

Developing Vocabulary and Supporting English Learners

i-Ready Classroom Mathematics provides a variety of supports to help all students develop their ability to understand and use the academic language of mathematics. While many of the language supports listed are intended for all learners, the program also includes specific supports that address the strengths and needs of students learning English. Learn more about the supports available below.

Engaging All Students and Families

Family Letter (Available in 11 Languages)

PURPOSE:

Keep families informed and encourage math talk at home using a suggested activity and conversation starters

WHEN:

When starting a new lesson

WHERE:

Beginning of Lesson:

- Teacher Toolbox: Instruction & Practice tab (English and 10 additional languages)
- Teacher's Guide—English
- Student Worktext—English



Connect to Culture

PURPOSE:

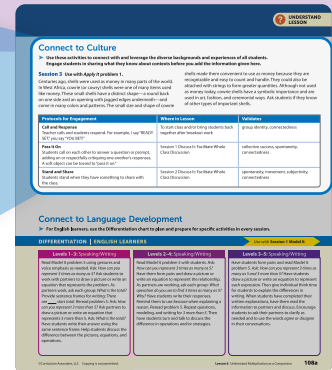
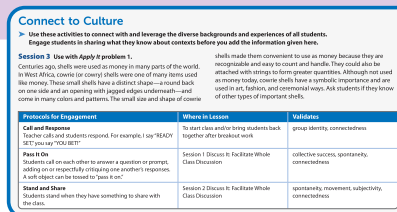
Integrate cultural information and leverage the diverse backgrounds and experiences of students through brief activities

WHEN:

During the sessions listed

WHERE:

- Beginning of Lesson: Teacher's Guide
- Teacher Toolbox: Each lesson on the presentation slides (K–1)



STEM Stories (Grades 2–5)

PURPOSE:

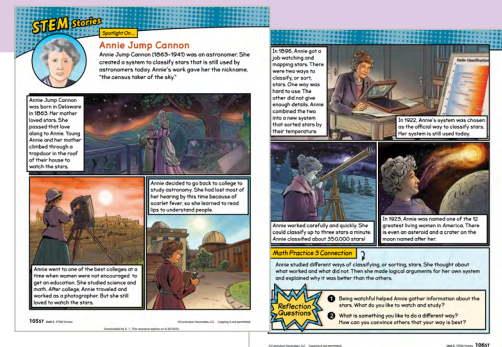
Engage students with stories of people of diverse cultural backgrounds pursuing and achieving success in STEM careers

WHEN:

Anytime during the unit

WHERE:

Beginning of Unit: Teacher's Guide, Student Worktext



Language Routines

PURPOSE:

Use language routines to help students incorporate the specialized language of mathematics

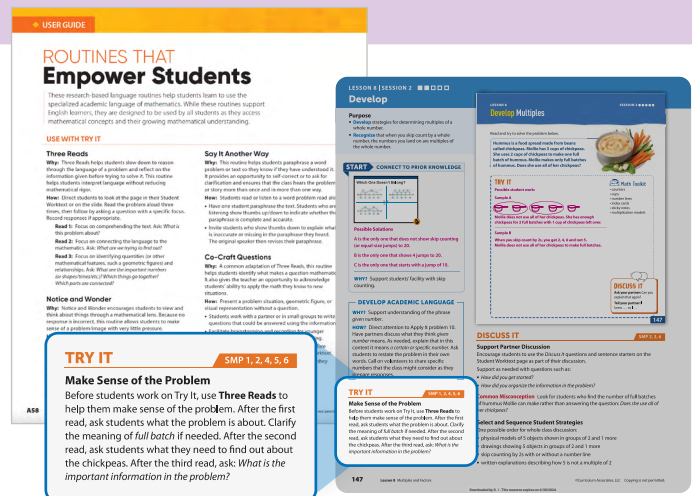
WHEN:

During the Try It portion of the Try–Discuss–Connect framework

WHERE:

Try It in the Try–Discuss–Connect framework: Teacher's Guide

Descriptions in the front matter in the Teacher's Guide and in the Teacher Toolbox in the Program Implementation tab



Protocols for Engagement

PURPOSE:

Increase student participation and involvement by using these protocols to validate and affirm cultural identities

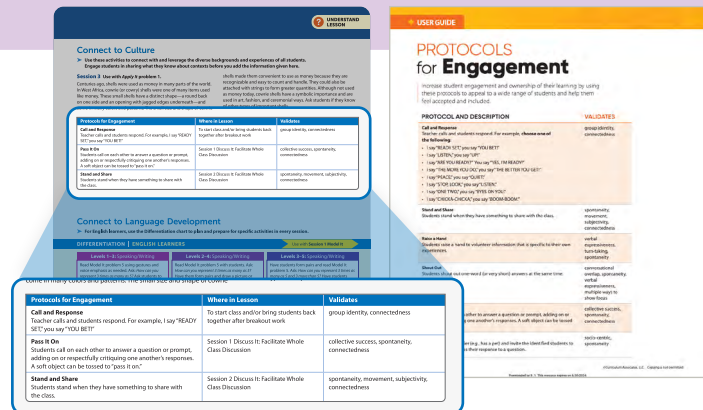
WHEN:

During the sessions listed

WHERE:

Beginning of Lesson: Teacher's Guide

Descriptions in the User Guide in the Teacher's Guide or in the Teacher Toolbox in the User Guide on the Program Implementation tab



Teacher Moves

PURPOSE:

Give students time and space to make sense of, critique, and develop ideas, as well as structures for attending and responding to each other's ideas

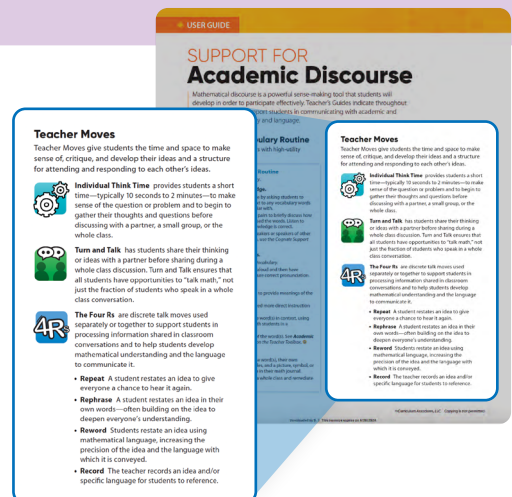
WHEN:

During the session as indicated in the Teacher's Guide

WHERE:

Embedded in Sessions: Teacher's Guide

Descriptions in the User Guide in the Teacher's Guide and in the Teacher Toolbox in the Program Implementation tab



Language Objectives

PURPOSE:

Sets expectations for what students can strive to do with language to demonstrate achievement of the Content Objectives

WHEN:

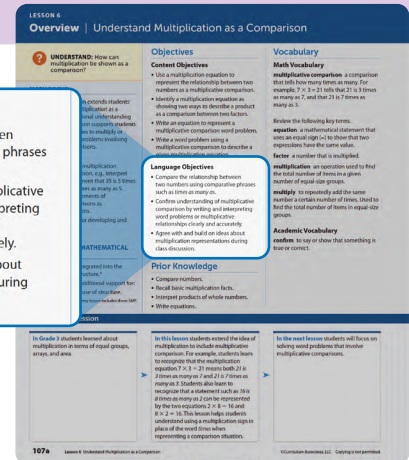
When planning for the lesson

WHERE:

Lesson Overview: Teacher's Guide

Language Objectives

- Compare the relationship between two numbers using comparative phrases such as *times as many as*.
- Confirm understanding of multiplicative comparison by writing and interpreting word problems or multiplicative relationships clearly and accurately.
- Agree with and build on ideas about multiplication representations during class discussion.



Develop Academic Language

PURPOSE:

Focuses on language at the word/phrase, sentence, or discourse level to support students in the development of the language needed to access and communicate about mathematics

WHEN:

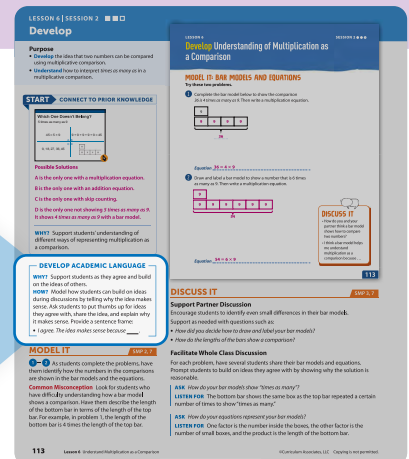
During the Develop sessions

WHERE:

Develop Sessions: Teacher's Guide

DEVELOP ACADEMIC LANGUAGE

- WHY?** Support students as they agree and build on the ideas of others.
- HOW?** Model how students can build on ideas during discussions by telling why the idea makes sense. Ask students to put thumbs up for ideas they agree with, share the idea, and explain why it makes sense. Provide a sentence frame:
• I agree. The idea makes sense because _____.



Discourse Cards or Discourse Cube

PURPOSE:

Questions and sentence stems to use to support conversations during discussion time

WHEN:

Anytime students are discussing

WHERE:

Physical Cards or Teacher Toolbox: Program Implementation tab



Vocabulary Support

Use these resources with all students.

Build Your Vocabulary

PURPOSE:

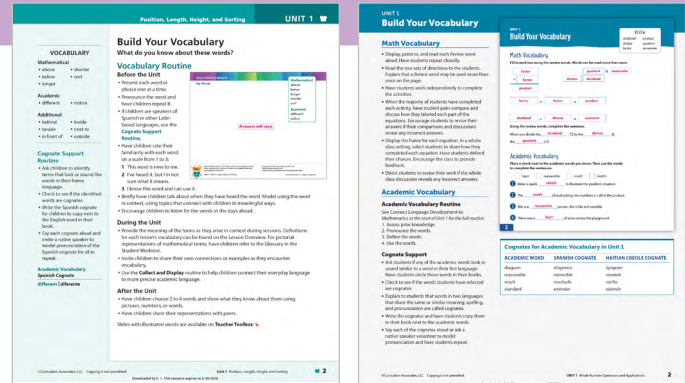
Use the Academic Vocabulary Routine and the Cognate Support Routine to help students build on prior knowledge of both math terms and academic vocabulary, then have students complete an activity to use the words in context

WHEN:

Before starting a new unit

WHERE:

Beginning of Unit: Teacher's Guide and Student Worktext



Vocabulary Review: Revisit Build Your Vocabulary (Grades K–1) or Vocabulary Cards (Grades K–5)

PURPOSE:

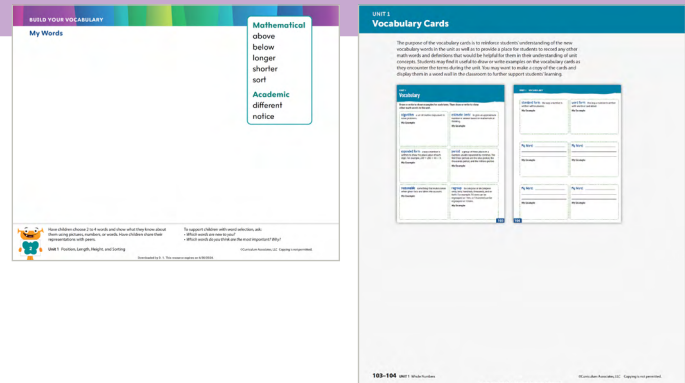
Guide students to reflect on the math terms and academic vocabulary learned during the unit

WHEN:

Before the unit assessment

WHERE:

End of Unit: Teacher's Guide, Student Worktext



Vocabulary Development (Grades 1–5)

PURPOSE:

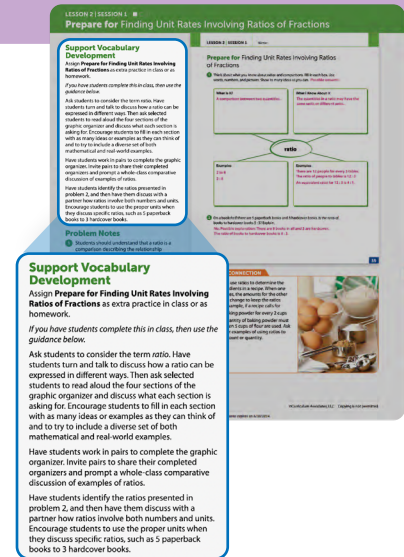
Use graphic organizers to focus on key math terms in the lesson to support language development

WHEN:

During the Explore sessions

WHERE:

Explore Session Practice Pages: Teacher's Guide, Student Worktext



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Sentence Starters and Frames

PURPOSE:

Use the questions and sentence starters to scaffold students' production of complete sentences using mathematics language with a partner

WHEN:

During the Apply It Activity (Grades K–1) and the Discuss It portion of the Try–Discuss–Connect framework (Grades 2–5)

WHERE:

Discuss It in the Try–Discuss–Connect framework: Teacher's Guide, Student Worktext

LESSON 2 **DEVELOP**

APPLY IT 1 **Longer or Shorter Activity**

How can you tell whether an object is longer than or shorter than another object?

This activity gives students a chance to practice comparing the lengths of two objects to find which is longer or shorter.

• Have two volunteers to demonstrate the activity. Have each volunteer choose an object from the bag. Invite the volunteers to keep their objects hidden behind their backs for now.

• Have one child call out they will be looking for the longer or shorter object in the pile.

• If the volunteer chooses the partner with the longer object to keep both objects. If the volunteer chooses the shorter object to keep both objects, the shorter object gets to keep both objects. If the objects are the exact same length, each partner keeps the object they chose.

• Have the class suggest ways that the volunteers can compare the lengths of the two objects. Then have the volunteers compare the lengths of the objects, guiding them as needed. Have them say "The object is longer. The object is longer." and "The object is shorter. The object is shorter."

Sentence Frames

Use these sentence frames to explain your thinking when speaking or writing:

- To compare lengths, I can _____.
- I know an object is _____ because _____.

LESSON 3 **DEVELOP**

DISCUSS IT

Support Partner Discussion

Encourage students to identify even small differences in their bar models. Support as needed with questions such as:

- How did you decide how to draw and label your bar models?
- How do the lengths of the bars show a comparison?

Facilitate Whole Class Discussion

For each problem, have several students share their bar models and equations. Prompt students to build on ideas they agree with by showing why the solution is reasonable.

ASK: How do your bar models show "times as many"?

LISTEN FOR: The bottom bar shows the same box as the top bar repeated a certain number of times to show "times as many."

ASK: How do your equations represent your bar models?

LISTEN FOR: One factor is the number inside the boxes, the other factor is the number of small boxes, and the product is the length of the bottom bar.

Academic Vocabulary Glossary

PURPOSE:

Use to model the academic vocabulary words in context and in a complete sentence

WHEN:

Anytime as needed

WHERE:

Teacher Toolbox: Program Implementation tab

Academic Term	Definition	Sample Sentence
alternate (verb)	to take turns.	My brother and I alternate taking out the garbage. Last week it was his turn and this week it is my turn.
altogether (adverb)	in all.	We combined our marbles and counted how many we had altogether .
assumption (noun)	something you think is true without having real proof.	When you make an assumption , you use what you know to make a best guess.
at least (adjective)	the minimum amount; greater than or equal to a number.	There were at least 100 students attending the field trip on Wednesday, but there may have been more.
batch (noun)	an amount of something that is made at one time.	I made pancakes for breakfast and put a batch in the freezer for later.
characteristic (noun)	a quality or feature of something or someone.	A major characteristic that makes humans special is that we use tools.
clarify (verb)	to make something clear and easier to understand.	I asked the teacher to clarify the directions because I wasn't sure what to do.
compare (verb)	to look at two things closely to see what is similar and what is different about them.	When I compared the two apples, I noticed that the red apple is larger and shinier than the green apple.

English Learner Support

Use these resources with students who are learning English.

Professional Learning

PURPOSE:

Provides information and guidance related to engaging all students, supporting English Learners, and developing vocabulary

WHEN:

When planning for the unit

WHERE:

Beginning of Unit: Teacher's Guide

UNIT 2 **Operations**

Professional Learning

Establishing Classroom Environments that Support Mathematical Discourse for ALL Learners

Adapted from Teaching Mathematics to English Language Learners, coauthored by Dr. Gladis Kersant

Strategy 1 **Help students work with and rely on one another.**

- Encourage students to seek assistance from peers before asking for help from the teacher.
- Discuss: Provide opportunities for students to talk about the math before whole-group discussions.

Strategy 2 **Allow students to work independently before sharing in small or large groups.**

- Students need time to gather their thoughts and identify what they know or do not know before they are exposed to the influence of other students. Then they can compare and contrast their approaches and solutions with those shared by others during the mathematics discussion.
- Discuss: Provide students opportunities to share in a small-group first.

Strategy 3 **Teachers can use questions and prompts.**

- Encourage students to listen to each other.
- Ask students to clarify or restate peers' comments.
- Teach students to respectfully critique the reasoning of their peers and disagree amicably. Give them some examples.
- Discuss: Provide opportunities for students to compare and contrast different solution strategies.

Strategy 4 **Use questions strategically to engage students in mathematical discourse.**

- Teachers can engage students in mathematical discourse by posing questions that encourage discussion and debate... and explain and justify their reasoning.
- To ask and listen to the roles in the Teacher's Guide (TCG) provide this type of questioning technique.

Strategy 5 **Acknowledge the importance of mistakes in learning and understanding.**

- Recognize that students will make errors because they are exploring and making connections.
- Reinforce students constantly that errors are expected and natural and that they can be good things because they lead to enhanced learning.
- Discuss: Misconceptions provide guidance to teachers to address common mistakes. (TCG)

Strategy 6 **Use collaborative learning strategies to support students in preparation for whole-class discussions.**

- When students work with peers or in small groups, they are able to take risks and build confidence on a small scale before they present solutions to the whole class.
- Try **Discuss-Connect** instructional framework. It incorporates collaborative learning strategies. (TCG)

Strategy 7 **Use a variety of pedagogical strategies to engage all students in whole-class, teacher-led mathematics discussions.**

- Select and sequence the **Strategies** provide teachers suggested paths for engaging all students in conversations. (TCG)

100K **UNIT 2** **Operations**

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Connect Language Development to Mathematics

PURPOSE:

Differentiate by understanding what students at different levels of language proficiency can typically do in relation to one math standard addressed in the unit

WHEN:

When planning for the unit

WHERE:

Beginning of Unit: Teacher's Guide

UNIT 2 Connect Language Development to Mathematics					
Language Expectations for Differentiation					
The chart below provides teachers with examples of what English learners can do based on their English Language proficiency level in connection with one of the Common Core State Standards (CCSS) addressed in this Unit. As you plan for the lessons in this Unit, use the examples of language expectations to help you differentiate instruction and meet the needs of your English learners.					
Standard 4.OA.A.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. Disrupting multiplicative comparison has additive comparison.					
LANGUAGE DOMAIN	BEGINNING Level 1	INTERMEDIATE Level 2	ADVANCED/ADVANCED HIGH Level 3	ADVANCED/ADVANCED HIGH Level 4	ADVANCED/ADVANCED HIGH Level 5
LISTENING	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using pictures or words.	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using visual models.	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using visual models.	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using visual models.	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using visual models.
READING	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using pictures or words.	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using visual models.	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using visual models.	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using visual models.	Identify whether a word or phrase is an additive comparison or a multiplicative comparison using visual models.
WRITING	Justify solutions to word problems using drawings or word models.	Justify solutions to word problems using drawings or word models.	Justify solutions to word problems using drawings or word models.	Justify solutions to word problems using drawings or word models.	Justify solutions to word problems using drawings or word models.

Connect to Language Development

PURPOSE:

Scaffold language and provide access to support participation in understanding the mathematics

WHEN:

During the session

WHERE:

End of Session: Teacher's Guide

DIFFERENTIATION | ENGLISH LEARNERS

Use with Session 3 Apply It

Levels 1-3: Speaking/Writing

Ask students to listen as you restate Apply It problem 3, eliminating information that may be confusing. Use one counter as a visual for seeds. Say: Elon planted 4 seeds. His dog planted 2 times as many seeds. Elon thinks his dog planted 4 seeds. Elon is wrong. Ask: When did Elon do wrong? Provide sentence frames for writing.

- Elon _____
- He should have _____

Have students form pairs. Ask students to listen as their partners read their responses and share if they agree or disagree.

Levels 2-4: Speaking/Writing

Read Apply It problem 3 to students. Ask students to form pairs and read the problem to partners. Have students discuss with partners and then write about what Elon did wrong. Provide a sentence frame.

- Elon was _____ because _____

Ask students to read the first two sentences of the word problem. Ask: How many seeds did Elon's dog plant? How do you know? Have students explain in writing. Provide a sentence frame if needed.

- Elon's dog planted _____ because _____

Levels 3-5: Speaking/Writing

Have students form pairs and read Apply It problem 3. Have students write their responses and share them with partners. Encourage them to use words such as because, should have, or instead of to explain their ideas. Then have students read their explanation to a partner. Have partners tell if they agree or disagree and provide details to support their ideas.

DIFFERENTIATION | ENGLISH LEARNERS

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Multilingual Glossary of Math Terms (Available in 10 Languages)

PURPOSE:

Use to support students in their home language to reinforce the meaning of math terms

WHEN:

Anytime as needed

WHERE:

Teacher Toolbox: Program Implementation tab

Glossary/Glosario		
English	Spanish	Example/Ejemplo
acute angle an angle that measures less than 90 degrees	ángulo agudo ángulo que mide menos de 90°	
addition a number being added.	suma número que se suma.	$24 + 18 = 42$ sum 24 + 18 --- 42
algorithm a set of routine steps used to solve problems.	algoritmo conjunto de pasos usados para resolver problemas.	$24 \div 12 = 2$ divides 24 ÷ 12 --- 2
the time from midnight until before noon	a.m. el tiempo que transcurre desde medianoche hasta el mediodía.	
angle a geometric shape formed by two rays, the two segments that meet at a common point.	ángulo figura geométrica formada por dos rayos, los dos segmentos que se encuentran en un punto común.	