineering Practices	4. Analyzing and interpreting data (use observations to describe patterns) (K-LS1-1)
Sample Integration of Science and ELD Standards in the Classroom	Students view and explore what plants and animals (including humans) need in order to survive (K-LS1-1), and record their observations and write analyses. For example, students observe how plants in different environments (e.g., one plant near a window and another in a dark corner) grow, recording their observations on a T chart and writing a summary of their conclusions.
Sample-Specific Science & Engineering Practices	1. Asking questions 3. Planning and carrying out investigations 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering)

Sample Integration of Science and ELD Standards in the Classroom	In small groups, students engage in developing models to represent the shapes and kinds of land and bodies of water in an area (2-ESS2-2). Each group examines graphics of a different type of landscape, labeling and writing brief text explanations on the location and characteristics of the area. Students collaborate and plan with their peers, utilizing the image and text evidence to support their choices for the materials, size, and process that they use to develop their models. After creating their models, students briefly explain in writing why they chose the materials they did and why they built the model the way they did. Before the students write, the teacher leads them through examining a text with a similar structure so students can see the way an author introduces the choices and supports them with reasons and evidence (e.g., "We chose to use crumpled paper to show mountains because we can make them tall and jagged. Mountains in real life are tall and jagged.") In order to support students at the Emerging level of English proficiency, the teacher pulls a small group and co-constructs an explanation with them, taking ideas from the students while recasting and asking probing questions to strengthen the writing.
Sample-Specific Science & Engineering Practices	7. Engaging in argument from evidence