



Secondary Mathematics

EDITION 1

Program and Implementation Guide

Acknowledgment

Thank you to all the Texas educators and stakeholders who supported the review process and provided feedback. These materials are the result of the work of numerous individuals, and we are deeply grateful for their contributions.

Notice

These learning resources have been built for Texas students, aligned to the Texas Essential Knowledge and Skills, and are made available pursuant to Chapter 31, Subchapter B-1 of the Texas Education Code.

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Welcome to the Program and Implementation Guide for Secondary Mathematics

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Welcome

The Open Education Resource (OER) Secondary Mathematics Edition 1 has been specifically designed by the Texas Education Agency (TEA) for students served by Texas schools. These Texas-designed instructional materials were thoughtfully crafted around well-defined scope and sequences and a systematic approach to learning.

The materials focus on active learning, which engages students dynamically, encourages discourse and collaboration, and addresses personalized learning approaches. The OER Secondary Mathematics Edition 1 product is guided by research from educational experts and valuable feedback from individuals across the state. It is freely available to Texas school districts and educators to enhance students' daily learning experiences.

This Program and Implementation Guide outlines the program components, describes the overall instructional approach and design, and provides guidance on implementing the program effectively.

Program Structure and Resources

The program includes instructional materials for Grade 6 through Algebra I mathematics. There are several program-level components to assist in program implementation.

Program Components

Component	Description	Use	For Who?
Program and Implementation Guide	The Program and Implementation Guide is a program-level document that provides an overview of what is included in the program and details the organization of the program. The guide includes implementation support for teachers, instructional coaches, and administrators.	Program Level	Teacher Administrator Instructional Coach
Content Organization	The Content Organization is a program-level document that provides an overview of the content covered across all the instructional materials in the program. This document tells the story of the mathematics and demonstrates how the math is coherently connected within and throughout the courses.	Program Level	Teacher Administrator Instructional Coach
Teacher Module and Topic Internalization Protocol	The Teacher Module and Topic Internalization Protocol provides a step-by-step process for understanding the module and each topic within the module prior to teaching, including what students will learn, how teachers will assess student learning, and the high-level arc of the learning.	Program Level	Teacher
Coach Module and Topic Internalization Guide	The Coach Module and Topic Internalization Protocol provides direction and recommendations to instructional coaches as they assist teachers in understanding the high-level arc of the learning.	Program Level	Instructional Coach
Teacher Lesson Internalization Protocol	The Teacher Lesson Internalization Protocol provides a step-by-step process for understanding each lesson prior to teaching, including what students will learn, how teachers will assess students, and how teachers can support all learners in meeting the rigor of the instructional materials. By using lesson internalization, teachers deepen the understanding developed during the Module and Topic Internalization process.	Program Level	Teacher
Coach Lesson Internalization Protocol	The Coach Lesson Internalization Protocol provides direction and recommendations to instructional coaches as they assist teachers in planning instruction to meet the rigor of the instructional materials and support all learners.	Program Level	Instructional Coach

Component	Description	Use	For Who?
Teacher Student Work Analysis Protocol	Teachers can use the Teacher Student Work Analysis Protocol to analyze student work samples both individually and collaboratively. The protocol supports the creation of a plan to take targeted action to support students' development of skills and knowledge in future instruction.	Program Level	Teacher
Coach Student Work Analysis Protocol	The Coach Student Work Analysis Protocol provides direction and recommendations to instructional coaches as they work with teachers to analyze student work and create a plan of action to support students' development of skills and knowledge in future instruction.	Program Level	Instructional Coach
Coach Observation Tool	The Coach Observation Tool is a resource for coaches to document specific look-fors while observing teachers' instruction and implementation of high-quality instructional materials.	Program Level	Instructional Coach

Each course in the program consists of a variety of Course Components. The table lists each course component, a description for the component, the frequency of use, and for whom the component is designed.

Course Components

Component	Description	Use	For Whom?
Course and Implementation Guide	The Course and Implementation Guide is a course-level document that provides an overview of the instructional approach, pedagogy, features, and course components. It also includes support for the additional resources provided for teachers, students, and families including Skills Practice, Family Guides, Academic Glossary, and Problem-Solving Model.	Course Level	Teacher
Course Guide	The Course Guide is a student-facing resource. It provides information about the course to students. Students should continually reference certain components found in the course guide including the Academic Glossary, and the Problem-Solving Model Graphic Organizer.	Course Level	Student
Scope and Sequence	The Scope and Sequence provides you with the Lesson Overview and the Essential Ideas for each lesson. It also provides you with lesson pacing, suggested placement for Learning Individually days and assessment days, and TEKS & ELPS alignment at the topic level. The program offers two pacing options to support various instructional calendars: 165-Day Scope and Sequence (suggested) 150-Day Scope and Sequence (alternative)	Course Level	Teacher
Year-at-a-Glance (YAG)	The Year at a Glance (YAG) is a course-level document that shows the TEKS covered at the topic and module levels.	Course Level	Teacher
TEKS Summary	The TEKS Summary is a course-level document to show how the TEKS are addressed at the lesson, topic, module, and course levels.	Course Level	Teacher
ELPS Summary	The ELPS Summary is a course-level document to show how the ELPS are addressed at the lesson, topic, module, and course levels.	Course Level	Teacher
Math Glossary	The Math Glossary is a student resource that houses the definitions of all new key terms along with pictorial references.	Course Level	Teacher Student

Component	Description	Use	For Whom?
Skills Practice Guide	The Skills Practice Guide is a course-level document that provides an overview of each problem set and the aligned TEKS. It also provides implementation support for Skills Practice, a resource for Learning Individually days.	Course Level	Teacher
Assessment Guide	The Assessment Guide is a course-level document that provides an overview of the variety of assessment opportunities throughout the course. It also provides teachers implementation support for assessments.	Course Level	Teacher
Assessment Reflection	The Assessment Reflection for each course is included in the Assessment Guide and is a resource teachers can provide to students after completion of an assessment. Students reflect on what went well and what adjustments they will make prior to the next assessment.	Course Level	Student
Materials List	The Materials List identifies the materials needed to implement each lesson of the course as written. It also identifies optional materials needed for implementation such as materials used when implementing Differentiation Strategies or EB Student tips.	Course Level	Administrator Instructional Coach Teacher
Problem-Solving Model Graphic Organizer	The Problem-Solving Model Graphic Organizer is a tool students can use to make sense of problems they will encounter. It provides questions to guide their thinking.	Course Level	Teacher Student
Standards Overview	The Standards Overview identifies the TEKS covered in each module and topic. It also identifies additional TEKS covered in the Skills Practice for each topic.	Course Level	Administrator Instructional Coach Teacher
Course Family Guide	The Course Family Guide , available in both English and Spanish, helps introduce families to the course. The guide shares the research-based design of the course, provides summaries of each module in the course, and provides strategies families can implement to support their student(s). Included in the Course Family Guide is a Family Letter that welcomes families to be an active partner in supporting their student's mathematical learning and progress."	Course Level	Families Student

Each course within the program is divided into Modules. These Modules are further divided into topics. The table shown lists the Module and Topic components available.

Module and Topic-Level Components

Component	Description	Use	For Whom?
Module Overview	The Module Overview describes the reasoning behind the name of the module, the mathematics developed throughout the module, how the module connects to prior learning, and how it connects to future learning. The Module Overview also includes an Assessment Summary, which explains when to administer the summative assessments available in the module and identifies the TEKS covered in each assessment.	Module Level	Teacher
Topic Overview	The Topic Overview describes how the topic is organized, the entry point for students, how a student will demonstrate understanding, the importance of the mathematics, how the activities promote expertise in the TEKS mathematical process standards, and the ELPS covered in the topic. The overview includes the new key terms covered in the topic as well as cognates when applicable. A section of the Topic Overview informs teachers on using cognates to support EB students.	Topic Level	Teacher

Component	Description	Use	For Whom?
Topic Pacing Guide	The Topic Pacing Guide provides more detailed information to help with pacing, including the number of days for each lesson, days for Learning Individually, and days for assessments, as well as specifically calling out the TEKS addressed in each lesson. The 165-Day Topic Pacing Guide is included as part of the Topic Overview.	Topic Level	Teacher
150-Day Topic Pacing Guide	The 150-Day Topic Pacing Guide is an optional alternative pacing guide to the 165-Day Topic Pacing Guide. It is available as a digital component.	Topic Level	Teacher
Topic Family Guide	The Topic Family Guide , available in both English and Spanish, is designed to assist families as they talk to their student(s) about their mathematics learning. It provides families with an overview of the mathematics of each topic, how the math is connected to what they already know, and how they will use the new knowledge in future learning. The Family Guide will include the new key terms learned in the topic along with cognates, when applicable. The Topic Family Guide may include questions to ask and/or a sample standardized test question.	Topic Level	Families Student
Topic Summary	The Topic Summary is a student-facing document that includes all new key terms in the topic, as well as a summary including examples for each lesson within the topic.	Topic Level	Teacher Student
End of Topic Assessment (Student Edition and Answer Key)	The End of Topic Assessment incorporates TEKS-aligned multiple-choice, multiselect, and open-response questions. Each assessment is aligned to the TEKS of the topic.	Topic Level	Teacher Student
Question and Test Interoperability (QTI) Files for Digital Assessments	The Question and Test Interoperability (QTI) Files are provided for the implementation of digital assessments aligned to each End of Topic Assessment. There are many problem types students will encounter on digital assessments: multiple-choice, multiselect, text entry/equation editor, graphing, inline choice, hot spot, drag and drop, and match table grid. It is recommended to administer either the print or the digital assessment method of the End of Topic Assessment. Students should not take both assessment types at the end of a topic.	Topic Level	For Whom? Teacher
Assessment Scoring Guide	An Assessment Scoring Guide is included at the end of the answer key for each End of Topic Assessment. The scoring guide provides a rubric for each question to ensure consistent scoring. The guide also includes a response to student performance. The response to student performance suggests ways to support or challenge students using the data gathered from the assessment.	Topic Level	Teacher
Topic Self-Reflection	Each topic contains a Topic Self-Reflection for students. Students self-assess their ability to demonstrate understanding of the TEKS within the topic from given “I can” statements. It is recommended that students use this tool at the beginning, middle, and end of each topic.	Topic Level	Student
Skills Practice (Student Edition and Answer Key)	Skills Practice is the Learning Individually resource that provides students with additional skill-building practice opportunities to achieve proficiency in the TEKS that align with each lesson’s skills, concepts, and applications. Skills Practice also includes interleaved and spaced practice for retrieval of concepts and skills to promote long-term learning and an extension section to challenge learners.	Topic Level	Teacher Student

You can access more information about the Module and Topic-level components of the course throughout this document and in the Course and Implementation Guide.

Each topic within the course consists of lessons. The table shown lists the lesson-level components.

Lesson-Level Components

Component	Description	Use	For Whom?
Teacher's Implementation Guide (TIG)	The Teacher's Implementation Guide (TIG) provides detailed facilitation notes to support the teacher in their planning process. This resource provides point-of-use supports that serve as the teacher's primary resource for planning, guiding, and facilitating student learning. Student Lesson and Assignment pages are embedded with the TIG with answer keys provided.	Lesson Level	Teacher
Student Lesson	The Student Lesson has three key components: 1. Engage (Getting Started)- activates and connects to prior knowledge. 2. Develop (Activities) - develops the math concepts in the lesson. 3. Demonstrate (Talk the Talk) - formative assessment / check for understanding.	Lesson Level	Student
Lesson Assignment	The Lesson Assignment follows each lesson and includes the following elements: Write, Remember, Practice, and Prepare. These elements reinforce the student's learning and provide an opportunity to prepare for the next lesson. The Assignment is an additional component that is useful for Tier 1 Instruction.	Lesson Level	Student

You can access more information about the lesson-level components in the Course and Implementation Guide.

Optional Components

Component	Description	Use	For Who?
Performance Tasks (Student Edition and Answer Key)	Each course contains 3 or 4 Performance Tasks. These tasks are optional resources not included in the 165-Day Scope and Sequence. Each task contains an overview that includes where within the 165-day pacing a task should come along with suggested pacing for implementation as both a formative and summative assessment. The tasks are problem-based activities that are aligned with selected priority math standards taught in this course. These activities are an additional opportunity for students to demonstrate their ability to make sense of multi-step, real-world problems, communicate their thinking, represent solutions, and justify their reasoning on content aligned with the selected math standards.	Topic Level	Teacher Student

You can access more information about the Optional Components is in the Course and Implementation Guide.

Instructional Approach and Design

The program delivers instructional resources that make learning math attainable for all students. Learning Together and Learning Individually resources work in parallel to engage students with various learning experiences they need to understand the mathematics at each grade level.

For **Learning Together**, lessons encourage students to become creators of mathematical knowledge. This resource supports teachers as they facilitate active learning so that students are confident in sharing ideas, listening to each other, and learning together.

For **Learning Individually**, Skills Practice provides students the opportunity to engage with problems that target each lesson's skills, concepts, and applications. This resource targets discrete skills for development and proficiency, therefore, scaffolding and extension opportunities are provided, where appropriate, in the problem sets.

Three Phases of the Instructional Approach

The Instructional Approach is based on 3 simple phases.



ENGAGE

Activate student thinking by tapping into prior knowledge and real-world experiences.

Provide an introduction that generates curiosity and plants the seeds for deeper learning.



DEVELOP

Build a deep understanding of mathematics through a variety of activities.

Students encounter real-world problems, sorting activities, Worked Examples, and peer work analysis—in an environment where collaboration, conversations, and questioning are routine practices.



DEMONSTRATE

Reflect on and evaluate what was learned.

Ongoing formative assessment underlies the entire learning experience, driving real-time adjustments, next steps, insights, and measurements.

Instructional Strategies

Specific instructional strategies are provided for each activity type. By understanding the instructional sequence, teachers have the FLEXIBILITY to plan out your pedagogical moves in a way that works for a specific classroom of students.

ENGAGE

Instructional Strategies

- Connect to prior knowledge
- Build off intuition
- Establish a situation

DEVELOP

Instructional Strategies

- Investigation
- Classification
- Worked Example
- Peer work analysis
- Real-world problem solving
- Mathematical problem solving

DEMONSTRATE

Instructional Strategies

- Procedure
- Application
- Generalization
- Graphic organizer
- Writing task
- Presentation

Use the instructional strategies to guide development.

GUIDING THE MATHEMATICAL DEVELOPMENT OF STUDENTS

Establish Mathematical Goals to Focus Learning	<ul style="list-style-type: none">• Create a classroom climate of collaboration and establish the learning process as a partnership between teachers and students.• Communicate continuously with students about learning objectives to encourage self-monitoring of their learning.
Activate Student Thinking	<ul style="list-style-type: none">• Tap into students' prior knowledge and real-world experiences.• Pay attention to the strategies students use; these strategies reveal underlying thought processes and present opportunities for connections throughout the lesson.
Align Teaching to Learning	<ul style="list-style-type: none">• Support student-to-student discourse as well as whole class conversations that elicit and use evidence of student thinking.• Encourage productive struggle by allowing students time to engage with and persevere through mathematics.
Promote Self-Reflection	<ul style="list-style-type: none">• Encourage students to take responsibility for their own learning and to self-assess.• Listen to and review their answers and explanations and provide feedback to help them advance their understanding.
Reflect and Practice	<ul style="list-style-type: none">• Reflect on and practice the new concepts of the lesson.
Build Fluency	<ul style="list-style-type: none">• Use spaced retrieval, which focuses on optimizing memory retention through strategically spaced practice.

The goal of this section is to provide an overview of the different alignment documents provided at the course level and how educators can use each to support the implementation process. This product includes the following resources:

The YAG shows the sequence of topics, the number of instructional days allotted, and the TEKS coverage at the topic and module level. The YAG is a one-page document.

- Administrators, instructional coaches, and educators can use this document to make sure TEKS are covered at the appropriate time during the course of the school year.

GRADE 6 • YEAR-AT-A-GLANCE 3

GRADE 7 • YEAR-AT-A-GLANCE 3

GRADE 8 • YEAR-AT-A-GLANCE 3

ALGEBRA I • YEAR-AT-A-GLANCE 3

The Scope and Sequence includes more information than the YAG. The document includes a lesson summary for each lesson as well as essential ideas from each lesson. The TEKS mathematical process standards and ELPS covered in the topic are included as well as the number of Learning Individually days for the topic.

- Administrators, instructional coaches, and educators can use this document to view the progression of the content. Teachers can scaffold and tailor instruction to make connections to future learning.

GRADE 6: SCOPE & SEQUENCE		150-Day Pacing
1 Composing and Decomposing TOPIC 1: Factors and Multiples TEKS covered at the lesson level are shown in course color. Additional TEKS covered in Skills Practice are shown in black.		Module Pacing: 20 Days Lesson Pacing: 10 Days
Topic	Lesson	Days
1	1.1 Factors and Multiples	1-4
	1.2 Prime Numbers	5-8
	1.3 Prime Factorization	9-12
	1.4 Least Common Multiple	13-16
2	2.1 Fractions and Decimals	17-20
	2.2 Adding and Subtracting Fractions	21-24
	2.3 Multiplying Fractions	25-28
	2.4 Dividing Fractions	29-32
3	3.1 Ratios and Proportions	33-36
	3.2 Unit Rates	37-40
	3.3 Percentages	41-44
	3.4 Word Problems	45-48

GRADE 7: SCOPE & SEQUENCE		150-Day Pacing
1 Thinking Proportionally TOPIC 1: Rates and Ratios TEKS covered at the lesson level are shown in course color. Additional TEKS covered in Skills Practice are shown in black.		Module Pacing: 20 Days Lesson Pacing: 10 Days
Topic	Lesson	Days
1	1.1 Rates and Ratios	1-4
	1.2 Unit Rates	5-8
	1.3 Percentages	9-12
	1.4 Word Problems	13-16
2	2.1 Fractions and Decimals	17-20
	2.2 Adding and Subtracting Fractions	21-24
	2.3 Multiplying Fractions	25-28
	2.4 Dividing Fractions	29-32
3	3.1 Ratios and Proportions	33-36
	3.2 Unit Rates	37-40
	3.3 Percentages	41-44
	3.4 Word Problems	45-48

GRADE 8: SCOPE & SEQUENCE		165-Day Pacing
1 Transforming Geometric Objects TOPIC 1: Rigid Motion Transformations TEKS covered at the lesson level are shown in course color. Additional TEKS covered in Skills Practice are shown in black.		Module Pacing: 20 Days Lesson Pacing: 10 Days
Topic	Lesson	Days
1	1.1 Rigid Motion Transformations	1-4
	1.2 Congruence	5-8
	1.3 Similarity	9-12
	1.4 Word Problems	13-16
2	2.1 Area and Perimeter	17-20
	2.2 Volume	21-24
	2.3 Surface Area	25-28
	2.4 Word Problems	29-32
3	3.1 Data and Probability	33-36
	3.2 Statistics	37-40
	3.3 Percentages	41-44
	3.4 Word Problems	45-48

ALGEBRA I: SCOPE & SEQUENCE		165-Day Pacing
1 Searching for Patterns TOPIC 1: Quantities and Relationships TEKS covered at the lesson level are shown in course color. Additional TEKS covered in Skills Practice are shown in black.		Module Pacing: 20 Days Lesson Pacing: 10 Days
Topic	Lesson	Days
1	1.1 Quantities and Relationships	1-4
	1.2 Functions	5-8
	1.3 Linear Equations	9-12
	1.4 Word Problems	13-16
2	2.1 Area and Perimeter	17-20
	2.2 Volume	21-24
	2.3 Surface Area	25-28
	2.4 Word Problems	29-32
3	3.1 Data and Probability	33-36
	3.2 Statistics	37-40
	3.3 Percentages	41-44
	3.4 Word Problems	45-48

NOTE: The 165-Day YAG and Scope and Sequence is the suggested pacing for the program. Other optional resources are provided to support effective implementation for various instructional calendars.

- 150-Day Pacing Guidance
- Performance Tasks

STANDARDS OVERVIEW DOCUMENT

The Standards Overview document shows the TEKS coverage at the topic and module level. It also includes TEKS covered on the Learning Individually days.

- Teachers can use this document to quickly locate spaced retrieval opportunities for each TEKS. They can also quickly locate opportunities for differentiated instruction, targeted practice toward proficiency, and/or enrichment and extension.

GRADE 6 STANDARDS OVERVIEW	
TEKS covered at the lesson level are shown in course color. Additional TEKS covered in Skills Practice are shown in black.	
Module	TEKS
MODULE 1: Composing and Decomposing	TOPIC 1: Factors and Multiples
	TOPIC 2: Fractions and Decimals
	TOPIC 3: Ratios and Proportions
	TOPIC 4: Word Problems
MODULE 2: Thinking Proportionally	TOPIC 1: Rates and Ratios
	TOPIC 2: Unit Rates
	TOPIC 3: Percentages
	TOPIC 4: Word Problems

GRADE 7 STANDARDS OVERVIEW	
TEKS covered at the lesson level are shown in course color. Additional TEKS covered in Skills Practice are shown in black.	
Module	TEKS
MODULE 1: Thinking Proportionally	TOPIC 1: Rates and Ratios
	TOPIC 2: Unit Rates
	TOPIC 3: Percentages
	TOPIC 4: Word Problems
MODULE 2: Transforming Geometric Objects	TOPIC 1: Rigid Motion Transformations
	TOPIC 2: Congruence
	TOPIC 3: Similarity
	TOPIC 4: Word Problems

GRADE 8 STANDARDS OVERVIEW	
TEKS covered at the lesson level are shown in course color. Additional TEKS covered in Skills Practice are shown in black.	
Module	TEKS
MODULE 1: Transforming Geometric Objects	TOPIC 1: Rigid Motion Transformations
	TOPIC 2: Congruence
	TOPIC 3: Similarity
	TOPIC 4: Word Problems
MODULE 2: Searching for Patterns	TOPIC 1: Quantities and Relationships
	TOPIC 2: Functions
	TOPIC 3: Linear Equations
	TOPIC 4: Word Problems

ALGEBRA I STANDARDS OVERVIEW	
TEKS covered at the lesson level are shown in course color. Additional TEKS covered in Skills Practice are shown in black.	
Module	TEKS
MODULE 1: Searching for Patterns	TOPIC 1: Quantities and Relationships
	TOPIC 2: Functions
	TOPIC 3: Linear Equations
	TOPIC 4: Word Problems
MODULE 2: Transforming Geometric Objects	TOPIC 1: Rigid Motion Transformations
	TOPIC 2: Congruence
	TOPIC 3: Similarity
	TOPIC 4: Word Problems

TEKS SUMMARY

The TEKS Summary provides a visual representation of TEKS coverage throughout the course.

- Teachers can use this resource to quickly see when the next opportunity is to cover a TEKS and compare the objectives of the lesson to the TEKS breakouts to determine where breakouts are covered.

GRADE 6 TEKS SUMMARY		GRADE 7 TEKS SUMMARY		GRADE 8 TEKS SUMMARY		ALGEBRA I TEKS SUMMARY	
This document provides an overview of the TEKS coverage in Secondary Mathematics, Grade 6.		This document provides an overview of the TEKS coverage in Secondary Mathematics, Grade 7.		This document provides an overview of the TEKS coverage in Secondary Mathematics, Grade 8.		This document provides an overview of the TEKS coverage in Secondary Mathematics, Algebra I.	
Grade 6 TEKS Summary	Grade 6 TEKS Summary	Grade 7 TEKS Summary	Grade 7 TEKS Summary	Grade 8 TEKS Summary	Grade 8 TEKS Summary	Algebra I TEKS Summary	Algebra I TEKS Summary

ELPS SUMMARY

The ELPS Summary provides a visual representation of ELPS coverage throughout the course.

- Teachers can use this resource to quickly see the coverage of the ELPS in each lesson to support language acquisition and increase language proficiency.

GRADE 6 ELPS SUMMARY		GRADE 7 ELPS SUMMARY		GRADE 8 ELPS SUMMARY		ALGEBRA I ELPS SUMMARY	
This document provides an overview of the ELPS coverage in Secondary Mathematics, Grade 6.		This document provides an overview of the ELPS coverage in Secondary Mathematics, Grade 7.		This document provides an overview of the ELPS coverage in Secondary Mathematics, Grade 8.		This document provides an overview of the ELPS coverage in Secondary Mathematics, Algebra I.	
Grade 6 ELPS Summary	Grade 6 ELPS Summary	Grade 7 ELPS Summary	Grade 7 ELPS Summary	Grade 8 ELPS Summary	Grade 8 ELPS Summary	Algebra I ELPS Summary	Algebra I ELPS Summary

MATERIALS LIST

The Materials List provides a visual representation of materials needed throughout the course.

- Administrators, instructional coaches, and educators can use this document to ensure teachers and students have access to the materials they need for the course.

GRADE 6 MATERIALS		GRADE 7 MATERIALS		GRADE 8 MATERIALS		ALGEBRA I MATERIALS	
This document provides an overview of the materials needed in Secondary Mathematics, Grade 6.		This document provides an overview of the materials needed in Secondary Mathematics, Grade 7.		This document provides an overview of the materials needed in Secondary Mathematics, Grade 8.		This document provides an overview of the materials needed in Secondary Mathematics, Algebra I.	
Grade 6 Materials	Grade 6 Materials	Grade 7 Materials	Grade 7 Materials	Grade 8 Materials	Grade 8 Materials	Algebra I Materials	Algebra I Materials

Mathematical Coherence

CONTENT ORGANIZATION

The Content Organization document provides a visual representation of the mathematical coherence across the program. The arc of the mathematics develops coherently, building understanding by linking concepts together through a logically sequenced and connected scope and sequence, so students can learn mathematics more deeply and apply what they have learned to more complex problems in the future. Topics with the same icon link mathematical concepts within and across grades. A description of the progression is also provided.

- Administrators, instructional coaches, and educators can use this document for vertical teaming. This provides opportunities to see growth across multiple years of the program and can help educators ensure their students are prepared for the next course.

CONTENT ORGANIZATION				
<p>The program is thoroughly and thoughtfully designed to ensure students build the foundation they'll need to experience ongoing growth in mathematics. The arc of the mathematics develops coherently, building understanding by linking concepts together through a logically sequenced and connected scope and sequence, so students can learn mathematics more deeply and apply what they have learned to more complex problems in the future.</p> <p>Seeing Connections: Connections are shown visually within and between courses in the instructional materials with icons. Topics with the same icon link concepts within and across grades. On the last page, a key is provided to show the concept that each icon represents.</p>				
GRADE 6				
MODULE 1 Composing and Decomposing	MODULE 2 Relating Quantities	MODULE 3 Moving Beyond Positive Quantities	MODULE 4 Determining Unknown Quantities	MODULE 5 Describing Variability of Quantities
TOPIC 1 Factors and Multiples	TOPIC 1 Ratios	TOPIC 1 Signed Numbers and the Four Operations	TOPIC 1 Expressions	TOPIC 1 The Statistical Process
TOPIC 2 Shapes and Solids	TOPIC 2 Percent	TOPIC 2 Operating with Integers	TOPIC 2 Equations and Inequalities	TOPIC 2 Numerical Summaries of Data
TOPIC 3 Decimals	TOPIC 3 Unit Rates and Conversions	TOPIC 3 Graphing Quantitative Relationships	TOPIC 4 Financial Literacy: Accounts, Credit, and Cents	
GRADE 7				
MODULE 1 Thinking Proportionally	MODULE 2 Applying Proportionality	MODULE 3 Reasoning Algebraically	MODULE 4 Analyzing Populations and Probabilities	MODULE 5 Constructing and Measuring
TOPIC 1 Circles and Ratios	TOPIC 1 Proportional Relationships	TOPIC 1 Operating with Rational Numbers	TOPIC 1 Introduction to Probability	TOPIC 1 Angle Relationships
TOPIC 2 Fractional Rates	TOPIC 2 Financial Literacy: Interest and Budgets	TOPIC 2 Two-Step Equations and Inequalities	TOPIC 2 Compound Probability	TOPIC 2 Area, Surface Area, and Volume
TOPIC 3 Proportionality		TOPIC 3 Multiple Representations of Equations	TOPIC 3 Drawing Inferences	

GRADE 8				
MODULE 1 Transforming Geometric Objects	MODULE 2 Developing Function Foundations	MODULE 3 Data Everywhere	MODULE 4 Modeling Linear Equations	MODULE 5 Applying Powers
TOPIC 1 Rigid Motion Transformations	TOPIC 1 From Proportions to Linear Relationships	TOPIC 1 Patterns in Bivariate Data	TOPIC 1 Solving Linear Equations	TOPIC 1 Real Numbers
TOPIC 2 Similarity	TOPIC 2 Linear Relationships	TOPIC 2 Variability and Sampling	TOPIC 2 Systems of Linear Equations	TOPIC 2 The Pythagorean Theorem
TOPIC 3 Line and Angle Relationships			TOPIC 3 Financial Literacy: Your Financial Future	TOPIC 4 Volume of Curved Figures
ALGEBRA I				
MODULE 1 Searching for Patterns	MODULE 2 Exploring Constant Change	MODULE 3 Linear Equations and Inequalities	MODULE 4 Investigating Growth and Decay	MODULE 5 Maximizing and Minimizing
TOPIC 1 Quantities and Relationships	TOPIC 1 Linear Functions	TOPIC 1 Linear Equations and Inequalities	TOPIC 1 Introduction to Exponential Functions	TOPIC 1 Introduction to Quadratic Functions
TOPIC 2 Sequences	TOPIC 2 Transformations and Comparisons of Linear Functions	TOPIC 2 Systems of Linear Equations and Inequalities	TOPIC 2 Using Exponential Equations	TOPIC 2 Polynomial Operations
			TOPIC 3 Solving Quadratic Equations	

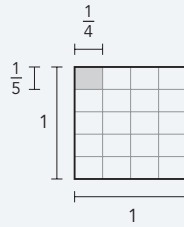
Concept	Description
Relationships between sets of numbers and fluency with the mathematical operations of addition, subtraction, multiplication, and division	<ul style="list-style-type: none"> Grade 6, Module 1: Students work with operations involving positive rational numbers. Grade 6, Module 3: Students operate with integers. Grade 7, Module 3: Students operate with positive and negative rational numbers. Grade 8, Module 5: Students expand to the real number system. Algebra I, Module 5: Students operate with polynomials.
Proportionality and Proportional Reasoning	<ul style="list-style-type: none"> Grade 6, Module 2: Students build understanding of ratio and rates. Grade 7, Modules 1 and 2: Students build to proportional relationships. Grade 8, Module 2: Students move to linear relationships. Algebra I, Module 2: Students move from linear relationships to linear functions. Algebra I, Modules 4 and 5: Students expand understanding of non-proportional relationships by investigating exponential and quadratic functions.
Equations, Expressions, and Relationships	<ul style="list-style-type: none"> Grade 6, Module 4: Students work with expressions and one-step equations and inequalities. Grade 7, Module 3: Students work with two-step equations and inequalities. Grade 8, Module 4: Students model and solve one-variable equations with variables on both sides. Algebra I, Module 3: Students solve linear equations with variables on both sides using the distributive property when necessary. Algebra I, Module 5: Students expand to solving quadratic equations.
Data Analysis and Probability	<ul style="list-style-type: none"> Grade 6, Module 5: Students begin work with the statistical process and numerical summaries. Grade 7, Module 4: Students develop an understanding of probability and draw inferences about populations from samples. Grade 8, Module 5: Students begin work with bivariate data and trend lines. Algebra I, Module 2, Topic 1: Students study the linear regression function. Algebra I, Modules 4 and 5: Students expand to the exponential regression function and the quadratic regression function.
Financial Literacy	<ul style="list-style-type: none"> Grade 6, Module 4, Topic 4: Students learn about credit cards and debit cards, net worth, and budgets. Grade 7, Module 2, Topic 3: Students build on their understanding of simple and compound interest. They investigate loans and discuss interest on credit cards. Algebra I, Module 4, Topic 2: Students compare linear and exponential functions in the context of simple interest and compound interest situations.
Geometric Relationships	<ul style="list-style-type: none"> Grade 6, Module 1, Topic 2: Students learn about the sum of the interior angles of a triangle, compare and decompose figures to determine the area of triangles, parallelograms, and trapezoids, and determine volumes of right rectangular prisms. Grade 7, Module 5: Students learn how to determine lateral and total surface area using nets, distinguish between surface area and volume, and investigate special angle relationships. Grade 8, Module 1: Students further explore the Triangle Sum theorem learned in Grade 6 and the special angle relationships learned in Grade 7 to develop the Exterior Angle theorem. Also, students extend their knowledge of special angle relationships to angle relationships in parallel lines. Finally, students investigate transformations of figures and develop an understanding of congruent and similar figures. Algebra I, Modules 1-5: Students extend their knowledge of transformations by translating and comparing figures.

Additional opportunities to see connections both vertically within the grade-level bands and horizontally within the course are provided in the Module and Topic Overviews. Each Module Overview includes a description and a math representation that demonstrate how the math of the module connects to prior learning. It also includes a description and a math representation to demonstrate how students will use their knowledge from the module in future learning.

In the Topic Overview a math representation and a description demonstrate the entry point for students. An additional math representation and description demonstrate why the mathematics of the topic is important.

Math Representation

The shaded area represents the fraction $\frac{1}{20}$ because 1 of 20 rectangles is shaded.



So, the shaded area of the rectangle represents the product $\frac{1}{5} \cdot \frac{1}{4} = \frac{1}{20}$.

Math Representation

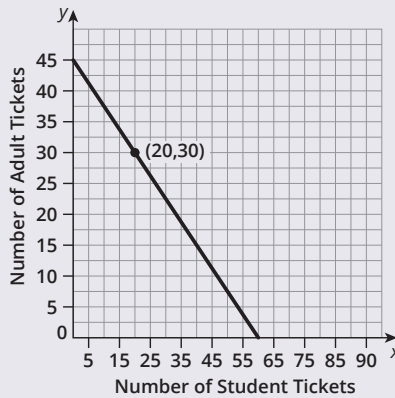
For the show choir's holiday performance, they are selling tickets for \$4.50 per student and \$6.00 per adult. On the night of their final performance, they collect \$270 in ticket sales.

Let x represent the number of student tickets, and let y represent the number of adult tickets.

The equation that represents this situation is $4.5x + 6y = 270$.

You can use the graph to identify possible combinations of student and adult tickets sold.

The point $(20, 30)$ indicates that the show choir collected \$270 from the sale of 20 student tickets and 30 adult tickets.



Topic Family Guides briefly describe the math of the content and highlight connections for families and students in the *Where have we been?* and *Where are we going?* sections of the guide.

Where have we been?

Students have used tiling to relate area to multiplication and addition, and they have used informal statements of the properties of operations. Students have also used area models to represent multiplication.

Where are we going?

In the next topic, students will use their knowledge of rectangles and area to develop the area formulas for parallelograms, triangles, and trapezoids. They will continue to build fluency with fractions throughout the course.

Depth of Key Concepts

To cover the depth of the TEKS it is crucial to spend most of the instructional time on the most important key concepts in the course.

To assist teachers with noting class instructional time spent on each TEKS a visual for each TEKS is provided. Each time the TEKS is covered within the course a portion of the visual is shaded. When the visual is completely shaded, there are no additional lessons within the course that provide direct instruction for the TEKS. At this point, the TEKS coverage, including all breakouts, within the Learning Together portion of the course is complete. Teachers can use this helpful visual to evaluate the needs of their students. When the visual is completely shaded, teachers can provide targeted Learning Individually instruction for students who have yet to become proficient with the TEKS or any breakout of the TEKS. Teachers can also provide Challenge Opportunities for students who are ready. A star in the visual indicates a readiness standard. A supporting standard does not contain a star.

Expressions, Equations, and Relationships

(7) The student applies mathematical process standards to represent linear relationships using multiple representations.

The student is expected to:



7.7A represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$.

The student is expected to:



7.10A write one-variable, two-step equations and inequalities to represent constraints or conditions within problems.

(11) The student applies mathematical process standards to solve one-variable equations and inequalities.

The student is expected to:



7.11A model and solve one-variable, two-step equations and inequalities.

In addition, teachers are provided with a lesson structure and pacing page for each lesson. The page includes an overall description of each activity, the instructional strategy employed in each activity, and suggested pacing for each activity in the lesson. This helps teachers know which activities they should spend the most time on.

LESSON STRUCTURE AND PACING: 2 DAYS

DAY 1

ENGAGE

Getting Started: It's All Greek to Me 5 minutes

ESTABLISH A SITUATION

Students analyze a problem situation involving earnings from a flat fee and per unit rate. They identify the quantities that change, the quantities that remain constant, and which quantity depends on the other quantity.

DEVELOP

Activity 1.1: Graphing Linear Equations 45 minutes

REAL-WORLD PROBLEM SOLVING, PEER WORK ANALYSIS

Students use the problem situation from Getting Started to complete a table of values. They use the table of values to establish maximum values, minimum values, and intervals of a graph of the situation. Using these dimensions, students graph the situation and then use the graph to answer questions. Students write an equation and determine if different paychecks are correct using the equation and graph.

DAY 2

Activity 1.2: Interpreting Situations in More Than One Quadrant 20-25 minutes

REAL-WORLD PROBLEM SOLVING

Students analyze a scenario involving breaking a climbing record. They determine the rate that the climbers must maintain to break the record. Students identify and define both the independent and dependent variables and write a linear equation. They use their equation to answer questions about the problem situation. Students complete a table of values and plot points on the coordinate plane, using Quadrants I and II. Then, they answer questions that focus on the graph.

DEMONSTRATE

Talk the Talk: Take Advantage of the Situation 15-20 minutes

GRAPHIC ORGANIZER

Students complete a graphic organizer to explain the advantages and disadvantages of representing a situation using a sentence, a table, a graph, and an equation.

MODULE 3 • TOPIC 3 • LESSON 1 **515C**

The Stamp the Learning icon included in lessons highlights important new key terms, definitions, activity summaries, or Worked Examples. These icons indicate opportunities for explicit instruction and emphasize key concepts teachers need to share with their students.

STAMP THE LEARNING



The paragraph and definitions provides an opportunity for explicit instruction. Interact with this information as a class and encourage students to restate or explain the information in their own words.

Balancing Conceptual and Procedural

This program covers both conceptual deep understanding and procedural fluency to pursue rigorous coverage of the TEKS. Both conceptual understanding and procedural fluency are necessary for proficiency.

To achieve a deep understanding progression in instruction starts with building understanding with concrete objects or movements, then moves to representing concepts visually, and finally to abstraction by modeling with symbols. Progressions can occur across topics, across lessons, and within lessons. Students have ample opportunities to build understanding before procedural problems and exercises are presented to increase computational fluency.

The example shown below is from Grade 6:

Concrete	Representational	Abstract										
<p>Students interact with a Worked Example as they utilize two-color counters to add integers.</p> <div><p>WORKED EXAMPLE</p><p>You can model the expression $3 + (-3)$ in different ways using two-color counters:</p><div><p>Three positive charges and three negative charges have no charge.</p><p>$3 + (-3) = 0$</p></div><div><p>Each positive charge is paired with a negative charge. Each pair of positive and negative charges has no charge.</p><p>$3 + (-3) = 0$</p></div></div>	<p>Students draw models representing the addition of number lines.</p> <div><p>Draw a model for each and then complete the number sentence.</p><div><p>a. $-9 + (-4) = \underline{\hspace{2cm}}$</p><p>c. $3 + 6 + (-4) = \underline{\hspace{2cm}}$</p></div><div><p>b. $-4 + (-5) + 4 = \underline{\hspace{2cm}}$</p></div></div>	<p>Students add integers without the use of counters.</p> <table><tr><td>$-58 + 24$</td><td>$-35 + (-15)$</td></tr><tr><td>$-33 + (-12)$</td><td>$-48 + 60$</td></tr><tr><td>$26 + (-13)$</td><td>$67 + 119$</td></tr><tr><td>$-105 + 25$</td><td>$153 + (-37)$</td></tr><tr><td>$21 + (-56)$</td><td>$18 + (-17)$</td></tr></table>	$-58 + 24$	$-35 + (-15)$	$-33 + (-12)$	$-48 + 60$	$26 + (-13)$	$67 + 119$	$-105 + 25$	$153 + (-37)$	$21 + (-56)$	$18 + (-17)$
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$21 + (-56)$	$18 + (-17)$											

More information on balancing the conceptual and procedural for each course is in the course specific Connecting Learning Experiences section of the Course and Implementation Guide.

Facilitating Productive Struggle

This program provides support for students as they problem-solve and productively struggle. Productive struggle happens when students are encouraged to discuss, explain, and revise their thinking. The program uses a consistent problem-solving model through all four courses. The Problem-Solving Model Graphic Organizer provides questions students can ask themselves as they work through each step of the modeling process. The problem-solving model encourages students to use multiple representations, to explain their mathematical reasoning, and to revise their thinking when necessary.

An icon within lessons reminds students to use the Problem-Solving Model. The Problem-Solving Model represents a strategy students can use to make sense of problems they must solve.

The Steps of the Problem-Solving Model:

1. **Notice and Wonder:** Students seek to understand the problem situation.
2. **Organize and Mathematize:** Students devise a plan for solving the problem.
3. **Predict and Analyze:** Students carry out the plan and solve the problem.
4. **Test and Interpret:** Students reflect on the reasonableness of their solution and the problem-solving process.
5. **Report:** Students share their mathematical reasoning with others.

There is more information about the Problem-Solving Model located in the Course and Implementation Guide.

Support is also provided to teachers as they facilitate activities that provide students with the opportunity to productively struggle. In the Teacher's Implementation Guide (TIG), Modeling Moment notes are included at point of use. These notes explain how to use the problem-solving model with students and how to scaffold the steps of the problem-solving model to create independent problem solvers.

Assessments

This program provides both formative and summative assessment opportunities. Formative assessment for learning occurs when teachers use student responses to assess progress and inform next instructional steps. Examples of formative assessment for learning include Questions to Support Discourse or the Talk the Talk. Formative assessment as learning occurs when students reflect, track their own progress, and set goals. This occurs on documents such as the Topic Self-Reflection or Assessment Reflection. Summative assessment of learning occurs when students take an assessment at the conclusion of a topic. Teacher guidance is provided on how to use assessment results to drive next steps of instruction supporting or challenging each student as needed.



Modeling Moment

- Provide students with the Problem-Solving Model Graphic Organizer.
- For Question 2, have students work individually or with a partner to complete the graphic organizer.
- Have students share and evaluate problem-solving strategies as a class.
- For Question 4, have students work individually or with a partner to complete the graphic organizer.
- See the Facilitating Productive Struggle section in the Course and Implementation Guide for additional guidance on supporting students through problem-solving activities.

Assessment	Type	Description and Purpose	How to Utilize the Evidence	Administration Guidance
Questions to Support Discourse; Student Look-Fors	Formative	<ul style="list-style-type: none"> To provide checks for understanding used to assess individual student and class progress towards proficiency of TEKS aligned lessons. To inform the instructional steps for the teacher during the lesson. 	<p>Allows teachers to:</p> <ul style="list-style-type: none"> Adapt instruction to meet the needs of an individual student or class. Scaffold support or extend the learning when needed. 	<ul style="list-style-type: none"> Do the math of the lesson. Read through the Facilitation Notes. Select Questions to Support Discourse to use during class. Consider creating your own questions that will guide and deepen student understanding.
Worked Examples; Thumb Up/Thumbs Down Problems; Who's Correct Problems	Formative	<ul style="list-style-type: none"> Worked Examples provide a means for students to view each step taken to solve the example problem. Thumbs Up/Down problems provide opportunities for students to analyze correct and incorrect responses to problems. From the incorrect responses, students learn to determine where the error in calculation is, why the method is an error, and also how to correct the method to correctly calculate the solution. Who's Correct problems help students analyze their own work for errors and correctness. 	<p>Allows teachers to check for understanding and common misconceptions during the lesson as:</p> <ul style="list-style-type: none"> students interact with Worked Examples. students explain the progression of the Worked Example. students justify the mathematical reasoning for Thumbs Up/ Thumbs Down and Who's Correct Problems. Teachers use the information to facilitate collaborative discourse to clarify and confirm understanding allowing students to course correct when needed. 	<ul style="list-style-type: none"> Refer to the lesson Facilitation Notes for strategies to help students interact with the Worked Example. Prepare a classroom environment that expects students to collaborate, discuss, justify, and share their mathematical reasoning.
Demonstrate component of the lesson (Talk the Talk); Essential Question (opening page of the lesson)	Formative	<ul style="list-style-type: none"> To assess student learning and to make decisions about helpful connections you need to make in future lessons. 	<p>Allows teachers to:</p> <ul style="list-style-type: none"> identify common understandings and misunderstandings from the class. inform plans for future lessons. 	<ul style="list-style-type: none"> Direct students to self-assess, monitor their own progress, and ask clarifying questions. Instruct students to revisit the Essential Question posed on the lesson opening page to gauge their understanding.
Topic Self-Reflection	Formative	<ul style="list-style-type: none"> Students self-assess their learning at the beginning, middle, and end of each topic. 	<p>Allows students to:</p> <ul style="list-style-type: none"> evaluate their understanding and identify skills where they excel or need support. see their growth during the course. make a plan to improve their understanding of concepts within the course. 	<ul style="list-style-type: none"> Direct students to the provided self-reflection document. Encourage students to accurately gauge their understanding. Discuss ways students can improve their understanding.

Assessment	Type	Description and Purpose	How to Utilize the Evidence	Administration Guidance
End of Topic Assessments	Summative	<ul style="list-style-type: none"> To evaluate individual and class understanding of the TEKS aligned topics. 	<p>Allows teachers to:</p> <ul style="list-style-type: none"> determine the next instructional steps. evaluate the need for small-group instruction or acceleration. 	<ul style="list-style-type: none"> It is recommended to administer either the print or the digital assessment method of the End of Topic Assessment. Do NOT allow a calculator (Grade 6 and Grade 7 only) Provide a 45-minute time allotment for each assessment. For consistent evaluation follow the Assessment Scoring Guide. Use the provided Response to Student Performance to help inform next instructional steps.
Assessment Reflection	Formative	<ul style="list-style-type: none"> To help students reflect, surface student thinking, and help them monitor their progress and growth. 	<p>Allows students to:</p> <ul style="list-style-type: none"> Set goals or next steps. Communicate with their teacher and family about the assessment process. 	<ul style="list-style-type: none"> Provide students with the Assessment Reflection after the assessment. Discuss the intent of the tool with students. Have students refer to the corresponding Topic Self-Reflection to complete when completing the Assessment Reflection.
Performance Tasks (optional)	Formative and Summative	<ul style="list-style-type: none"> To provide opportunities for students to problem solve, strategize, and demonstrate their learning from the entire course. 	<p>Allows teachers to:</p> <ul style="list-style-type: none"> utilize a rubric to assess individual and class depth of understanding as aligned to the TEKS. 	<ul style="list-style-type: none"> Do the Math. Review the Facilitation Notes. Use the problem-solving model to complete the task. Direct students to reference the rubric and use the rubric to evaluate the student's work.

More information on supports provided, such as the Essential Question, Questions to Support Discourse, Student Look-Fors, Common Misconceptions, and Differentiation Strategies is in the Course and Implementation Guide.

More information on the problem types students will see, such as Worked Examples, Who's Correct, and Thumbs Up/Thumbs Down problems is also included in the Course and Implementation Guide.

Supporting All Learners

Program Supports for All Learners

COURSE-LEVEL SUPPORTS

- **Course and Implementation Guide:** The Course and Implementation Guide for each course provides information about supporting EB students, students with disabilities, and gifted and talented students.
- **Math Glossary:** The math glossary for each course contains the definitions and visuals of the new key terms presented in the course.
- **Academic Glossary:** This glossary provides definitions of terms students will see throughout the course as they are asked to explain and justify their mathematical reasoning. The Academic Glossary provides questions students can ask themselves as they build proficiency in the TEKS mathematical process standards.
- **Problem-Solving Model:** The problem-solving provides a strategy all students can use to access challenging mathematical tasks. It also encourages participation from all students as they share their mathematical reasoning and problem-solving strategies.

TOPIC-LEVEL SUPPORTS

- **Cognates:** Cognates for new key terms are included in the Topic Overview, the Topic Summary, and the Topic Family Guide. The Topic Overview includes guidance for teachers on how to use cognates with EB students.
- **Skills Practice:** Skills Practice is provided for each topic for use on Learning Individually days. Teachers should use formative data to strategically plan and schedule Learning Individually days based on the needs of their students. Skills Practice includes Interleaved Practice, which helps students connect existing knowledge with newly developed skills as they alternate between skills within a section. Spaced Practice sections provide spaced retrieval opportunities of previously covered TEKS. In addition, Skills Practice includes additional differentiation instruction opportunities through prerequisite questions, when appropriate, and extension sections to help support or challenge students as needed.

LESSON-LEVEL SUPPORTS

- **EB Student Tips:** EB Student Tips at varying levels of language proficiency are provided at point of use for teachers in the Teacher's Implementation Guide.
 - The tips include embedded guidance to support EB students in developing academic vocabulary, increasing comprehension, building background knowledge, and making cross-linguistic connections through oral and written discourse.
 - The distribution of EB Student Tips across the program is intentional. The program does include tips for every proficiency level. However, there is an emphasis on supporting students at intermediate and higher proficiency levels.

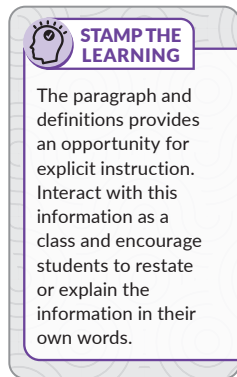
EB STUDENT TIP

For all proficiency levels

Emergent bilingual students may already know how to *translate* a word from their native tongue to English. Explain that in math, a *translation* occurs by sliding an object up, down, right, or left. Just as the meaning of a word doesn't change when it is translated, the angle, slope, or shape of an object doesn't change when it is *translated*. Be sure students understand that *translating* does not include turning, flipping, stretching, or shrinking the object.

- **Differentiation Strategies:** Differentiation Strategies for lesson instruction are provided in the Teacher's Implementation Guide. There are 3 categories of differentiation strategies. These strategies often include alternative grouping strategies such as the jigsaw method or whole class participation.
 - **Challenge Opportunities** provide options for extending the learning for students who are ready.
 - **Access for All** strategies are useful strategies that support varying learning styles.
 - **Just in Time Support** provides scaffolding to support students in reaching a deep understanding of the mathematics content.

- **Lesson Assignments:** Lesson Assignments provide additional opportunities for skill development and demonstration. The assignments also include a section to help prepare for the next lesson. Educators can use this section as a diagnostic tool to assess what students already know or to preview upcoming material.
- **Stamp the Learning:** Stamp the Learning icons identify opportunities for explicit instruction on key concepts and skills all students need to understand at the closing of a lesson.



- **Essential Question:** Closing the lesson by returning to the Essential Question and lesson objectives help students evaluate their knowledge by helping them identify what they should know and be able to do at the end of the lesson.

OBJECTIVES

- Understand quantities and their relationships with each other.
- Identify the independent and dependent quantities for a scenario.
- Match a graph with an appropriate scenario.
- Use a reasonable scale for a graph modeling a scenario.
- Identify key characteristics of graphs.
- Describe similarities and differences between pairs of graphs and scenarios.

.....

You have analyzed graphs of relationships and identified important features, such as intercepts and slopes. How can the key characteristics of a graph tell a story?

NEW KEY TERMS

- dependent quantity
- independent quantity

Leveraging the Math Glossary

Every course has a Math Glossary. At times, the Math Glossary can be a static document that exists simply to check terminology definitions. However, educators can use the Math Glossary as an interactive tool for students to utilize and be able to call upon as they encourage students to claim ownership of their own learning.

Math Glossary

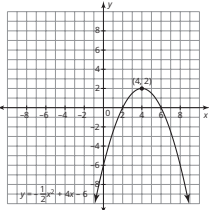
A

absolute maximum

A function has an absolute maximum if there is a point that has a y-coordinate that is greater than the y-coordinates of every other point on the graph.

Example

The ordered pair (4, 2) is the absolute maximum of the graph of the function $f(x) = -\frac{1}{2}x^2 + 4x - 6$.

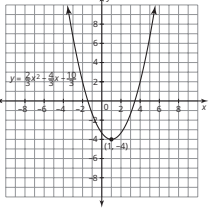


absolute minimum

A function has an absolute minimum if there is a point that has a y-coordinate that is less than the y-coordinates of every other point on the graph.

Example

The ordered pair (1, -4) is the absolute minimum of the graph of the function $y = \frac{2}{3}x^2 - \frac{4}{3}x - \frac{10}{3}$.




argument of a function

The argument of a function is the variable on which the function operates.

Example

In the function $f(x + 5) = 32$, the argument is $x + 5$.



MATH GLOSSARY G1

For all students, academic language is vital to the understanding and learning of academic content. Math concepts can often times feel difficult for students as they tend to compartmentalize math vocabulary based on when they learn a term and under what circumstances they learn it in. Consistently provide the Math Glossary to all students to reference at any point during instructional time and while working on assignments. The sooner a student can begin to make connections to the vocabulary within a lesson, the sooner they will begin to speak confidently in the classroom with you and with their peers about what they are learning.

Goals for Academic Language Acquisition:

- The Glossary should be used to effectively introduce new terms to students.
- The Glossary allows for a variety of modalities to introduce those terms based on the needs of your students.

- The glossary reinforces the use of the terms and provides authentic opportunities to use the academic language with teachers and peers in small groups, whole groups, etc.
- For students in need of support, the glossary should be considered a tool in their toolbox that they can access at any point to support them. Students should feel they have agency over their learning to utilize the Glossary to support their speaking, listening, or writing throughout the class period. All learners should feel agency to leverage the Math Glossary.

PRE-TEACHING VOCABULARY

Use the Math Glossary as a pre-teaching tool for your emergent bilingual students and special population students.

- Pre-teaching terminology will allow students to feel success before the content is being covered in the general education classroom.
- Help connect the dots and support the students and develop the skills they need to be successful in general education.

SCAFFOLDING UP FOR STUDENTS

Oftentimes, students compartmentalize academic vocabulary in just a singular content. Consider scaffolding activities that would encourage students to pursue cross-discipline and real-world applications of academic terminology using the Math Glossary. How would this vocabulary integrate in the real-world and in common language? What careers would use this language regularly and why might they use it regularly? By encouraging your students to begin to develop those real-world connections to the vocabulary, it will help them apply the information they are learning to other disciplines as well.

All students will benefit from academic vocabulary in the classroom.

ELPS

(2) Learning Strategies

The student is expected to:

- (E) internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment.

(3) Listening

The student is expected to:

- (I) demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs.

(4) Reading

The student is expected to:

- (G) demonstrate comprehension of increasingly complex English by participating in shared reading, retelling or summarizing material, responding to questions, and taking notes commensurate with content area and grade-level needs.

BEST PRACTICES TO SUPPORT LANGUAGE ACQUISITION

Embedded English Language Proficiency Standards (ELPS) are included throughout the program. They are on the teacher Lesson Overview Page, the Topic Pacing Guide, the Scope and Sequence, and the ELPS Summary.

The ELPS identify second language acquisition skills students develop as they participate in linguistically accommodated instruction in the content areas. The ELPS are grouped into five categories: learning strategies, listening, speaking, reading, and writing. As you move through your lesson materials, you will notice that the lessons are intended to offer scaffolded support to help students demonstrate what they know as they develop language and content attainment.

Strategies for Supporting EB Students in Each Lesson Phase

ENGAGE

In the Engage section of the lesson, students are asked to call upon prior knowledge and leverage the mathematical experiences they bring from home and have attained from prior years using both the home language and English. This is an opportunity for emergent bilingual students to make meaningful connections using language and content. The use of graphs or other visual representations are purposefully embedded to enhance understanding and to help students make connections. Students can create bilingual vocabulary references on these visuals to build conceptual understanding while developing English language proficiency. All students should be comfortable sharing and connecting during this portion of the lesson, so provide as many supports and opportunities for emergent bilingual students as possible to share in whatever way is comfortable to them.

DEVELOP

In the Develop section of the lesson, new mathematical concepts are taught. It is important to make content comprehensible while supporting language development. Tools such as answer banks, vocabulary word banks, sentence frames, and graphic organizers can linguistically accommodate a lesson when used strategically. Intentionally planning opportunities for students to interact with peers and discuss concepts throughout the learning process provides meaningful opportunities for practice. Creating an acceptable space for the use of the home language in the classroom lets students know educators recognize and value their contributions regardless of their level of English proficiency.

This is also the portion of the lesson where a high level of collaboration and group work might be taking place. Recall and frame for students the expectations for working in groups and be sure that contribution from all group members is a priority. It is important that all students are heard in their group and that their group is a safe space for them to make mistakes whether it be on the mathematical content end or the use of linguistic structures (regardless of language acquisition status). Mistakes are how we learn and that remains true in group work!

DEMONSTRATE

The Demonstrate section of the lesson is the formative assessment which gives students the opportunity to show what they can do and what key concept(s) they have learned during the lesson. This portion of the lesson should be linguistically accommodated, differentiated based on the students' language proficiency levels. The most critical question is, how can I linguistically accommodate this formative assessment so that language is not an obstacle to demonstrating content knowledge?

There are many ways to linguistically accommodate the Demonstrate portion of the lesson. The ideas below are suggestions that start with the

highest level of support and lessen as a student advances in levels of English proficiency.

- Allow a beginner or intermediate level student to draw a representation or use a visual to show what they learned. Encourage the student to explain the representation.
- Determine whether your beginner or intermediate students are literate in their home language and are comfortable completing the Talk the Talk in their home language. When so, locate a person who can translate student responses for you. Ask a campus specialist for help.
- As lessons progress and a beginner or intermediate student has multiple opportunities to practice with content vocabulary, encourage the student to insert these words into home language writing in the Talk the Talk.
- As students become comfortable using content words in English, offer them a sentence frame so they can begin drafting complete sentences in English.
- Advanced or Advanced High-level students may complete the Talk the Talk in English with many errors in grammar, spelling, and word choice. Focus on the appropriate use of content area vocabulary and organization of writing for clarity. For example, an unclear paragraph could be effectively chunked into numbered, single sentence steps.

Remember to be mindful of the variety of linguistic accommodations that you can bring to the table to ensure that your students are comfortable and set up for success. Language acquisition is not a “one size fits all” methodology and every student will benefit from your flexibility, consistent support, and refinement of support.

Data Analysis and Guidance

Data is what drives instruction. There are many opportunities throughout this program to gather data and the data comes in many forms. A summative assessment is not the only way to gather data. Educators can also gather data by analyzing student work and facilitating discourse.

As students work through the lesson, the activities in the lesson and the Questions to Support Discourse are provided to assist teachers in gathering data. As teachers gather data from students during a lesson, point of use notes direct teachers to Learning Individually Skills Practice sets that target the skills covered in portions of that lesson. The data gathered by teachers for the class and individual students should dictate when to schedule Learning Individually days as well as what Skills Practice sets to assign to which students.

Questions 1–3 present an opportunity to assess students' understanding of the essential content of the lesson. Use student responses to determine when to schedule Learning Individually Days. To provide additional practice identifying dependent and independent quantities, assign Skills Practice Set A for this lesson.

Just as teachers learn from analyzing student work, students learn from peer work analysis. Who's Correct, Thumbs Up, and Thumbs Down problems throughout the courses allow students to analyze peer work. Viewing the correct and incorrect examples help guide understanding and reduce common misconceptions. In this case students are provided with data to analyze as an instructional strategy. Common misconceptions included within the teacher facilitation notes provide additional strategies for addressing and correcting misconceptions.

The End of Topic Assessment provides one way for teachers to formally assess students. The teacher-facing Assessment Scoring Guide provides guidance for responding to student performance on each question in the assessment. The guidance indicates Skills Practice sections to support learners who need additional support with a TEKS as well as challenge opportunities. Remember, the placement of Learning Individually days is flexible within the program. Educators can choose to use a Learning Individually day for the topic after the assessment to respond to the assessment data. Remember data is used to drive the instruction and flexibility is provided to meet the needs of different classrooms of students.

Additional opportunities for students to demonstrate proficiency on priority TEKS within the course is provided in the form of Performance Tasks.

Guidance informs teachers when students have received instruction in the concepts necessary to complete each task. Each task includes a scoring rubric, so students know what they need to receive points and show proficiency. There is a Performance Task Overview for each course that explains how the performance tasks in the course are organized and how students can demonstrate understanding for each task. In addition, the Performance Task Overview details how the performance tasks promote expertise in the TEKS mathematical process standards providing students with an additional opportunity to demonstrate proficiency with productive mathematical processes. These are optional and not included within the 165-Day Pacing.

Educators have flexibility in implementing these performance tasks, and again these are optional tasks and are not required of all learners. Use the data from each class and each student to drive instructional decisions here. Some students could complete a performance task to extend their learning, while others work on Skills Practice or a different task.

Educators can use the Prepare section of the assignment as a diagnostic tool. Teachers can assign the Prepare section of the lesson assignment to determine student's prior knowledge for the upcoming activity. This data can drive the facilitation questions educators chose to ask students during the lesson. In addition, educators can also use Spaced Practice sets in the Skills Practice to analyze individual students' level of proficiency with standards from previous topic.

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