OER Secondary Mathematics
EDITION 1

Module 1

150-Day Topic Pacing Guides

MODULE 1, TOPIC 1 PACING GUIDE

150-Day Pacing

1 Transforming Geometric Objects

TOPIC 1: Rigid Motion Transformations

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1D, 8.1E, 8.1F, 8.1G

ELPS: 1.A, 1.C, 1.E, 2.E, 2.I, 3.B, 3.D, 3.E, 3.H, 4.C, 4.D, 4.F, 4.G, 4.H

Topic Pacing: 19 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
	Introduction to the Problem-Solving Model and Learning Resources	Students reflect on learning a new skill and the variety of ways they learn. The problem-solving model, TEKS mathematical process standards, and the Academic Glossary help students complete a problem-solving activity. Students reflect on and summarize the problem-solving process. Since the intent of this lesson is to introduce the problem-solving model and review the TEKS mathematical process standards, the focus is on process not content. Students will need access to the Academic Glossary, Problem-Solving Model Graphic Organizer, Problem-Solving Questions to Ask, and TEKS mathematical process standards which are located in the Course Guide. These materials should always be available to students throughout the course. **Materials Needed:** (located in the Course Guide) Academic Glossary, Problem-Solving Model Graphic Organizer, Problem-Solving Model Questions to Ask, TEKS Mathematical Process Standards	**8.10C**	**0**
1	Introduction to Congruent Figures	Students use patty paper to indirectly measure segments and angles and use folds to make observations about a figure. They determine if figures are the same size and shape. The term *congruent figures* is defined. Students use patty paper to determine if figures are congruent. They then make conjectures about congruence, investigate their conjectures, and justify their conjectures using informal transformation language. **Materials Needed:** Patty Paper, Scissors	8.10A	2
2	Introduction to Rigid Motions	Students develop a formal understanding of translations, rotations, and reflections in the plane. The terminology of transformations is introduced, including *pre-image*, *image*, *translation*, *reflection*, *line of reflection*, *rotation*, *center of rotation*, *and angle of rotation*. Students use patty paper to investigate each transformation, create images from pre-images, and determine the properties of each transformation. They learn that each rigid motion transformation preserves the size and shape of the original figure, and that translations and rotations also preserve the orientation of the figure. At the end of the lesson, students state the formal name for transformations that carry figures onto congruent figures and reason that an image of an image of a pre-image is congruent to the pre-image. **Materials Needed:** Patty Paper, Protractors, Centimeter Rulers	8.10A 8.10B	3

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 1, TOPIC 1 PACING GUIDE

150-Day Pacing

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
3	Translations of Figures on the Coordinate Plane	Students use patty paper to explore translations of various figures on a coordinate plane. They then generalize about the effects of translating a figure on its coordinates. Students verify that two figures are congruent by describing translations that map one figure onto another. **Materials Needed:** Patty Paper	8.10A **8.10C**	2
4	Reflections of Figures on the Coordinate Plane	Students use patty paper to explore reflections of various figures on a coordinate plane. They then generalize about the effects reflecting a figure has on its coordinates. Students verify that two figures are congruent by describing reflections that map one figure onto another. **Materials Needed:** Patty Paper, Problem-Solving Model Graphic Organizer	8.10A **8.10C**	2
5	Rotations of Figures on the Coordinate Plane	Students use patty paper to explore rotations of various figures on a coordinate plane. They then generalize about the effects of rotating a figure on its coordinates. Students verify that two figures are congruent by describing a rigid motion that maps one figure onto another. **Materials Needed:** Patty Paper, Problem-Solving Model Graphic Organizer	8.10A **8.10C**	2
6	Congruence and Rigid Motions	Students use coordinates to determine the rigid motion used to map one congruent figure onto another. They learn about and write congruence statements for congruent triangles. Using a coordinate plane, students determine whether two figures are congruent. They then generalize the effects of rigid motions on the angle measures, side lengths, area, and perimeter of the figures. **Materials Needed:** Problem-Solving Model Graphic Organizer	8.10A **8.10C**	2
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				5

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 1, TOPIC 1 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.10A		TEKS: 8.10A, 8.10B		
LESSON 1 Introduction to Congruent Figures GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ✪ TALK THE TALK ✪	**LESSON 2** Introduction to Rigid Motions GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 2** continued ACTIVITY 2 ✪	**LESSON 2** continued ACTIVITY 3 ✪ TALK THE TALK ✪
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
	TEKS: 8.10A, **8.10C**			TEKS: 8.10A, **8.10C**
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 3** Translations of Figures on the Coordinate Plane GETTING STARTED ACTIVITY 1 ✪	**LESSON 3** continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 4** Reflections of Figures on the Coordinate Plane GETTING STARTED ACTIVITY 1 ✪
Day 11	**Day 12**	**Day 13**	**Day 14**	**Day 15**
		TEKS: 8.10A, **8.10C**		
LESSON 4 continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 5** Rotations of Figures on the Coordinate Plane GETTING STARTED ACTIVITY 1 ✪	**LESSON 5** continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*
Day 16	**Day 17**	**Day 18**	**Day 19**	
TEKS: 8.10A, **8.10C**				
LESSON 6 Congruence and Rigid Motions GETTING STARTED ACTIVITY 1 ✪ ACTIVITY 2 ✪	**LESSON 6** continued ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**END OF TOPIC ASSESSMENT**	

*Bold TEKS = Readiness Standard

How can you incorporate Skills Practice with students?

There are five Learning Individually days scheduled within this topic. The placement of these days within the topic is flexible. The intent is to distribute spaced and interleaved practice throughout a topic and throughout the year. It is not necessary for students to complete all Skills Practice for the topic and different students may complete different problem sets. You should use data to strategically assign problem sets aligned to individual student needs. You should analyze student responses from the following embedded assessment opportunities to help assess individual needs: Essential Questions, Talk the Talks, Student Self-Reflections, and End of Topic Assessments. For students who are building their proficiency, you can assign problem sets to target specific skills. For students who have demonstrated proficiency, there are extension problems of varied levels of challenge.

How can you identify whether students are ready for new learning?

The Prepare section of the Lesson Assignments and the Spaced Practice set of Skills Practice can serve as diagnostic tools. Depending on available time, you can assign the Prepare section of the Lesson Assignments as homework or as a warm-up to identify students' prior knowledge for the upcoming lesson's activities. You can also use the Spaced Practice sets of Skills Practice to analyze individual students' level of proficiency on standards from previous topics.

MODULE 1, TOPIC 2 PACING GUIDE

150-Day Pacing

1 Transforming Geometric Objects

TOPIC 2: Similarity

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1E, 8.1F, 8.1G

ELPS: 1.A, 1.B, 1.C, 1.E, 3.D, 3.J, 4.F, 5.B, 5.F

Topic Pacing: 10 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Dilations of Figures	Students explore dilations on the plane. The terms *dilation*, *center of dilation*, *scale factor* or *dilation factor*, *enlargement*, and *reduction* are defined. Students dilate a variety of objects and figures using scale factors greater than and less than 1. They use a model to determine side lenths and angle measures after enlargements and reductions in order to verify similarity. Students connect dilations to changing image sizes in word processing and graphics software. **Materials Needed:** Millimeter Rulers, Protractors	8.3A 8.10A	2
2	Dilating Figures on the Coordinate Plane	Students build dilations on the coordinate plane as repeated geometric translations, using the origin as the center of dilation. Throughout, students create and modify conjectures about the effect of dilations with the origin as the center on the coorindates, perimeter, and area of a figure. They use dilations and transformations they learned previously to verify that two figures are similar. **Materials Needed:** Centimeter Rulers, Protractors, Problem-Solving Model Graphic Organizer	8.3B **8.3C** 8.10B 8.10D	2
3	Mapping Similar Figures Using Dilations	Students determine if figures are similar through transformations. They explore what is meant by "same shape" when referring to similar figures. Students determine similarity using a single dilation and verify similarity of a variety of figures through a sequence of transformations. They then explore the relationship between images of a common pre-image under different conditions and the relationship between figures that are similar. Finally, students summarize the relationships between transformations and congruent and similar figures. **Materials Needed:** Centimeter Rulers, Protractors	8.3A **8.3C** 8.10A 8.10B	2
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				3

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 1, TOPIC 2 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.3A, 8.10A			TEKS: 8.3B, **8.3C**, 8.10B, 8.10D	
LESSON 1 Dilations of Figures GETTING STARTED ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 2** Dilation Figures on the Coordinate Plane GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 2** continued ACTIVITY 2 ✪ TALK THE TALK ✪
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
	TEKS: 8.3A, **8.3C**, 8.10A, 8.10B			
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 3** Mapping Similar Figures Using Dilations GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 3** continued ACTIVITY 2 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**END OF TOPIC ASSESSMENT**

*Bold TEKS = Readiness Standard

How can you incorporate Skills Practice with students?

There are three Learning Individually days scheduled within this topic. The placement of these days within the topic is flexible. The intent is to distribute spaced and interleaved practice throughout a topic and throughout the year. It is not necessary for students to complete all Skills Practice for the topic and different students may complete different problem sets. You should use data to strategically assign problem sets aligned to individual student needs. You should analyze student responses from the following embedded assessment opportunities to help assess individual needs: Essential Questions, Talk the Talks, Student Self-Reflections, and End of Topic Assessments. For students who are building their proficiency, you can assign problem sets to target specific skills. For students who have demonstrated proficiency, there are extension problems of varied levels of challenge.

How can you identify whether students are ready for new learning?

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MODULE 1, TOPIC 3 PACING GUIDE

150-Day Pacing

1 Transforming Geometric Objects

TOPIC 3: Line and Angle Relationships

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1D, 8.1E, 8.1F, 8.1G

ELPS: 2.C, 2.E, 3.B, 3.F, 3.G, 4.D, 4.F, 4.G, 5.B

Topic Pacing: 10 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Exploring Angle Theorems	Students explore and justify the relationships between angles and sides in a triangle. They establish the Triangle Sum theorem and use the theorem as they explore the relationship between interior angle measures and the side lengths of triangles. Students identify exterior angles and remote interior angles of triangles and explore the relationship between these angles to establish the Exterior Angle theorem. They then practice applying both theorems to demonstrate their knowledge of triangle relationships. **Materials Needed:** Patty Paper, Centimeter Rulers, Problem-Solving Model Graphic Organizer	8.8D	2
2	Exploring the Angles Formed by Lines Intersected by a Transversal	Students explore the angles formed when two lines are intersected by a transversal. They use the Parallel postulate and transformations to begin exploring and identifying the angles. The terms *transversal*, *alternate interior angles*, *alternate exterior angles*, *same-side interior angles*, and *same-side exterior angles* are introduced. Students are given a street map and asked to identify transversals and special pairs of angles. After measuring several angles, they conclude that when two parallel lines are intersected by a transversal, the alternate interior, alternate exterior, and corresponding angles are congruent. Students also conclude that same-side interior and same-side exterior angles are supplementary. When the lines are not parallel, these relationships do not hold true. Finally, students solve problems using the parallel line and angle relationships. **Materials Needed:** Straightedges, Patty Paper, Protractors	8.8D	**2**
3	Exploring the Angle-Angle Similarity Theorem	The Angle-Angle Similarity theorem can be used to show that two traingles are simlar. From previous lessons, students should already recognize that two similar triangles have congruent corresponding angles and proportional corresponding sides. The Angle-Angle Similarity theorem allows students to show that two triangles are similar without comparing the measures of the six parts of each triangle. **Materials Needed:** Straightedges, Protractors	8.8D	2
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				3

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MODULE 1, TOPIC 3 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.8D **LESSON 1** Exploring Angle Theorems GETTING STARTED ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	TEKS: 8.8D **LESSON 2** Exploring the Angles Formed by Lines Intersected by a Transversal GETTING STARTED ✪ ACTIVITY 1 ACTIVITY 2 ✪	**LESSON 2** continued ACTIVITY 3 ✪ ACTIVITY 4 ✪ ACTIVITY 5 TALK THE TALK ✪
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	TEKS: 8.8D **LESSON 3** Exploring the Angle-Angle Similarity Theorem GETTING STARTED ACTIVITY 1 ✪	**LESSON 3** continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**END OF TOPIC ASSESSMENT**

*Bold TEKS = Readiness Standard

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OER Secondary Mathematics
EDITION 1

Module 2

150-Day Topic Pacing Guides

MODULE 2, TOPIC 1 PACING GUIDE

150-Day Pacing

2 Developing Function Foundations

TOPIC 1: From Proportions to Linear Relationships

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1D, 8.1E, 8.1F, 8.1G

ELPS: 1.H, 2.A, 2.C, 2.D, 2.G, 2.H, 2.I, 3.G, 3.I, 4.J, 5.A, 5.C, 5.F, 5.G

Topic Pacing: 16 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Representations of Proportional Relationships	Students examine a context which presents a proportional relationship with a ratio and use this ratio to write equivalent ratios. They further analyze this context by creating a table of values and matching equations to situations. Students then generalize this representation to an equation in the form $y = kx$, identifying k as the constant of proportionality. Next, students analyze scenarios involving proportional relationships, also known as direct variation, represented in different forms. They end the lesson by analyzing and describing the general characteristics of proportional relationships as represented in graphs, tables, and equations. Later in the topic, students will use these general characteristics to contrast proportional linear relationships with non-proportional linear relationships. **Materials Needed:** Straightedges	**8.4B** **8.4C** 8.5A 8.5E 8.5H	3
2	Using Similar Triangles to Describe the Steepness of a Line	Students connect the previously learned concepts of unit rate, constant of proportionality, and scale factor with the concept of slope, which is introduced here as the rate of change of the dependent quantity compared to the independent quantity. In this lesson, *slope* is defined as the steepness and direction of a line. The formula to calculate slope is introduced in the next topic. Students derive the equation for a proportional relationship, $y = mx$ and then, by translating the line b units, they derive the equation for a non-proportional linear relationship, $y = mx + b$. They practice writing equations from graphs. Students begin with incomplete tables and graphs to create their own proportional and non-proportional linear relationships. They also investigate the slope of a horizontal line. **Materials Needed:** Patty Paper, Straightedges, Scissors	8.4A **8.4B** **8.4C** 8.5F 8.5H	3

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 2, TOPIC 1 PACING GUIDE

150-Day Pacing

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
3	Exploring Slopes Using Similar Triangles	Students use similar triangles to explain why the slope is the same between any two distinct points on a non-vertical line. They develop this understanding by taking two points on a line and drawing a segment horizontally from one point and a segment vertically from the other point until the two segments intersect to form a right triangle. The right triangles formed are verified to be similar using transformations, patty paper, and properties of angles formed by parallel lines. Using the relationship between the ratios associated with the corresponding sides of similar triangles, students demonstrate that the slope of any two points on the non-vertical line is the same. They explore this concept first using a line in the form $y = mx$ and then with lines in the form $y = mx + b$ with positive and negative slopes. **Materials Needed:** Patty Paper, Problem-Solving Model Graphic Organizer	8.4A	2
4	Transformations of Lines	Students apply geometric transformations to the basic function, $y = x$, first reviewing the effects of transformations on geometric figures in the coordinate plane. They use patty paper to investigate the relationship between translations of $y = x$, noting that the images have the same slope as the pre-image and different y-intercepts. Students then investigate graphs with the same y-intercept but different slopes and recognize $y = mx$ as a dilation of $y = x$ by a factor of m. Students graph several equations with the same slope and conclude that the lines have a parallel relationship. **Materials Needed:** Thin Pasta, Patty Paper, Straightedges, Problem-Solving Model Graphic Organizer	**8.3C** **8.4B** **8.4C** 8.5B 8.5F **8.10C**	3
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				4

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MODULE 2, TOPIC 1 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: **8.4B**, **8.4C**, 8.5A, 8.5E, 8.5H				TEKS: 8.4A, **8.4B**, **8.4C**, 8.5F, 8.5H
LESSON 1 Representations of Proportional Relationships GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ACTIVITY 3 ✪	**LESSON 1** continued ACTIVITY 4 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 2** Using Similar Triangles to Describe the Steepness of a Line GETTING STARTED ACTIVITY 1 ✪
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
			TEKS: 8.4A	
LESSON 2 continued ACTIVITY 2 ✪ ACTIVITY 3 ✪	**LESSON 2** continued ACTIVITY 4 ✪ ACTIVITY 5 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 3** Exploring Slopes Using Similar Triangles GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 3** continued ACTIVITY 2 ✪ TALK THE TALK
Day 11	**Day 12**	**Day 13**	**Day 14**	**Day 15**
	TEKS: **8.3C**, **8.4B**, **8.4C**, 8.5B, 8.5F, **8.10C**			
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 4** Transformations of Lines GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 4** continued ACTIVITY 2 ✪	**LESSON 4** continued ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*
Day 16				
END OF TOPIC ASSESSMENT				

*Bold TEKS = Readiness Standard

How can you incorporate Skills Practice with students?

There are four Learning Individually days scheduled within this topic. The placement of these days within the topic is flexible. The intent is to distribute spaced and interleaved practice throughout a topic and throughout the year. It is not necessary for students to complete all Skills Practice for the topic and different students may complete different problem sets. You should use data to strategically assign problem sets aligned to individual student needs. You should analyze student responses from the following embedded assessment opportunities to help assess individual needs: Essential Questions, Talk the Talks, Student Self-Reflections, and End of Topic Assessments. For students who are building their proficiency, you can assign problem sets to target specific skills. For students who have demonstrated proficiency, there are extension problems of varied levels of challenge.

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MODULE 2, TOPIC 2 PACING GUIDE

150-Day Pacing

2 Developing Function Foundations

TOPIC 2: Linear Relationships

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1D, 8.1E, 8.1G

ELPS: 1.A, 1.B, 1.C, 1.E, 1.F, 2.C, 2.D, 2.I, 3.E, 4.C, 4.D, 4.F, 5.B, 5.D, 5.G

Topic Pacing: 16 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Using Tables, Graphs, and Equations	Tables, graphs, and equations can provide different representations of the same problem situation. Students create equations, tables, and graphs to analyze linear relationships. Students compare and analyze the local shop and online store problem situations algebraically and graphically. They then write a response that compares the pricing plans for the two companies and predict how the pricing by the online store will affect the business of the local shop. **Materials Needed:** Straightedges, Problem-Solving Model Graphic Organizer	8.5B **8.5I**	**2**
2	Linear Relationships in Tables	Students analyze a table of values within a context and determine the rate of change by using its formal definition. Students use the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$ to determine the rate of change for a table of values (or two points). Students combine their knowledge of linear relationships and their skill of determining rate of change from a table of values in order to determine whether a given table of values represents a linear relationship. This process includes the special case of examining first differences. **Materials Needed:** Calculators, Problem-Solving Model Graphic Organizer	8.4A **8.4C** 8.5F	**2**
3	Linear Relationships in Contexts	Students analyze a context that represents linear relationships among distance, cost, and gallons of gas. They represent the same context using different independent and dependent quantities, each time calculating the rate in order to connect processes and representations. Students then determine the unit rate from a variety of contexts. Some contexts provide rates that must be interpreted and restated using the given units and labels, while others provide two data points, giving students the opportunity to use the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$. **Materials Needed:** Problem-Solving Model Graphic Organizer	**8.4C**	**1**

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 2, TOPIC 2 PACING GUIDE

150-Day Pacing

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
4	Slope-Intercept Form of a Line	Students formalize the initial value of a linear relationship, or the point where the line crosses the *y*-axis, as the *y*-intercept of the graph. They learn the notation for *y*-intercept and determine *y*-intercept informally from graphs. Students then use the slope formula to determine the value of the *y*-intercept and to derive the slope-intercept form of a linear equation. They practice writing equations in slope-intercept form given different information in different forms and analyze linear relationships. **Materials Needed:** Derby Day Cards, Straightedges, Colored Pencils, Problem-Solving Model Graphic Organizer	**8.4C** **8.5I**	2
5	Defining Functional Relationships	The terms *relation* and *function* are defined. Relations are represented as mappings, sets of ordered pairs, tables, sequences, contexts, graphs, and equations. Students begin by analyzing mappings, sets of ordered pairs, tables, and sequences and determine whether these relations are functions according to the definition. They then determine whether different real-world contexts represent functions. Next, students analyze graphs and use the vertical line test to determine whether the various graphs represent functions. Students determine whether equations are functions by substituting values for *x* into the equation and then determining if any *x*-values can be mapped to more than one *y*-value. Students solidify their understanding of functions by completing a graphic organizer with the definition of *function*, a problem situation, a table, and a sketch of a graph of a function. **Materials Needed:** Scissors, Graph Cutouts	**8.5G**	3
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				5

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MODULE 2, TOPIC 2 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.5B, **8.5I**			TEKS: 8.4A, **8.4C**, 8.5F	
LESSON 1 Using Tables, Graphs, and Equations GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 2** Linear Relationships in Tables GETTING STARTED ACTIVITY 1 ✪ ACTIVITY 2 ✪	**LESSON 2** continued ACTIVITY 3 ✪ ACTIVITY 4 ✪ TALK THE TALK
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
	TEKS: **8.4C**		TEKS: **8.4C, 8.5I**	
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 3** Linear Relationships in Contexts GETTING STARTED ACTIVITY 1 ✪ ACTIVITY 2 ✪ TALK THE TALK	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 4** Slope-Intercept Form of a Line GETTING STARTED ✪ ACTIVITY 1 ✪ ACTIVITY 2 ✪	**LESSON 4** continued ACTIVITY 3 TALK THE TALK ✪
Day 11	**Day 12**	**Day 13**	**Day 14**	**Day 15**
	TEKS: **8.5G**			
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 5** Defining Functional Relationships GETTING STARTED ACTIVITY 1 ✪	**LESSON 5** continued ACTIVITY 2 ACTIVITY 3 ✪	**LESSON 5** continued ACTIVITY 4 ✪ ACTIVITY 5 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*
Day 16				
END OF TOPIC ASSESSMENT				

*Bold TEKS = Readiness Standard

How can you incorporate Skills Practice with students?

There are five Learning Individually days scheduled within this topic. The placement of these days within the topic is flexible. The intent is to distribute spaced and interleaved practice throughout a topic and throughout the year. It is not necessary for students to complete all Skills Practice for the topic and different students may complete different problem sets. You should use data to strategically assign problem sets aligned to individual student needs. You should analyze student responses from the following embedded assessment opportunities to help assess individual needs: Essential Questions, Talk the Talks, Student Self-Reflections, and End of Topic Assessments. For students who are building their proficiency, you can assign problem sets to target specific skills. For students who have demonstrated proficiency, there are extension problems of varied levels of challenge.

How can you identify whether students are ready for new learning?

The Prepare section of the Lesson Assignments and the Spaced Practice set of Skills Practice can serve as diagnostic tools. Depending on available time, you can assign the Prepare section of the Lesson Assignments as homework or as a warm-up to identify students' prior knowledge for the upcoming lesson's activities. You can also use the Spaced Practice sets of Skills Practice to analyze individual students' level of proficiency on standards from previous topics.

OER Secondary Mathematics
EDITION 1

Module 3

150-Day Topic Pacing Guides

MODULE 3, TOPIC 1 PACING GUIDE

150-Day Pacing

3 Data Data Everywhere

TOPIC 1: Patterns in Bivariate Data

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1D, 8.1E, 8.1F, 8.1G

ELPS: 1.A, 1.D, 1.F, 2.C, 2.E, 3.B, 3.D, 3.H, 4.E, 4.F

Topic Pacing: 11 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Analyzing Patterns in Scatterplots	Students construct and analyze scatterplots of bivariate data to explore patterns in the data. They perform an experiment, collect data, use the data to create a table of values, use the table of values to create a scatterplot, and use the scatterplot to answer questions related to the problem situation. Students analyze scatterplots as they learn the terms *bivariate data*, *explanatory variable*, *response variable*, *linear association*, *positive association*, *negative association*, *cluster*, and *outlier*. Students identify explanatory and response variables and look for and describe the patterns of association in a wide variety of contexts. **Materials Needed:** 1–3 Stopwatches, Cups	8.5C 8.11A	**2**
2	Drawing Trend Lines	Students analyze two scatterplots to show the percent of sales for presidential biographies in two formats, from bookstores and from the Internet, from the period from 2017 to 2023. They write an equation of the trend line for each scatterplot and draw it on their plot. Using their trend line, also called a line of best fit, students predict the percent of book sales. The terms *trend line*, *interpolating*, and *extrapolating* are defined in this lesson. **Materials Needed:** Thin Pasta, Straightedges	**8.5D** **8.5I**	2
3	Analyzing Trend Lines	Students create a scatterplot for age and height. They draw the trend line and determine the equation of the line that best fits the data. Students then make predictions for height based on age using the trend line. **Materials Needed:** Straightedges	**8.5D** **8.5I**	2

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 3, TOPIC 1 PACING GUIDE

150-Day Pacing

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
4	Comparing Slopes and Intercepts of Data from Experiments	The Stroop Test studies a person's perception of words and colors by using lists of color words (red, green, black, and blue) that are written in one of the four colors. Students conduct the Stroop Test experiment to gather data. They calculate the mean time for various matching and nonmatching lists of words and create scatterplots of the length of the list versus the amount of time. Students draw the trend line for each scatterplot, and then make predictions for the amount of time based on the length of the list using the line that best fits the data. **Materials Needed:** Matching Lists and Non-Matching Lists, Problem-Solving Model Graphic Organizer, Stopwatches, Straightedges	**8.5D** **8.5I**	1
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				3

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 3, TOPIC 1 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.5C, 8.11A **LESSON 1** Analyzing Patterns in Scatterplots GETTING STARTED ACTIVITY 1 ACTIVITY 2 ✪	**LESSON 1** continued ACTIVITY 3 ✪ ACTIVITY 4 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	TEKS: **8.5D**, **8.5I** **LESSON 2** Drawing Trend Lines GETTING STARTED ACTIVITY 1 ✪	**LESSON 2** continued ACTIVITY 2 ✪ TALK THE TALK ✪
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	TEKS: **8.5D**, **8.5I** **LESSON 3** Analyzing Trend Lines GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 3** continued ACTIVITY 2 ✪ TALK THE TALK ✪	TEKS: **8.5D**, **8.5I** **LESSON 4** Comparing Slopes and Intercepts of Data from Experiments ACTIVITY 1 ✪ ACTIVITY 2 ✪ TALK THE TALK	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*
Day 11				
END OF TOPIC ASSESSMENT				

*Bold TEKS = Readiness Standard

How can you incorporate Skills Practice with students?

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How can you identify whether students are ready for new learning?

The Prepare section of the Lesson Assignments and the Spaced Practice set of Skills Practice can serve as diagnostic tools. Depending on available time, you can assign the Prepare section of the Lesson Assignments as homework or as a warm-up to identify students' prior knowledge for the upcoming lesson's activities. You can also use the Spaced Practice sets of Skills Practice to analyze individual students' level of proficiency on standards from previous topics.

MODULE 3, TOPIC 2 PACING GUIDE

150-Day Pacing

3 Data Data Everywhere

TOPIC 2: Variability and Sampling

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1D, 8.1E, 8.1F, 8.1G

ELPS: 1.C, 1.E, 2.E, 2.H, 3.D, 3.H

Topic Pacing: 10 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Mean Absolute Deviation	Students analyze two data sets displayed on a dot plot that have the same mean, but with different amounts of spread. The concept of deviation is introduced, and students calculate the deviations of each data point from the mean. The *mean absolute deviation* is introduced, and students calculate the mean absolute deviation for each data set. Then, they calculate and interpret the mean absolute deviation for two additional data sets. Finally, students convert non-numerical data from two data sets into numerical data to analyze and interpret it using measures of center and variation. **Materials Needed:** Calculators	8.11B	2
2	Collecting Random Samples	Students review the statistical process and deepen their understanding of the second component of the process: data collection. They are introduced to new terms related to data collection. Students then read various problem situations and differentiate between census and sample, and parameter and statistic. Students learn that a sample is smaller than the population, and it represents characteristics of the population. They encounter methods for selecting samples from a population and determine if methods inadvertently misrepresent the population. Students use two tools to generate random numbers: pulling numbers and random number tables. Random number tables are provided. **Materials Needed:** Paper Bags, Scissors, Blank Paper, Problem-Solving Model Graphic Organizer, Calculators	8.11C	**2**
3	Sample Populations	Students are introduced to the concept and purpose of a census. They are given census data in the form of tables for the population of each county in Texas. Students analyze the data and determine the importance of selecting a random sample that is representative of the population. Students then choose their own random samples of the population data and calculate various statistics. Finally, students calculate the averages of the statistics of the entire class's samples and compare these averages to the population statistics. **Materials Needed:** Problem-Solving Model Graphic Organizer, Calculators	8.11B 8.11C	2
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				3

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 3, TOPIC 2 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.11B **LESSON 1** Mean Absolute Deviation GETTING STARTED ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	TEKS: 8.11C **LESSON 2** Collecting Random Samples GETTING STARTED ACTIVITY 1 ✪ ACTIVITY 2 ✪	**LESSON 2** continued ACTIVITY 3 ACTIVITY 4 ✪ TALK THE TALK
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	TEKS: 8.11B, 8.11C **LESSON 3** Sample Populations GETTING STARTED ACTIVITY 1 ✪	**LESSON 3** continued ACTIVITY 2 ✪ TALK THE TALK	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**END OF TOPIC ASSESSMENT**

*Bold TEKS = Readiness Standard

How can you incorporate Skills Practice with students?

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How can you identify whether students are ready for new learning?

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Secondary Mathematics
EDITION 1

Module 4

150-Day Topic Pacing Guides

MODULE 4, TOPIC 1 PACING GUIDE

150-Day Pacing

4 Modeling Linear Equations

TOPIC 1: Solving Linear Equations and Inequalities

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1D, 8.1E, 8.1F, 8.1G

ELPS: 1.A, 2.D, 2.G, 4.E, 4.I, 4.K, 5.G

Topic Pacing: 7 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Equations with Variables on Both Sides	Students solve equations with the same variable on both sides of the equal sign. They use the properties of equality, the additive inverse, and the distributive property to solve equations. In addition, students consider different strategies to solve the same equation based on its given structure. They divide out a number from both sides of an equation, multiply both sides of an equation by the least common denominator of fractional terms to rewrite fractions as integers, and multiply both sides of an equation by a power of 10 to rewrite decimals as integers. These strategies help simplify equations for students to make calculations easier as students solve for an unknown. The lesson begins and ends with students building their own equations. **Materials Needed:** Algebra Tiles, Scissors, Problem-Solving Model Graphic Organizer	8.8A **8.8C**	2
2	Analyzing and Solving Linear Equations	Students write algebraic expressions within the context of different situations. They then use the expressions to write equations and solve the equations for unknown values. Students interpret solutions and determine when equations have *one solution*, *no solution*, or *infinitely many solutions*. **Materials Needed:** Problem-Solving Model Graphic Organzier	8.8A 8.8B **8.8C**	**1**
3	Solving Linear Inequalities	Students review writing and solving two-step equations and inequalities within the context of a movie theater selling tickets. They then solve inequalities with variables on both sides of the inequality symbol. Students model given situations with inequalities and write possible scenarios that could be represented by a given inequality. **Materials Needed:** None	8.8A 8.8B **8.8C**	1
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				2

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 4, TOPIC 1 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.8A, **8.8C**			TEKS: 8.8A, 8.8B, **8.8C**	TEKS 8.8A, 8.8B, **8.8C**
LESSON 1 Equations with Variables on Both Sides GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 2** Analyzing and Solving Linear Equations GETTING STARTED ✪ ACTIVITY 1 ✪ ACTIVITY 2 ✪ ACTIVITY 3 ✪ ACTIVITY 4 TALK THE TALK	**LESSON 3** Solving Inequalities GETTING STARTED ACTIVITY 1 ACTIVITY 2 TALK THE TALK
Day 6	**Day 7**			
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**END OF TOPIC ASSESSMENT**			

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How can you incorporate Skills Practice with students?

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MODULE 4, TOPIC 2 PACING GUIDE

150-Day Pacing

4 Modeling Linear Equations

TOPIC 2: Systems of Linear Equations

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1E, 8.1F, 8.1G

ELPS: 1.C, 1.E, 2.C, 3.A, 3.D, 3.E, 3.F, 5.B

Topic Pacing: 10 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Point of Intersection of Linear Graphs	The terms *point of intersection* and *break-even point* are introduced. Students compare and analyze cost and income equations graphically and algebraically. They then graph cost and income equations on the same graph to determine a point of intersection. Students interpret the point of intersection as the solution to the two equations, and they explore the meaning of the break-even point in different real-world situations. Finally, students compare the process of determining a point of intersection using a table, to determining a point of intersection using a graph and equations. **Materials Needed:** Straightedges	8.5B **8.5I** 8.9A	2
2	Systems of Linear Equations	Students write and analyze a linear system of equations with different slopes and *y*-intercepts. They informally calculate the solution to a system of linear equations and then graph the system of equations. Students then match graphs to situations, write a system of linear equations to represent the situation, and identify—and algebraically verify—the point that satisfies the system. Finally, students investigate systems of equations that have no solution and infinitely many solutions. **Materials Needed:** Glue or Tape, Scissors, Straightedges, Problem-Solving Model Graphic Organizer	8.5B **8.5I** 8.9A	3
3	Multiple Representations of Systems of Linear Equations	Students compare the cost of holding a middle school skating event at two different locations. The first location charges a $200 fee plus a $3 per skater fee and the second location charges only a $5 per skater fee. Students write equations for each location. They then compare the cost for different numbers of skaters by considering the systems of equations, completing tables of values, and creating graphs to represent each location. Using all of the information gathered, students recommend which location better meets their needs for the more reasonable price. Finally, students describe the advantages and disadvantages of using various representations to determine the values of *x* and *y* that satisfy a system of equations. **Materials Needed:** Problem-Solving Model Graphic Organizer	8.5B **8.5I** 8.9A	1
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				3

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 4, TOPIC 2 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.5B, **8.5I**, 8.9A **LESSON 1** Point of Intersection of Linear Graphs GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	TEKS: 8.5B, **8.5I**, 8.9A **LESSON 2** Systems of Linear Equations GETTING STARTED ACTIVITY 1 ✪	**LESSON 2** continued ACTIVITY 2
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
LESSON 2 continued ACTIVITY 3 TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	TEKS: 8.5B, **8.5I**, 8.9A **LESSON 3** Multiple Representations of Systems of Linear Equations GETTING STARTED ACTIVITY 1 ✪ TALK THE TALK	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**END OF TOPIC ASSESSMENT**

*Bold TEKS = Readiness Standard

How can you incorporate Skills Practice with students?

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OER Secondary Mathematics
EDITION 1

Module 5

150-Day Topic Pacing Guides

MODULE 5, TOPIC 1 PACING GUIDE

150-Day Pacing

5 Applying Powers

TOPIC 1: Real Numbers

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1D, 8.1E, 8.1F, 8.1G

ELPS: 1.A, 1.C, 1.E, 1.F, 2.B, 2.C, 2.F, 2.I, 3.B, 3.D, 3.E, 3.F, 3.G, 4.B

Topic Pacing: 11 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Sorting Numbers	In this lesson, students connect back to their previous work with sets and subsets of numbers. Students sort numbers and justify their reasoning. They analyze the work of their peers and provide reasoning for the way in which their peers grouped their numbers. Students provide the rationale that was used to group given sets of numbers and then identify a set of numbers that satisfy a given description for a group. **Materials Needed:** Number Cards, Scissors, Paper Clips, Scientific Calculators (optional)	8.2A	1
2	Rational and Irrational Numbers	Students learn formal definitions for *rational* and *irrational numbers*. They order rational numbers using a number line. Then the sets of natural numbers, whole numbers, and integers are reviewed. Students learn that an irrational number is a decimal that does not terminate or repeat. They convert fractions to repeating decimals and repeating decimals to fractions. This lesson prepares students for future lessons where they learn to estimate square roots. **Materials Needed:** None	8.2A 8.2B **8.2D**	2
3	The Real Numbers	In this lesson, students study the square roots of numbers that are not perfect squares. They learn that, in many cases, these roots are irrational numbers. Next, they order numbers in the real number system using real-world situations. Students create a Venn diagram to represent the relationships formed between the set of real numbers and other number sets. They use the completed Venn diagram to answer questions related to the sets of numbers. **Materials Needed:** Scientific or Graphing Calculators	8.2A 8.2B **8.2D**	2
4	Scientific Notation	Students are introduced to scientific notation. The terms related to scientific notation, the process of converting between standard form and scientific notation, and reading scientific notation from technology are explored. Students convert from standard form to scientific notation and from scientific notation to standard form. Students compare mantissas and characteristics of numbers written in scientific notation. **Materials Needed:** Scientific or Graphing Calculators, Problem-Solving Model Graphic Organizer	8.2C	2
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				3

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 5, TOPIC 1 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.2A	TEKS: 8.2A, 8.2B, **8.2D**			TEKS: 8.2A, 8.2B, **8.2D**
LESSON 1 Sorting Numbers GETTING STARTED ACTIVITY 1 ACTIVITY 2 ✪ TALK THE TALK ✪	**LESSON 2** Rational and Irrational Numbers GETTING STARTED ACTIVITY 1 ✪ ACTIVITY 2 ✪	**LESSON 2** continued ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 3** The Real Numbers GETTING STARTED ACTIVITY 1 ✪
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
		TEKS: 8.2C		
LESSON 3 continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 4** Scientific Notation GETTING STARTED ACTIVITY 1 ✪ ACTIVITY 2 ✪	**LESSON 4** continued ACTIVITY 3 ✪ ACTIVITY 4 TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*
Day 11				
END OF TOPIC ASSESSMENT				

*Bold TEKS = Readiness Standard

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MODULE 5, TOPIC 2 PACING GUIDE

150-Day Pacing

5 Applying Powers

TOPIC 2: The Pythagorean Theorem

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1E, 8.1F, 8.1G

ELPS: 1.A, 1.E, 1.F, 2.E, 2.H, 2.I, 3.B, 3.C, 3.F, 4.A, 4.B, 5.F

Topic Pacing: 9 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	The Pythagorean Theorem	Students conjecture about the lengths of the sides of a right triangle. They notice a pattern in the squares of the side lengths of right triangles and learn this as the Pythagorean Theorem. Students prove the Pythagorean Theorem using one of three different geometric methods. Students conclude that the area of the largest square is equal to the sum of the areas of the two smaller squares. They then use the Pythagorean Theorem to solve for the length of unknown sides of right triangles set in a variety of contexts. **Materials Needed:** Scissors, Tape or Glue, Colored Pencils, Straightedges, Problem-Solving Model Graphic Organizer	8.6C **8.7C**	3
2	The Converse of the Pythagorean Theorem	Students begin by determining whether triangles are right triangles by using a protractor. They then determine whether three side lengths form a right triangle by whether or not the side lengths satisfy the Pythagorean Theorem. Students are given a definition of the term *Pythagorean triple* and complete tables composed of multiples of Pythagorean triples. They then provide the rationale for a proof of the converse of the Pythagorean Theorem. Finally, students use either the Pythagorean Theorem or the converse of the Pythagorean Theorem to solve problems. **Materials Needed:** Protractors, Problem-Solving Model Graphic Organizer	**8.7C**	**1**
3	Distances in a Coordinate System	Students apply the Pythagorean Theorem to a map context on a grid. They calculate various distances of points aligned either horizontally or vertically using subtraction and aligned diagonally using the Pythagorean Theorem. Students then plot pairs of points on the coordinate plane and use the Pythagorean Theorem to determine the distance between the two given points. **Materials Needed:** None	8.7D	1

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 5, TOPIC 2 PACING GUIDE

150-Day Pacing

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
4	Side Lengths in Two and Three Dimensions	Students apply the Pythagorean Theorem to determine the lengths of the diagonals of a rectangle, square, trapezoid, and isosceles trapezoid. They determine the areas of complex figures requiring the use of the Pythagorean Theorem. Students use the Pythagorean Theorem to determine the lengths of diagonals in three-dimensional rectangular prisms. **Materials Needed:** Problem-Solving Model Graphic Organizer	**8.7C** 8.7D	**1**
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				**2**

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MODULE 5, TOPIC 2 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.6C **8.7C**				TEKS: **8.7C**
LESSON 1 The Pythagorean Theorem GETTING STARTED ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ✪	**LESSON 1** continued ACTIVITY 3 ✪ ACTIVITY 4 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 2** The Converse of the Pythagorean Theorem GETTING STARTED ACTIVITY 1 ✪ ACTIVITY 2 ACTIVITY 3 ✪ TALK THE TALK
Day 6	**Day 7**	**Day 8**	**Day 9**	
TEKS: 8.7D		TEKS: **8.7C**, 8.7D		
LESSON 3 Distances in a Coordinate System GETTING STARTED ✪ ACTIVITY 1 ACTIVITY 2 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 4** Side Lengths in Two and Three Dimensions GETTING STARTED ACTIVITY 1 ✪ ACTIVITY 2 ✪ ACTIVITY 3 TALK THE TALK	**END OF TOPIC ASSESSMENT**	

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How can you incorporate Skills Practice with students?

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How can you identify whether students are ready for new learning?

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MODULE 5, TOPIC 3 PACING GUIDE

150-Day Pacing

5 Applying Powers

TOPIC 3: Financial Literacy: Your Financial Future

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1A, 8.1B, 8.1C, 8.1D, 8.1G

ELPS: 1.C, 1.E, 2.C, 3.B, 3.D, 3.E, 3.H, 5.B, 5.F, 5.G

Topic Pacing: 10 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Simple and Compound Interest	This lesson begins with developing a conceptual understanding of growth functions. Students compare linear and exponential growth through a pay scenario, and they then compare simple interest and compound interest for a specific investment through a given table of values. Next, students extend their understanding to other representations and develop the mathematical skills involved in calculating simple and compound interest. They deal with two other representations—graphs and equations—for both types of interest. They are given different representations of interest problems, and they determine whether the problem refers to simple or compound interest. Students calculate simple interest using a formula and compound interest using both a table and a formula. **Materials Needed:** Graphing Technology, Problem-Solving Model Graphic Organizer	8.12C **8.12D**	1
2	Terms of a Loan	This lesson explores ways to make financially responsible decisions based on analyzing the terms of loans. Students compare two scenarios with the same principal and time but different interest rates to see the effect interest has on the payback amount. Next, students make the most cost-effective decision when given two loans with the same principal but different interest rates and lengths of time. Students also discuss appropriate questions to ask a lender regarding the terms of a loan when making decisions. The loan process is expanded to include student loans and the concept of loan deferment. By calculating the interest that is still accrued when student loan payments are deferred, students see the costly consequences of this sometimes necessary, sometimes not so necessary, financial decision. **Materials Needed:** Calculators, Problem-Solving Model Graphic Organizer	8.12A 8.12E 8.12F	1

*Bold TEKS = Readiness Standard; Bold Pacing = Reduced Number of Days

MODULE 5, TOPIC 3 PACING GUIDE

150-Day Pacing

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
3	Online Calculators	Because debt is more complicated than calculating simple interest or interest compounded annually, students are introduced to the idea of using technology, such as an online-calculator with an internet-based application, to quickly perform payment options. They use this technology to determine the amount of time it takes to pay off a credit card, the interest amount, and the total debt payment amount when given the principal, interest rate, and monthly payment. Students are also made aware of cash advances and easy access loans and the fees associated with each. Students analyze the advantages and disadvantages of each payment method. Similarly, students are introduced to an online calculator as another technology that can be used specifically for post-secondary student loans. They use this technology to determine the amount of monthly student loan payments, the total cost of the student loan, and the salary necessary to pay the loan when given the principal, interest rate, and time to pay off the loan. Other scenarios are also provided, in which students make use of this online tool. The lesson concludes with a series of questions that generate discussion about the necessity of planning and practicality to pay for post-secondary education. **Materials Needed:** Web-Based Resources, Calculators, Problem-Solving Model Graphic Organizer	8.12A 8.12B 8.12E 8.12F	2
4	Financing Your Education	This lesson sends a three-pronged message: (1) every student can benefit from some form of post-secondary education; (2) post-secondary tuition costs vary widely, and there is an option that makes sense and is affordable for every student, and (3) all students can determine a way to manage the cost of post-secondary education. Each activity leads students through a series of fact or fiction questions to help them gain knowledge and develop the mindset that attending some form of post-secondary institution is an achievable goal. **Materials Needed:** Web-Based Resources, Calculators	8.12G	2
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				3

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MODULE 5, TOPIC 3 PACING GUIDE

150-Day Pacing

1 DAY PACING = 45-MINUTE SESSION

✪ *This activity highlights a key term or concept that is essential to the learning goals of the lesson.*

Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.12C, **8.12D**	TEKS: 8.12A, 8.12E, 8.12F		TEKS: 8.12A, 8.12B, 8.12E, 8.12F	
LESSON 1 Simple and Compound Interest GETTING STARTED ✪ ACTIVITY 1 ✪ TALK THE TALK ✪	**LESSON 2** Terms of a Loan GETTING STARTED ✪ ACTIVITY 1 ✪ ACTIVITY 2 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 3** Online Calculators GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 3** continued ACTIVITY 2 ✪ TALK THE TALK
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
	TEKS: 8.12G			
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 4** Financing Your Education GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 4** continued ACTIVITY 2 ✪ TALK THE TALK ✪	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**END OF TOPIC ASSESSMENT**

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MODULE 5, TOPIC 4 PACING GUIDE

150-Day Pacing

5 Applying Powers

TOPIC 4: Volume of Curved Figures

1 DAY PACING = 45-MINUTE SESSION

TEKS Mathematical Process Standards: 8.1B, 8.1C, 8.1D, 8.1E, 8.1F, 8.1G

ELPS: 1.D, 1.E, 1.G, 2.D, 2.G, 2.H, 2.I, 3.C, 3.D, 3.F, 4.K, 5.E

Topic Pacing: 11 Days

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
1	Volume, Lateral, and Total Surface Area of a Cylinder	Students explore how to determine the volume of a cylinder. The terms *cylinder*, *right cylinder*, *radius of a cylinder*, and *height of a cylinder* are introduced. Students identify characteristics of a cylinder, such as the radius, diameter, and height. Using circular discs, students calculate the volume of a cylinder. They then answer several questions related to the formula used to compute the volume of a cylinder, including a problem that emphasizes that a specific volume may be associated with the dimensions of more than one cylinder. Students then develop the formulas for the lateral and total surface area of a cylinder and apply them in several situations. **Materials Needed:** Calculator, Problem-Solving Model Graphic Organizer	8.6A **8.7A** **8.7B**	2
2	Volume of a Cone	Students learn how to calculate the volume of a cone and solve problems involving cones. They sketch a cone and answer questions related to their sketches. Students use nets for a cylinder and a cone to assemble models, and they explore the volume of a cone compared to the volume of the cylinder. Students use the formulas for the volume of a cylinder and the volume of a pyramid to write the formula for the volume of a cone. They solve problems when given different dimensions of a cone, including the slant height. **Materials Needed:** Scissors, Tape or Glue, Birdseed or Rice, Centimeter Rulers, Nets, Calculators, Problem-Solving Model Graphic Organizer	8.6B **8.7A** **8.7C**	2
3	Volume of a Sphere	The terms *sphere*, *center of a sphere*, *radius of a sphere*, *diameter of a sphere*, and *great circle* are introduced. Students create a sphere out of modeling clay and place it inside a cylinder of the same height to investigate the volume occupied by the material of the sphere inside the cylinder. They arrive at a formula for the volume of a sphere. Students then use the formula to calculate the volume of various spheres. Students also use their knowledge of the circumference formula to solve problems. **Materials Needed:** Modeling Clay, Scissors, Tape, Transparencies or Paper, Centimeter Rulers, Calculators, Problem-Solving Model Graphic Organizer	**8.7A**	**1**

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MODULE 5, TOPIC 4 PACING GUIDE

150-Day Pacing

Lesson	Lesson Title	Highlights	TEKS*	Pacing*
4	Volume and Surface Area Problems with Prisms, Cylinders, Cones, and Spheres	Students review all of the formulas they have learned up to this point, and they use them to solve real-world and mathematical problems. Students compare the amount of cardboard used on two different cereal box designs. They also determine the volume of grain needed to fill a silo, the volume of a cone and a melted scoop of yogurt, and the volume of cylindrical and conical popcorn containers. **Materials Needed:** Paper of Different Colors (Same Size), Centimeter Rulers, Centimeter Cubes, Tape, Calculators,	**8.7A** **8.7B**	**2**
End of Topic Assessment				1
Learning Individually with Skills Practice *Schedule these days strategically throughout the topic to support student learning.*				**3**

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MODULE 5, TOPIC 4 PACING GUIDE

150-Day Pacing

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Day 1	Day 2	Day 3	Day 4	Day 5
TEKS: 8.6A, **8.7A, 8.7B**			TEKS: 8.6B, **8.7A 8.7C**	
LESSON 1 Volume, Lateral, and Total Surface Area of a Cylinder GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 1** continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 2** Volume of a Cone GETTING STARTED ✪ ACTIVITY 1	**LESSON 2** continued ACTIVITY 2 ✪ ACTIVITY 3 ✪ TALK THE TALK
Day 6	**Day 7**	**Day 8**	**Day 9**	**Day 10**
	TEKS: **8.7A**	TEKS: **8.7A, 8.7B**		
LEARNING INDIVIDUALLY Skills Practice *This is a suggested placement. Move based on student data and individual needs.*	**LESSON 3** Volume of a Sphere GETTING STARTED ✪ ACTIVITY 1 ACTIVITY 2 ✪ TALK THE TALK	**LESSON 4** Volume and Surface Area Problems with Prisms, Cylinders, Cones, and Spheres GETTING STARTED ✪ ACTIVITY 1 ✪	**LESSON 4** continued ACTIVITY 2 ACTIVITY 3 ✪ ACTIVITY 4 ACTIVITY 5 TALK THE TALK	**LEARNING INDIVIDUALLY** Skills Practice *This is a suggested placement. Move based on student data and individual needs.*
Day 11				
END OF TOPIC ASSESSMENT				

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