



# Language Development Workbook

DRAFT

*CaMSP – Preparing for Success in Algebra*



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# Beginning Language Learners



# CaMSP Language Development DRAFT

## **Beginning Language Learners**

### **4<sup>th</sup> – 12<sup>th</sup> Grade**

Students in upper elementary and secondary classrooms who are at a beginning proficiency level need to be appropriately placed in stand-alone, accelerated intensive intervention programs. It is essential that language learners have the opportunity to rapidly gain the skills and knowledge necessary to be successful in grade-level content classrooms. Many students, however, will be placed in core mathematics classrooms. It is necessary to provide language support along with content support in order for beginning language learners to access the curriculum. Following are resources and activities to support English learners at the beginning level in mathematics classrooms.

## **Language Skills That Beginners Need In Order To Develop Academic Language**

### Foundational Language

*Turn to see examples for each of these subcategories:*

- **Listening / Speaking**
- **Reading**
- **Grammar**
- **Vocabulary**

## Listening / Speaking Skills

Listening	Why is this skill important?	Why is this skill a challenge?
Beginning language students must learn to listen carefully so that they can begin to use the language learned in their classrooms and in activities such as explaining mathematical concepts and defining key mathematical terms.	Oral language activities are important as students are learning a new language and hearing words and structures for the first time. Students need to develop effective listening skills for future learning.	Students in mathematics classrooms may have limited proficiency in oral English; many students seem to understand their instructors and classmates when they really do not.

### Some Activities to Teach Listening Skills:

- **Matching Game:** Students match a number of pictures to their descriptions, which are read aloud by the teacher. Advanced students could work with beginning students.
- **Hand's Up!:** Teachers write four to six questions related to a reading passage on the board. Teachers read a passage aloud. As the passage is read aloud, the students hear information that answers one of the questions. When they hear the information, they raise their hands. The questions are in the same order as the information in the text.
- **Picture Dictation:** Students receive a series of pictures pertaining to the lesson. They are out of order. As the teacher reads the passage, the students put the pictures in order. Then they summarize the passage to a partner. Teachers can encourage the use of specific structures or words by providing word lists or sentence stems. Again, advanced language students could work with beginning students.
- **Sage and Scribe:** All students independently complete various mathematical tasks or problems. Student pairs are formed. Target vocabulary words are written in the left column of a chart. For lower grades, the teacher can fill in the words. The two students write their names across the top. One student explains half of the completed task or a given problem to the other student as he or she tallies on the chart each time a target word is used in the explanation. Students keep talking until all target words have been used. The other student then takes a turn doing the same.
- **Sentence Builders:** Students fold a piece of paper into 9 squares. They then pick 9 words from the target vocabulary list and place a word into each of the 9 squares. Finally, they create a sentence using the 3 words on each vertical column, each horizontal row, and both diagonals for a total of 8 sentences.

Oral Communication / Speaking	Why is this skill important?	Why is this skill a challenge?
<p>Students at the beginning level are acquiring a new language. Some of the students will have few if any oral English skills.</p>	<p>Students learning English for the first time must first learn basic language skills, such as <i>Hello. How are you? This is my address. Excuse me. I do not understand. Please say that again.</i></p>	<p>Students may lack opportunities to communicate orally in English. Students may rarely hear or use phrases such as <i>Please repeat. Could you give me an example? Please define that term.</i> Yet they have a great need for certain words and expressions in certain circumstances in order to improve their English and mathematics skills or to communicate basic needs.</p>

Some Activities to Teach Oral Communication / Speaking:

- Provide continuous opportunities for oral practice when teaching basic and even academic vocabulary.
- Use partner work to provide students oral practice, e.g., describing, explaining, comparing and analyzing the mathematical concepts discussed in their lessons and textbooks. Create scenarios for students that put them into real life situations that require mathematical vocabulary and have students act through the scenario (example: Pizza is on sale. The sale is that you can buy two pizzas for \$8 total and then get a third pizza for free. How much would each one cost?)
- Corrective recasting: If the student uses the wrong verb tense, for example, the teacher repeats the statement, modeling the correct verb tense and then asks the student to answer again using correct grammatical structure.

## Reading

Reading	Why is this skill important?	Why is this skill a challenge?
<p>Beginning language learners are just developing the ability to read. They need to learn to read basic types of text fluently and accurately. Those who lack phonemic awareness, decoding, vocabulary, fluency and comprehension skills must develop these skills in order to become fluent readers.</p>	<p>Reading failure has long- term consequences, not only for school performance but also for the student's self-confidence and motivation to learn. Reading is the "gateway" skill that will open up a world of knowledge for the student. Reading deficits negatively impact every other content area, including mathematics.</p>	<p>Learning to read is complex. A student must master both the sound/symbol relationships and the skill of blending sounds. The student must be able to decode the text at a fluent rate with a level of automaticity that allows for comprehension. The student must acquire sufficient vocabulary to be able to use words correctly to speak, read and write. The student must master text comprehension skills in order to understand and access mathematics specific information.</p>

Some Activities to Teach Reading:

*Fluency: The ability to read text accurately and quickly.*

- Repeated Reading: Students repeatedly read passages from mathematics text with guidance from teacher.
- Shadow Reading: Students read a short passage silently while the teacher reads the passage aloud. Then, the teacher and the students read the same passage aloud together. This is called "Shadow Reading" as the students attempt to follow the teacher's pronunciation, stress patterns, and intonation patterns. This type of repeated reading promotes fluency.
- Exercises: Students practice reading the key words introduced in the mathematics curriculum orally.
- Choral Reading Activities: Students read chorally after their instructors.
- Partner Reading Activities: Students practice reading texts with partners.

*Comprehension: The ability to read with understanding.*

- Partner activities: There are many partner activities. Here is an example. Students explain to a partner the key points of a word problem or text with the support of graphics and symbols.
- Questioning: Students answer the teacher's questions about a mathematics problem or text, using pictures, graphics and symbols to support their understanding.
- Comprehension checks: Beginning students need frequent comprehension checks to ensure that language is not limiting access to the mathematical content. Using white boards, retelling, and summarizing are all ways a teacher might do a quick check of reading comprehension.

## Grammar

Grammar	Why is this skill important?	Why is this skill a challenge?
Beginning students learn the basic grammatical features of the English language, beginning with the present tense and simple sentences.	Beginning level students can progress quickly if mathematics teachers support their grammatical development as it applies to mathematics.	Students need to convey content knowledge and use language to discover new ideas and understand challenging content. Without attention to language features, students will often plateau and not progress to higher levels of content knowledge. Mathematical problems offer certain past tense verbs, complex sentence structures and multiple prepositional phrases that beginning students do not understand.

### Some Activities to Teach Grammar:

- **Sentence Frames:** A sentence frame consists of a sentence with some part of the sentence missing. Students can fill in the blanks orally as a group, chorally, or individually. Sentence frames teach structures in sentences.
  - *How do you define \_\_\_\_\_ (mathematical term, ex., square, circle)*
- Teachers represent a sentence by writing blanks on the board (ex, A \_\_\_\_\_ is \_\_\_\_\_.)

**Chants/Songs/Poetry:** Age appropriate texts with repetitive structures such as chants, songs and poetry are taught to students to increase students' exposure to specific grammatical features and to help them remember key mathematical concepts.

- **Read Alouds:** Reading mathematical word problems aloud allow the teacher to discuss a reading and the structure used and give students the opportunity to practice using the structure as they retell the problem.
- **Questions/Answers:** Teachers structure questions that elicit specific structural features to give students practice using the features:
  - *Is two an odd number or an even number?*
  - *Is two a fraction or a whole number?*

## Vocabulary

Vocabulary	Why is this skill important?	Why is this skill a challenge?
Beginning students are learning basic everyday vocabulary as well as some academic language terms in mathematics.	The ability to understand and use the words and symbols in mathematical texts is a gateway skill. Students who do not know these words will be unable to understand their textbooks and lessons. To close the achievement gap, students must have accelerated vocabulary instruction in order to gain a conceptual understanding of mathematics.	Students often do not receive exposure to academic words outside of school. Beginning students have just learned to read English and have only acquired the basic, high frequency words of everyday speech.

### Some Activities to Teach Vocabulary:

- Teachers teach mathematics vocabulary systematically, encouraging students to read words and use them in a variety of contexts. They provide direct, structured instruction, scaffolding both whole group and pair learning with word learning strategies through the four language skills - reading, writing, speaking, and listening. They ask students to repeat words after them several times to give them the opportunity to hear and practice the words and stress patterns.
- To know students are learning new mathematical words, teachers encourage them to use the words they are learning in their speech and writing. They provide students with many opportunities to talk and write about mathematics. They scaffold their students' oral communication by providing them with lists of useful words they can use when describing, explaining, comparing and analyzing mathematical concepts and problems in pairs, small groups and whole groups. Getting students to write about these concepts also reinforces words and clarifies misconceptions concerning word use. Teachers scaffold the students' written use of words by giving assignments that call on students to use the vocabulary. Teachers explicitly model and teach how to use the vocabulary correctly.
- Mathematics teachers teach beginning level students 4-5 new words each day. The 4-12 teachers teach at least 4-5 words in each content class. The words should be chosen in terms of usefulness, ease of learning, and frequency of occurrence in the mathematics lesson. The teachers build the students' background knowledge to allow the students to associate the new words with their experience.

# Intermediate Language Learners



# CaMSP Language Development DRAFT

## Intermediate Language Learners

### 4<sup>th</sup> – 12<sup>th</sup> Grade

The majority of language learners in secondary mathematics classrooms are at the intermediate and advanced stage of language development. These students may have strong conversational English but lack a command of the academic vocabulary and language features necessary to master and manipulate math content. The result is that they are unable to reclassify as English proficient, often doing poorly on standardized tests, and losing confidence and interest in academics. Skillful instruction in vocabulary and complex language features **by all content teachers** is necessary in order to adequately address the needs of language learners at the intermediate level. If this is done directly and consistently, significant gains can be made in math achievement and students can be reclassified as proficient in the English language. More importantly students will have the foundational language skills necessary to succeed in increasingly complex math classrooms at upper elementary and secondary level.

### Language Skills That Intermediates Need In Order To Develop Academic Language

*Turn to see examples for each of these subcategories:*

- **Listening / Speaking**
- **Reading**
- **Grammar**
- **Vocabulary**

## Vocabulary

Vocabulary	Why is this skill important?	Why is this skill a challenge?
<p>At the intermediate level of language proficiency, students expand their academic words—words that are commonly used across all content areas. They also learn content-specific words.</p> <p>They are introduced to Latin and Greek roots, figurative language, analogies, connotation, and denotation.</p>	<p>The ability to understand and use words is a gateway skill. Students who do not know mathematics vocabulary will be unable to understand their textbooks. To close the achievement gap, students require accelerated vocabulary instruction.</p>	<p>Students do not receive much exposure to academic words outside of school. Many have just learned to read English and have only acquired the basic, high frequency words characterizing everyday English.</p>

### Some Activities to Teach Vocabulary:

- Teachers teach high level (academic) vocabulary systematically, encouraging students to read words and use them in a variety of contexts. They provide direct, structured instruction, scaffolding, group and pair learning, and word learning strategies through the four language skills: reading, writing, speaking, and listening. They ask students to repeat words after them several times to give them the opportunity to hear and practice the words and stress patterns.
- Teachers incorporate an explicit focus on word use into their instruction, teaching students about words whenever the occasion arises by discussing related words and word families (*assign-assignment*), playing synonym/antonym guessing games (*compute-calculate, apply-use, find-determine, include-exclude, positive-negative, prime-composite*) and teaching word connotations. They also deepen their students' comprehension of the ways mathematic text is structured by pointing out the vocabulary that signals relationships such as cause and effect (*as a result, when, because, while, so*), comparison and contrast (*alike, as, like, in contrast, differ, different from, on the one hand, on the other hand, same, similar to*), and generalization (*in general, to conclude*). In addition, they point out collocations, fixed words and expressions that go together (*write a paragraph ABOUT something, think ABOUT something, smallest TO largest*).
- To know students are learning new words, teachers encourage them to **use** the words they are learning from their reading in their mathematics textbooks. They scaffold their ELs' oral communication by providing them with lists of useful mathematic words they can use when reading and explaining in pairs, brainstorming, and discussing word problems. Getting students to write about their mathematical conceptual understanding also reinforces words and clarifies misconceptions concerning word use. Teachers scaffold the students' written use of words by giving them assignments that call on them to use the words in their lessons and teaching them how to use these words correctly.

## Grammar

Grammar	Why is this skill important?	Why is this skill a challenge?
<p>At an intermediate level, students learn to use the basic grammatical features of the English language, as well as an expanded list of these features. Students learn to form grammatically correct kernel sentences (subject-verb, S-V; subject-verb-object, S-V-O) with correct subject-verb agreement and learn to identify and use nouns, articles, pronouns, adjectives and verbs. They learn to form complex sentences in speech and writing and to understand them in reading and listening. They learn to correctly place clauses and phrases and to write compound subjects and predicates. They are introduced to relative pronouns (that, who, which), and transitive verbs that require objects (such as kicks –John kicks the ball) and intransitive verbs that do not require an object (such as sleeps – John sleeps). They learn to use past tense verbs.</p>	<p>Students who do not know how to form complex sentences in English will have difficulty accessing their mathematics textbook passages and conveying ideas and needs accurately and precisely in academic English.</p>	<p>Students are not exposed to sentence complexity outside of their classes; they may often hear their classmates use simple and/or grammatically incorrect sentences. Peers rarely provide learners with an intermediate level of proficiency with sufficient feedback on their language use. Students may transfer the sentence structure of Spanish or dialects of English into academic English, and this may result in ungrammatical sentences. Students may plateau in their language development if they do not learn the grammatical features that are required to convey concepts accurately in academic English.</p>

### Some Activities to Teach Grammar:

- Before students are asked to read passages from mathematics texts teachers can help students understand a complex sentence structure that might confuse them when they encounter it in their reading. They can write sample sentences that contain the structure from the textbook on the board. They can prompt students to break the sentences up into smaller sentences that have the same meaning.
- Preparing Students for Reading: Before making a reading assignment, teachers can help students understand that adjectives and adverbial forms such as *almost, probably, never, exactly, unless, hardly, scarcely, rarely, next, not quite, last, older, younger, most, many, less, longer, least, and higher* modify the meanings of sentences and words.
- Teachers can ask students to circle common words used to combine clauses, resulting in complex sentences, including:
  - Time: when, before, after
  - Place: where
  - Cause: because, since

## Listening/Speaking

Listening/Speaking Skills	Why is it important?	Why is it a challenge?
<p>Intermediate language learners understand and follow some complex, multi-step oral directions. The intermediate language learner uses a broader range of vocabulary and syntax appropriate to setting and purpose, with gaps in communication. They explain coherently, based on a picture sequence, using phrases and incomplete sentences. They learn to understand the ways words are used to convey meaning and/or organize language in listening and speaking. They learn to use past tense verbs.</p>	<p>Oral language activities are important as students are acquiring higher academic language and listening to mathematics language. Students may plateau in their language development if they do not learn the language features of math that are required to convey concepts accurately in academic English.</p>	<p>Students may lack opportunities to communicate orally in English. Students can often convey their needs in simple sentences. Students are beginning to hear phrases such as My idea is similar to..., I hypothesize.... They need models of language use in mathematics and to participate in discussions that require the use of mathematical language. Students are not exposed to sentence complexity outside of their classes; they may often hear their classmates use simple and/or grammatically incorrect sentences. Peers rarely provide learners with an intermediate level of proficiency with sufficient feedback on their language use. Students may transfer the sentence structure of Spanish or dialects of English into academic English, and this may result in ungrammatical sentences.</p>

Some Activities to Teach Listening/Speaking:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## Reading

Reading	Why is this skill important?	Why is this skill a challenge?
<p>Intermediate language students typically understand some complex vocabulary and syntax, with occasional gaps in comprehension.</p> <p>At the intermediate level of language proficiency, students demonstrate knowledge of simple synonyms, antonyms, and simple root words; identify the correct meaning of a word in a math context; recognize the sequence of events in a reading passage; begin to decode and use word-attack skills, such as sound pairs and prefixes; and make inferences and draw conclusions from reading passages.</p>	<p>Reading failure has long-term consequences, not only mathematics performance, but also for students' self-confidence and motivation to learn. Reading is the "gateway" skill that will open up a world of knowledge for the student. Reading negatively deficits negatively impact every other content area, including mathematics.</p>	<p>Learning to read is complex, especially for intermediate language learners who tend to plateau in their reading comprehension if they do not learn the reading skills that are required to understand and explain the mathematical concepts of word problems.</p>

### Some Activities to Teach Reading:

- Teacher conducts read-alouds, and guided-reading
- Ear to Ear Reading: In pairs, student A reads a word problem and student B listens. After student A reads, student B asks student A questions about the word problem. Then, students switch roles.



# Advanced Language Learners



## CaMSP Language Development DRAFT

### Advanced Language Learners

#### 4<sup>th</sup> – 12<sup>th</sup> Grade

The majority of language learners in upper elementary and secondary classrooms are at the advanced stage of language development. These students may have strong conversational English, but they lack a command of the academic vocabulary and language features necessary to master and manipulate content. The result is that they are unable to reclassify as English proficient, often doing poorly on standardized tests, and losing confidence and interest in academics. Skillful instruction in vocabulary and complex language features **by mathematics teachers (and all other content teachers)** is necessary in order to adequately address the needs of language learners at the advanced level. If this is done directly and consistently, significant gains can be made and students can be reclassified as proficient in the English language. More importantly, students will have the foundational language skills necessary to succeed in increasingly complex content classrooms at the secondary level.

### Language Skills That Advanced Language Learners Need In Order To Develop Academic Language

*Turn to see examples for each of these subcategories:*

- **Listening / Speaking**
- **Reading / Writing**
- **Grammar**
- **Grammatical Complexity**
- **Vocabulary**
- **Discourse**

## Listening/Speaking

Listening/Speaking	Why are these skills important?	Why are these skills a challenge?
<p>At the advanced level of language learning, students are learning to participate in a wide range of conversations, both social and academic. They are mastering the ability to listen critically with understanding to long stretches of academic texts and to communicate their ideas precisely and accurately in speech. Their extensive knowledge of vocabulary, grammar and discourse features enables them to understand most oral communication. This knowledge also allows them to communicate orally with complete, complex sentences that are appropriate in a variety of academic settings. In addition, the knowledge enables them to achieve a variety of communicative goals.</p> <p>Advanced language learners continue to develop their skills at listening accurately and understanding and attending to the academic language that they hear. Students at this level are expected to have mastered all of the skills at the lower levels, and they are now expected to be able to understand complex academic texts that they hear and to communicate in speech accurately and precisely in academic settings. They often require instructional support to use specific mathematical words, complex sentence structures, and discourse features correctly in their speech.</p>	<p>Students who do not know how to listen critically and with understanding to a wide range of texts—such as mathematical discussions, inquiries, explanations, directions and instructions, and reports—will have difficulty gaining a high level of success in mathematics. Those who are unable to convey their ideas accurately in speech with correct vocabulary, grammatical features and discourse will have difficulty discussing mathematics concepts critically, and displaying their understanding of these concepts in their oral communication. They will have difficulty communicating ideas accurately and precisely, using the language of mathematics.</p>	<p>Students often listen to the gist of discussions without understanding their precise meanings. Teachers might assume that their students understand what they (the teachers) say, when the students only have a superficial understanding of what their teachers actually say.</p> <p>Students are not exposed to the language of mathematics outside of their classes; they may often hear their classmates use simple and/or grammatically incorrect sentences.</p> <p>Students lack opportunities to engage in academic discussions about mathematics outside of their mathematics classrooms. Teachers may be reluctant to give advanced-level students much feedback or instruction concerning their oral communication skills. However, without instruction or feedback, students may not advance further in their ability to communicate accurately in a range of academic situations.</p>

### Some Activities to Teach Speaking and Listening:

- Before asking students to listen to an explanation or discussion about a mathematics concept, teachers can direct students' attention to specific language features or meanings of words and sentences that the students might not attend to or that might confuse them when they encounter them. For instance, they might write specific words, word definitions, and sentences that the students will hear on the board. They can prompt students to focus on specific features of language. They can give students cloze passages and ask the students to complete them as they hear their teachers read the passages orally. They can ask students to take notes and write summaries of their oral explanations to make sure that the students understood all the subtle messages contained in the explanations. Teachers can ask students to complete graphic organizers as the students listen to oral instructions or explanations.
- Teachers can ask students to write down specific language features (e.g., fixed expressions, prepositional phrases or adverbial phrases) that they hear in oral communication (such as teacher explanations, summaries of information about mathematics concepts, etc.)
- To scaffold advanced-level students' oral conversations, teachers can ask students to use sentence stems that contain academic words, complex syntax and a range of discourse features that they students rarely use. They can give students word banks to use in pair and group work.
- To help students improve their oral communication skills, advanced-level students can serve in a tutoring role, at times tutoring students who are less proficient in English.
- Teachers can provide advanced-level students with direct, explicit instruction and feedback concerning language use related to mathematics.

## Reading/Writing

Reading/Writing	Why are these skills important?	Why are these skills a challenge?
<p>At the advanced level of language learning, students are learning to read many different types of texts about a wide range of topics. They are mastering the ability to read academic informational texts, inferring meaning, and synthesizing information accurately. They understand most complex sentences. However, they may have difficulty understanding sentences that contain mathematical terms, specific types of pronominal reference, passive structures, as well as conditional statements, and relative clauses. In writing, they are able to communicate most of their ideas well, using a variety of sentence types and grammatical features and a range of vocabulary words including idiomatic expressions. However, they lack the ability to write precisely and accurately in a range of academic situations, lacking complete control of the use of academic words and fixed expressions, verb tense, subject-verb agreement, pronoun reference, and complex syntax.</p> <p>Advanced language learners continue to develop their skills at reading and writing academic language. Students at this level are expected to have mastered all of the skills at the lower levels, and they are now expected to be able to improve their ability to read and write a wider range of academic texts. In reading, they are expected to gain understanding of the language of content texts. In writing, they are expected to gain control of word usage and grammatical features (such as verb tense, subject-verb agreement, pronoun reference, and complex sentence structure). They are also expected to master the ability to organize cohesive text with a clear sequence of ideas and with appropriate transitions. Students at an advanced level are expected to make few errors. They often require instructional support to effectively use academic words, complex sentence structures, and discourse features in their writing.</p>	<p>Students who do not know how to read critically and with understanding of such academic texts as explanations and word problems will have difficulty gaining a high level of success in mathematics. They will not be able to accurately interpret the word problems on their assessments. Those who are unable to convey their ideas accurately in writing in complex sentences with correct vocabulary, grammatical features and discourse in a range of academic situations in English will have difficulty displaying their understanding of academic concepts in their written communication (e.g., constructed responses). They will have difficulty communicating ideas accurately and precisely, using the language of mathematics.</p>	<p>Students often read quickly, skipping over information, to identify the gist of texts. As a result, they may never understand the complicated meanings that the texts actually convey. Teachers might assume that their students understand them when the students only have a superficial understanding of what the texts actually say.</p> <p>Students are not exposed to much academic reading outside of their classes; they may lack opportunities to practice reading academic text carefully, paying attention to the language features that convey meaning or identifying non-essential information.</p> <p>Students lack opportunities to write academic texts outside of their mathematics classrooms. Teachers may be reluctant to give advanced-level students much feedback or instruction concerning their writing skills, since the students' writing skills are already advanced. However, without instruction or feedback, students may not advance further in their ability to write about a range of diverse academic topics in varying academic situations.</p>

### Some Activities to Teach Reading and Writing:

- Before asking students to read a text about a mathematics concept, teachers can give students pre-reading assignments. They can introduce the reading and direct students' attention to specific language features or meanings of words and sentences that the students might not attend to or that might confuse them when they encounter them. For instance, they might pre-teach (or front load) by instructing specific words and sentence structures. They might write specific words, word definitions, and sentences that the students will encounter in their reading on the board and discuss the language on the board before the students complete the reading assignment. They can prompt students to focus on specific features of language. They can give students cloze passages and ask the students to check students' understanding. They can ask students to take notes and write summaries of their readings to make sure that the students understand them.
- Teachers can ask students to write down specific language features that they do not understand (e.g., fixed expressions, prepositional phrases or adverbial phrases), so that they can discuss these features with their teachers.
- To scaffold advanced-level students' writing, teachers can ask students to use sentence stems that contain academic words, complex syntax and a range of discourse features that they students rarely use.
- Teachers can give students time to write and revise or edit their writing in class.
- To help students improve both their reading and writing, teachers can provide advanced-level students with direct, explicit instruction and feedback concerning language use related to mathematics.

## Grammar

Grammar	Why is this skill important?	Why is this skill a challenge?
<p>At the advanced level of language learning, students are learning to form conditional sentences effectively and are mastering the placement of clauses and phrases. They are also able to write sentences with compound subjects and predicates.</p> <p>Advanced language learners continue to develop their skills at creating sentences. Students at this level are expected to have mastered all of the skills at the lower levels, and they are now expected to be able to form compound-complex sentences.</p>	<p>Students who do not know how to form complex sentences in English will have difficulty understanding mathematics concepts, discussing them critically, and displaying their understanding of these concepts in their written work (e.g., constructed responses) and discussion. They have difficulty conveying themselves accurately and precisely using the language of mathematics.</p>	<p>Students can often convey their needs in simple sentences. Teachers assume they have the more complex sentence and language knowledge and are perplexed when they do not master mathematics.</p> <p>Students are not exposed to sentence complexity outside of their classes; they may often hear their classmates use simple and/or grammatically incorrect sentences.</p> <p>Students may transfer the sentence structure of Spanish or other languages incorrectly into English.</p>

### Some Activities to Teach Sentence Structure Complexity:

- Before making teaching a specific mathematics concepts, teachers can help students understand a complex sentence structure that might confuse them when they encounter them in the mathematics lesson/s (e.g., in the teacher's explanations, word problems, or explanations that appear in the textbook). They can write sample sentences that contain the structure from the textbook on the board. They can prompt students to focus on word problems that contain complex sentences and to break the sentences up into smaller sentences with the same meaning.
- Teachers can ask students to circle common words used to combine clauses, resulting in complex sentences, including:
  - Time: when, before, after
  - Place: where
  - Cause: because, since
- To teach students relative clauses, teachers can point out that relative clauses - such as the bold text in the sentence "the square **who lives in the triangle**" - modify nouns, reminding the students that the nouns represent people, places, things and ideas, and that the relative clause modifies the noun. To teach these kinds of relative clauses, teachers can ask students to circle the noun that the relative clause modifies and underline the relative clause. The teacher can ask students to underline conditional clauses and circle the *if* that begins the clauses and in addition, discuss the meaning of sentences that contain conditional clauses.

## Grammatical Complexity

Grammatical Complexity / Accuracy	Skill Areas	Why is this skill important?
<p>Advanced language learners continue to learn to identify and use nouns, articles, pronouns, adjectives and verbs. At the advanced level they are taught complex clauses. They learn the past perfect and future perfect tense verbs as well as active/passive verbs.</p> <p>Advanced language learners are expected to have mastered all of the lower level skills and are introduced to gerunds and participial phrases.</p> <p>Passive structures and relative clauses characterize many of the word problems that students encounter in their mathematics textbooks, lessons and tests. They often need to understand these structures well to complete the problems effectively.</p> <p>Advanced students need to demonstrate mastery of present tense/past tense/past and present perfect tense.</p>	<p>Reading, Writing, Speaking, Listening</p>	<p>Students may plateau in their language development if they do not learn the grammatical features that are required to convey concepts accurately in academic English.</p>

### Some Activities to Teach Grammatical Complexity:

- Before asking students to complete word problems that contain adverbial forms, teachers can help students understand that adjectives and adverbial forms such as *almost, probably, never, exactly, unless, hardly, scarcely, rarely, next, not quite, last, older, younger, most, many, less, longer, least, and higher* modify the meanings of sentences and words.
- Teachers can point these words out to students and discuss their meanings when discussing mathematics concepts and unpacking test questions and word problems in class. They can write sentences that contain these words on the board and ask students to identify the word and/or words they modify.
- Teachers can emphasize the accurate use of pronoun reference. If students can't identify the nouns that pronouns represent or even understand the pronouns that represent nouns, they are sure to experience difficulties understanding mathematics problems. To help students understand that pronouns represent nouns, teachers can write sentences containing pronouns on the board and ask students to identify the nouns that the pronouns represent. They can also word problems and ask students to circle the pronouns and underline the noun referents.

## Vocabulary

Vocabulary	Skill Areas	Why is this skill important?	Why is this skill a challenge?
<p>Advanced language learners must continue to expand their academic vocabulary.</p> <p>Advanced students have learned many high-level words but still lack knowledge of mathematics terms and many academic words and words with multiple meanings and fixed expressions. They may know the meanings of words but lack the ability to use them effectively in academic situations. On occasion, they may drop word endings.</p>	<p>Reading, Writing, Speaking, Listening</p>	<p>The ability to understand and use high level words is a gateway skill. Students who do not know these words will be unable to understand important mathematics concepts. To close the achievement gap, students require accelerated vocabulary instruction.</p>	<p>Students do not receive much exposure to academic words outside of school.</p>

### Some Activities to Teach High Level Words:

- Teachers teach academic vocabulary systematically, encouraging students to read words and use them in a variety of contexts. They provide direct, structured instruction, scaffolding, group and pair learning, and word learning strategies through the four language skills: reading, writing, speaking, and listening. They ask students to repeat words after them several times to give them the opportunity to hear and practice the words and stress patterns.
- Mathematics teachers with advanced-level language learners in their classroom need to incorporate an explicit focus on word use into their instruction, teaching students about words whenever the occasion arises by discussing related words and word families (*geometry-geometrical*, playing synonym/antonym games, as appropriate (*high-low*) and teaching words with multiple meanings (like *table*). Teachers also deepen their students' comprehension of how mathematics problems are structured by pointing out the vocabulary that signals relationships such as cause and effect (*as a result, when, because, while, so*) and comparison and contrast (*alike, as, like, in contrast, differ, different from, on the one hand, same, similar to*). In addition, they point out collocations, fixed words and expressions that go together (*verify the reasonableness OF the results, represent an unknown number, evaluate simple algebraic expressions in one variable BY substitution*).
- To know students are learning new words in their mathematics lessons, teachers encourage them to *use* specific targeted words in their speech and writing. They provide students with many opportunities to use targeted words when they talk about their mathematics words. They scaffold their ELs' oral communication by providing them with lists of useful words they can use when summarizing passages in pairs, brainstorming, and discussing their reading. Getting students to write about mathematics concepts also reinforces words and clarifies misconceptions concerning word use. Teachers scaffold the students' written use of words by giving them assignments that call on them to use the words from their lessons and teaching them how to use these words correctly.

## Discourse

Discourse	Why is it important?	Why is it a challenge?
<p>At the advanced level of language learning, students are learning to use complex functions of language and ways of writing specific types of texts and talking about mathematics concepts in diverse ways. They are mastering the placement of cohesive markers (<i>first, second, therefore, nevertheless</i>) to make their writing look more coherent and they are learning specific ways of making their speech and writing seem more academic and authoritative. At this level, they are expected to have mastered all of the critical reading and writing skills at the lower levels, and they are now expected to read a variety of reading genres (types of reading) and write a variety of types of text (including analyses of word problems and solutions to the constructed response).</p>	<p>It is important for students to be able to speak and write effectively in a variety of different academic discourse settings, with a variety of different addressees to reach a variety of different goals. Similarly, it is critical for students to read diverse types of texts about mathematics concepts effectively and be able to think about these texts critically, interpret and evaluate them effectively and convey their knowledge of them appropriately, precisely and correctly in writing in a variety of types of mathematics writing genres (e.g., summaries of explanations, comparisons, descriptions, analyses and the constructed response).</p>	<p>Students seldom receive exposure to a variety of types of mathematics text types outside of their mathematics classrooms. They may have not received instruction that would help them develop the features of mathematics discourse or they may have lacked sufficient previous instruction in these features. They may also lack the opportunity to practice using these features. They also may feel that they have little reason to learn them as the features are not valued (e.g., by peers). Without sustained instruction of these discourse features, appropriate scaffolding, adequate structured exposure to the features and numerous opportunities to practice using the features, students may never acquire them.</p>

### Some Activities to Teach Discourse Complexity:

- Before making an assignment that asks students to compare, describe, analyze, or critique a mathematics concepts, teachers can scaffold these functions and help students use the specific language features required to express themselves effectively. Teachers can point these features to students and discuss ways to use them effectively when discussing mathematics problems and unpacking test questions in class. They can write sentences that help students begin academic discussions and sustain academic discussions.
- Teachers should emphasize the accurate use of pronoun reference. If students can't identify the nouns that pronouns represent or even understand the pronouns that represent nouns, they are sure to experience difficulties understanding mathematics problems. To help students understand that pronouns represent nouns, teachers can write sentences containing pronouns on the board and ask students to identify the nouns that the pronouns represent. They can also copy word problems and ask students to circle the pronouns and underline the noun referents.
- Teachers can develop multiple opportunities for students to be exposed to mathematics discourse, to engage in academic discourse, and to produce mathematics discourse in speech and in writing.
- Teachers can provide frequent feedback on student written constructed responses that foster students' successful development of mathematics discourse.

