

# 1 The Real Number System

This chapter extends the understanding of properties of numbers and number systems to include irrational and real numbers.

**Standards:** 8.2A, 8.2B, 8.2D

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
1.1	<b>So Many Numbers, So Little Time</b>	Number Sort	8.2A	<ul style="list-style-type: none"> <li>Review and analyze numbers.</li> <li>Determine similarities and differences among various numbers.</li> <li>Sort numbers by their similarities and rationalize the differences between the groups of numbers.</li> </ul>	
1.2	<b>Is It a Bird or a Plane?</b>	Rational Numbers	8.2D	<ul style="list-style-type: none"> <li>Use a number line to compare and order rational numbers.</li> <li>Learn about types of numbers and their properties.</li> <li>Perform operations with rational numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Natural numbers (counting numbers)</li> <li>Whole numbers</li> <li>Integers</li> <li>Closed</li> <li>Rational numbers</li> </ul>
1.3	<b>Sew What?</b>	Irrational Numbers	8.2B 8.2D	<ul style="list-style-type: none"> <li>Identify decimals as terminating or repeating.</li> <li>Write repeating decimals as fractions.</li> <li>Identify irrational numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Irrational number</li> <li>Terminating decimal</li> <li>Repeating decimal</li> <li>Bar notation</li> </ul>
1.4	<b>Worth 1000 Words</b>	Real Numbers and Their Properties	8.2A 8.2B 8.2D	<ul style="list-style-type: none"> <li>Classify numbers in the real number system.</li> <li>Understand the properties of real numbers.</li> </ul>	<ul style="list-style-type: none"> <li>Real number</li> <li>Venn diagram</li> <li>Closure</li> </ul>
<b>Learning Individually with MATHia or Skills Practice</b>			8.2A 8.2B 8.2D	In the MATHia software, students are introduced to irrational numbers. The classify real numbers as rational or irrational. Students compare and order real numbers on a number line.	

## 2 Pythagorean Theorem

This chapter develops the Pythagorean Theorem and the Converse of the Pythagorean Theorem. These theorems are then applied to solve real-world problems in two and three dimensions.

**Standards:** 8.6C, 8.7C, 8.7D

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
2.1	<b>Soon You Will Determine the Right Triangle Connection</b>	The Pythagorean Theorem	8.6C 8.7C	<ul style="list-style-type: none"> <li>Use mathematical properties to discover the Pythagorean Theorem.</li> <li>Solve problems involving right triangles.</li> </ul>	<ul style="list-style-type: none"> <li>Right triangle</li> <li>Right angle</li> <li>Leg</li> <li>Hypotenuse</li> <li>Diagonal of a square</li> <li>Pythagorean Theorem</li> <li>Theorem</li> <li>Postulate</li> <li>Proof</li> </ul>
2.2	<b>Can That Be Right?</b>	The Converse of the Pythagorean Theorem	8.7C 8.7D	<ul style="list-style-type: none"> <li>Use the Pythagorean Theorem and the Converse of the Pythagorean Theorem to determine unknown side lengths in right triangles.</li> </ul>	<ul style="list-style-type: none"> <li>Converse</li> <li>Converse of the Pythagorean Theorem</li> <li>Pythagorean triple</li> </ul>
2.3	<b>Pythagoras to the Rescue</b>	Solving for Unknown Lengths	8.7C	<ul style="list-style-type: none"> <li>Use the Pythagorean Theorem and the Converse of the Pythagorean Theorem to determine the unknown side lengths in right triangles.</li> </ul>	
2.4	<b>Meeting Friends</b>	The Distance Between Two Points in a Coordinate System	8.7D	<ul style="list-style-type: none"> <li>Use the Pythagorean Theorem to determine the distance between two points in a coordinate system.</li> </ul>	
2.5	<b>Diagonally</b>	Diagonals in Two Dimensions	8.7C 8.7D	<ul style="list-style-type: none"> <li>Use the Pythagorean Theorem to determine the length of diagonals in two-dimensional figures.</li> </ul>	
2.6	<b>Two Dimensions Meet Three Dimensions</b>	Diagonals in Three Dimensions	8.7C	<ul style="list-style-type: none"> <li>Use the Pythagorean Theorem to determine the length of a diagonal of a solid.</li> <li>Use a formula to determine the length of a diagonal of a rectangular solid given the lengths of three perpendicular edges.</li> <li>Use a formula to determine the length of a diagonal of a rectangular solid given the diagonal measurements of three perpendicular sides.</li> </ul>	
<b>Learning Individually with MATHia or Skills Practice</b>			8.6C 8.7C 8.7D	In the MATHia software, students use the Pythagorean Theorem to solve real-world and mathematical problems. They determine distances on the coordinate plane using the Pythagorean Theorem.	

# 3 Translations, Reflections, and Rotations

The chapter focuses on translations, rotations, and reflections of geometric figures on a coordinate plane.

**Standards:** 8.10A, 8.10B, 8.10C

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
3.1	<b>Sliding Right, Left, Up, Down, and Diagonally</b>	Translations Using Geometric Figures	8.10A 8.10B 8.10C	<ul style="list-style-type: none"> <li>• Translate geometric figures horizontally.</li> <li>• Translate geometric figures vertically.</li> <li>• Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of translations.</li> </ul>	<ul style="list-style-type: none"> <li>• Transformation</li> <li>• Translation</li> <li>• Image</li> <li>• Pre-image</li> </ul>
3.2	<b>Round and Round We Go!</b>	Rotations of Geometric Figures on the Coordinate Plane	8.10A 8.10C	<ul style="list-style-type: none"> <li>• Rotate geometric figures on the coordinate plane.</li> </ul>	<ul style="list-style-type: none"> <li>• Rotation</li> <li>• Angle of rotation</li> <li>• Point of rotation</li> </ul>
3.3	<b>Mirror, Mirror</b>	Reflections of Geometric Figures on the Coordinate Plane	8.10B 8.10C	<ul style="list-style-type: none"> <li>• Reflect geometric figures over the axes on the coordinate plane.</li> <li>• Reflect geometric figures over lines on the coordinate plane.</li> </ul>	<ul style="list-style-type: none"> <li>• Reflection</li> <li>• Reflection line</li> </ul>
3.4	<b>Slide, Flip, Turn!</b>	Translations, Rotations, and Reflections of Triangles	8.10B 8.10C	<ul style="list-style-type: none"> <li>• Translate triangles in a coordinate plane.</li> <li>• Rotate triangles in a coordinate plane.</li> <li>• Reflect triangles in a coordinate plane.</li> </ul>	
3.5	<b>All the Same to You</b>	Congruent Triangles	8.10A 8.10B	<ul style="list-style-type: none"> <li>• Identify corresponding sides and corresponding angles of congruent triangles.</li> <li>• Explore the relationship between corresponding sides of congruent triangles.</li> <li>• Explore the relationship between corresponding angles of congruent triangles.</li> <li>• Write statements of triangle congruence.</li> <li>• Identify and use transformations to create new images.</li> </ul>	<ul style="list-style-type: none"> <li>• Congruent line segments</li> <li>• Congruent angles</li> <li>• Corresponding sides</li> <li>• Corresponding angles</li> </ul>
<b>Learning Individually with MATHia or Skills Practice</b>			8.10A 8.10C	In the MATHia software, students describe the translations, rotations, and reflections needed to map a pre-image onto a congruent image. They identify the effects of rigid transformations on coordinates.	

# 4 Similarity

This chapter explores dilations of triangles to develop the concept of similarity. The Angle-Angle Similarity Theorem, Side-Angle-Side Similarity Theorem, and the Side-Side-Side Similarity Theorem are developed as efficient methods to demonstrate that two triangles are similar.  
**Standards:** 8.3A, 8.3B, 8.3C, 8.8D, 8.10A, 8.10B, 8.10C, 8.10D

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
4.1	<b>Expanding Your Mind</b>	Dilations of Triangles	8.3A 8.3B 8.3C 8.10B 8.10D	<ul style="list-style-type: none"> <li>Dilate triangles that result in an enlargement of the original triangle.</li> <li>Dilate triangles that result in a reduction of the original triangle.</li> <li>Dilate triangles in a coordinate plane.</li> </ul>	<ul style="list-style-type: none"> <li>Dilation</li> <li>Center of dilation</li> <li>Scale factor</li> <li>Dilation factor</li> <li>Enlargement</li> <li>Reduction</li> </ul>
4.2	<b>Look-Alikes</b>	Similar Triangles	8.3A	<ul style="list-style-type: none"> <li>Define similar triangles.</li> <li>Identify the corresponding parts of similar triangles.</li> <li>Write triangle similarity statements.</li> <li>Determine the measure of corresponding parts of similar triangles.</li> </ul>	<ul style="list-style-type: none"> <li>Similar triangles</li> </ul>
4.3	<b>Prove It!</b>	AA, SAS, and SSS Similarity Theorems	8.3B 8.3C 8.8D 8.10D	<ul style="list-style-type: none"> <li>Explore the AA Similarity Theorem.</li> <li>Explore the SAS Similarity Theorem.</li> <li>Explore the SSS Similarity Theorem.</li> <li>Use the AA, SAS, and SSS Similarity Theorems to identify similar triangles.</li> </ul>	<ul style="list-style-type: none"> <li>AA Similarity Theorem</li> <li>SAS Similarity Theorem</li> <li>SSS Similarity Theorem</li> </ul>
4.4	<b>Back on the Grid</b>	Similar Triangles on the Coordinate Plane	8.3B 8.3C	<ul style="list-style-type: none"> <li>Graph similar triangles and determine the dilation factor.</li> <li>Dilate triangles to form similar triangles.</li> <li>Verify that triangles are similar using Similarity Theorems.</li> <li>Determine the coordinates of a point needed to form similar triangles.</li> </ul>	
<b>Learning Individually with MATHia or Skills Practice</b>			8.3A 8.3C 8.10A 8.10C	In the MATHia software, students differentiate between congruent and similar figures. They select a single transformation or multiple transformations that map a pre-image onto an image. Students identify the effects of these transformations on coordinates.	

# 5 Line and Angle Relationships

This chapter focuses on line and angle characteristics and relationships. It begins with the relationships that can exist between two lines, then moves to the relationships between angles when intersected by a line, and finally concludes with transformations related to parallel and perpendicular lines.  
**Standards:** 8.8D

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
5.1	<b>Location, Location, Location</b>	Line Relationships	8.8D	<ul style="list-style-type: none"> <li>Explore possible relationships between two lines in Euclidean geometry.</li> </ul>	<ul style="list-style-type: none"> <li>Intersecting lines</li> <li>Plane</li> <li>Perpendicular lines</li> <li>Parallel lines</li> <li>Coplanar lines</li> <li>Skew lines</li> <li>Coincidental lines</li> </ul>
5.2	<b>When Lines Come Together</b>	Angle Relationships Formed by Two Intersecting Lines	8.8D	<ul style="list-style-type: none"> <li>Explore the angles determined by two intersecting lines.</li> <li>Identify congruent angles.</li> <li>Identify adjacent angles.</li> <li>Identify vertical angles.</li> <li>Identify a linear pair of angles.</li> <li>Identify supplementary angles.</li> <li>Solve for the supplement of an angle.</li> </ul>	<ul style="list-style-type: none"> <li>Supplementary angles</li> <li>Linear pair of angles</li> </ul>
5.3	<b>Crisscross Applesauce</b>	Angle Relationships Formed by Two Intersecting Lines	8.8D	<ul style="list-style-type: none"> <li>Explore the angles determined by two lines that are intersected by a transversal.</li> <li>Explore the measures of angles determined by two parallel lines that are intersected by a transversal.</li> <li>Identify alternate interior angles.</li> <li>Identify alternate exterior angles.</li> <li>Identify same-side interior angles.</li> <li>Identify same-side exterior angles.</li> <li>Identify corresponding angles.</li> <li>Determine the measure of alternate interior angles, alternate exterior angles, same-side interior angles, same-side exterior angles, and corresponding angles.</li> </ul>	<ul style="list-style-type: none"> <li>Transversal</li> <li>Alternate interior angles</li> <li>Alternate exterior angles</li> <li>Same-side interior angles</li> <li>Same-side exterior angles</li> </ul>
<b>Learning Individually with MATHia or Skills Practice</b>			8.8D	<p>In the MATHia software, students use the Triangle Sum Theorem and Exterior Angles Theorem to determine angle measures. They identify and classify angle pairs in a given figure containing lines cut by transversals. Students use the Angle-Angle Similarity Theorem to verify that images are similar.</p>	

## 6 Proportional and Non-Proportional Relationships

This chapter develops an understanding of the distinctions between proportional and non-proportional representations and problem situations.

**Standards:** 8.4A, 8.4B, 8.4C, 8.5A, 8.5B, 8.5E, 8.5F, 8.5I, 8.8C

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
6.1	<b>Perfectly Proportional</b>	Proportional Situations, Part 1	8.4B 8.5A 8.5E	<ul style="list-style-type: none"> <li>Represent linear proportional situations with tables, graphs, and equations in the form <math>y = kx</math>.</li> <li>Solve problems involving direct variation.</li> <li>Compare proportional situations.</li> </ul>	
6.2	<b>Post-Secondary Proportion</b>	Proportional Situations, Part 2	8.4B 8.5A 8.5E	<ul style="list-style-type: none"> <li>Represent proportional situations with tables, graphs, and equations in the form <math>y = kx</math>.</li> <li>Solve problems involving proportional relationships.</li> <li>Compare proportional situations using multiple representations.</li> </ul>	<ul style="list-style-type: none"> <li>Proportional relationship</li> <li>Constant of proportionality</li> </ul>
6.3	<b>Proportional Pay</b>	Proportional vs. Non-Proportional Relationships	8.5A 8.5B 8.5F	<ul style="list-style-type: none"> <li>Analyze proportional and non-proportional situations using tables, graphs, and equations.</li> <li>Determine the characteristics of proportional and nonproportional relationships.</li> </ul>	<ul style="list-style-type: none"> <li>Non-proportional</li> </ul>
6.4	<b>Doing Math in a Proportional Way</b>	Proportional Applications	8.4B 8.4C 8.5A 8.5B 8.5F	<ul style="list-style-type: none"> <li>Apply your understanding of proportional and non-proportional relationships to problem situations.</li> <li>Distinguish between proportional and non-proportional relationships.</li> </ul>	
<b>Learning Individually with MATHia or Skills Practice</b>			8.4A 8.4B 8.5A 8.5E 8.5I 8.8C	In the MATHia software, students determine linear expressions that represent real-world scenarios. They use these expressions to solve problems. Students complete activities around the slopes of straight lines. They graph and compare proportional and non-proportional relationships.	

# 7 Linear Equations

This chapter focuses on strategies to solve linear equations in one variable with one solution, infinitely many solutions, and no solutions. Equations include rational number coefficients and require the use of the Distributive Properties.

**Standards:** 8.8A, 8.8B, 8.8C

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
7.1	<b>A Park Ranger's Work Is Never Done</b>	Solving Problems Using Equations	8.8C	<ul style="list-style-type: none"> <li>• Write and solve two-step equations to represent problem situations.</li> <li>• Solve two-step equations.</li> </ul>	<ul style="list-style-type: none"> <li>• Inverse operations</li> <li>• Two-step equation</li> <li>• Solution</li> <li>• Coefficient</li> <li>• Constant</li> <li>• Properties of Equality</li> </ul>
7.2	<b>Why Doesn't This Work?</b>	Equations with Infinite or No Solutions	8.8B 8.8C	<ul style="list-style-type: none"> <li>• Identify and solve equations that have infinite solutions.</li> <li>• Identify and solve equations that have no solutions.</li> </ul>	
7.3	<b>Who Has the Most?</b>	Solving Linear Equations	8.8A 8.8C	<ul style="list-style-type: none"> <li>• Write and solve linear equations.</li> </ul>	
7.4	<b>Games and Practice</b>	Solving More Linear Equations	8.8A 8.8B 8.8C	<ul style="list-style-type: none"> <li>• Solve linear equations.</li> </ul>	
<b>Learning Individually with MATHia or Skills Practice</b>			8.8C	In the MATHia software, students solve linear equations by combining like terms and by using the Distributive Property. They model real-world contexts with linear expressions and use them to solve problems. Students solve linear equations with variables on both sides.	

# 8 Linear Functions

This chapter develops the understanding that a function is a rule that assigns to each input exactly one output. Real-world problems, tables, graphs, and equations are used to model linear function relationships. Non-linear functions are introduced to contrast with linear functions.

**Standards:** 8.4C, 8.5A, 8.5B, 8.5F, 8.5G, 8.5H, 8.5I, 8.8A, 8.9A

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
8.1	<b>Patterns, Patterns, Patterns . . .</b>	Developing Sequences of Numbers from Diagrams and Contexts	8.4C	<ul style="list-style-type: none"> <li>Write sequences of numbers generated from the creation of diagrams and written contexts.</li> <li>State varying growth patterns of sequences.</li> </ul>	<ul style="list-style-type: none"> <li>Sequence</li> <li>Term</li> <li>Ellipsis</li> </ul>
8.2	<b>Every Graph Tells a Story</b>	Describing Characteristics of Graphs	8.5G	<ul style="list-style-type: none"> <li>Describe characteristics of graphs using mathematical terminology.</li> <li>Describe a real-world situation that could be represented by a given graph.</li> </ul>	<ul style="list-style-type: none"> <li>Discrete graph</li> <li>Continuous graph</li> <li>Linear graph</li> <li>Collinear points</li> <li>Non-linear graph</li> </ul>
8.3	<b>To Be or Not To Be a Function?</b>	Defining and Recognizing Functions	8.5A 8.5F 8.5G	<ul style="list-style-type: none"> <li>Define relation and function.</li> <li>Determine whether a relation (represented as a mapping, set of ordered pairs, table, sequence, graph, equation, or context) is a function.</li> </ul>	<ul style="list-style-type: none"> <li>Mapping</li> <li>Set</li> <li>Relation</li> <li>Input</li> <li>Output</li> <li>Function</li> <li>Domain</li> <li>Range</li> <li>Scatter plot</li> <li>Vertical line test</li> </ul>
8.4	<b>Scaling a Cliff</b>	Linear Functions	8.5B 8.5F 8.5H 8.5I	<ul style="list-style-type: none"> <li>Make input-output tables for linear functions.</li> <li>Graph linear functions.</li> <li>Determine characteristics of linear functions.</li> </ul>	<ul style="list-style-type: none"> <li>Linear functions</li> </ul>
8.5	<b>U.S. Shirts</b>	Using Tables, Graphs, and Equations, Part 1	8.5B 8.5I 8.8A	<ul style="list-style-type: none"> <li>Use different models to represent a problem situation.</li> <li>Determine an initial value when given a final result.</li> <li>Identify the advantages and disadvantages of using a particular representation.</li> </ul>	
8.6	<b>Hot Shirts</b>	Using Tables, Graphs, and Equations, Part 2	8.5B 8.5I 8.8A 8.9A	<ul style="list-style-type: none"> <li>Use different methods to represent a problem situation.</li> <li>Estimate values of expressions that involve decimals.</li> <li>Determine an initial value when given a final result.</li> </ul>	<ul style="list-style-type: none"> <li>Estimation</li> <li>Point of intersection</li> </ul>
8.7	<b>What, Not Linear?</b>	Introduction to Non-Linear Functions	8.5G	<ul style="list-style-type: none"> <li>Define, graph, and analyze non-linear functions, including absolute value, area of a square, and volume of a cube.</li> </ul>	<ul style="list-style-type: none"> <li>Absolute value function</li> <li>Square or quadratic function</li> <li>Cube or cubic function</li> </ul>

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
	<p><b>Learning Individually with MATHia or Skills Practice</b></p>		8.5G	<p>In the MATHia software, students write equations to represent a function given a table or graph. They classify given relations as functions or non-functions. Students identify key characteristics from the graph of a function</p>	

## 9 Analyzing Linear Equations

This chapter focuses on strategies to solve linear equations in one variable with one solution, infinitely many solutions, and no solutions. Equations include rational number coefficients and require the use of the Distributive Properties.

**Standards:** 8.4A, 8.4B, 8.4C, 8.4H, 8.5B, 8.5F, 8.5H, 8.5I

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
9.1	<b>Hitting the Slopes</b>	Determining Rate of Change from a Graph	8.4A 8.4B 8.4C 8.4H	<ul style="list-style-type: none"> <li>Determine the rate of change from a graph.</li> <li>Create a scenario, a table, and an equation from a graph.</li> <li>Connect the rate of change represented in a graph to the rate of change in other representations.</li> <li>Use rise/run to calculate the rate of change from a graph.</li> <li>Determine if a graph has a rate of change that is increasing, decreasing, zero, or undefined.</li> <li>Compare unit rates of change in the same graph.</li> </ul>	<ul style="list-style-type: none"> <li>Rate</li> <li>Rate of change</li> <li>Per</li> <li>Unit rate</li> <li>Rise</li> <li>rise/run</li> </ul>
9.2	<b>At the Arcade</b>	Determining Rate of Change from a Table	8.4C 8.5F	<ul style="list-style-type: none"> <li>Determine the rate of change from a table of values.</li> <li>Create a graph, a context, and an equation from a table of values.</li> <li>Connect the rate of change represented in a table of values to the rate of change in other representations.</li> <li>Use <math>y^2 - y^1 / x^2 - x^1</math> to calculate the rate change from a table of values or two coordinate pairs.</li> <li>Determine whether a table of values will make a straight line if graphed.</li> </ul>	<ul style="list-style-type: none"> <li>First differences</li> </ul>
9.3	<b>To Put It In Context</b>	Determining Rate of Change from a Context	8.4B 8.4C 8.5H	<ul style="list-style-type: none"> <li>Determine the rate of change from a context.</li> <li>Create a graph, a table, and an equation from a context.</li> <li>Connect the rate of change represented in a context to the rate of change in other representations.</li> <li>Generate the values of two coordinate pairs from information given in context.</li> </ul>	
9.4	<b>All Together Now!</b>	Determining Rate of Change from an Equation	8.4C	<ul style="list-style-type: none"> <li>Determine the rate of change from an equation that has been solved for <math>y</math>.</li> <li>Create a table, a scenario, and a graph from an equation.</li> <li>Connect the rate of change represented in an equation to the rate of change in other representations.</li> <li>Determine if an equation has a rate of change that is increasing, decreasing, zero, or undefined.</li> <li>Compare rates of change by comparing the coefficients of <math>x</math> in different equations.</li> </ul>	<ul style="list-style-type: none"> <li>Slope</li> <li>Slope-intercept form</li> </ul>

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
9.5	<b>Where It Crosses</b>	Determining y-Intercepts from Various Representations	8.4B 8.4C	<ul style="list-style-type: none"> <li>Determine the y-intercept of a linear function from a context, a table, a graph, or an equation.</li> <li>Write the y-intercept in coordinate form.</li> <li>Explain the meaning of the y-intercept when given the context of a linear function.</li> <li>Explain how the y-intercept is useful in graphing a linear function.</li> <li>Explain what makes a relationship a direct variation.</li> </ul>	<ul style="list-style-type: none"> <li>y-Intercept</li> <li>Direct variation</li> </ul>
9.6	<b>Slope-Intercept Form</b>	Determining the Rate of Change and y-Intercept	8.4C 8.5I	<ul style="list-style-type: none"> <li>Graph lines using the slope and y-intercept.</li> <li>Calculate the y-intercept of a line when given the slope and one point that lies on the line.</li> <li>Write equations of lines in slope-intercept form if given two points that lie on the line or the slope and one point that lies on the line.</li> <li>Write equations in point-slope form if given the slope and one point that lies on the line.</li> <li>Graph lines in standard form by using the intercepts.</li> <li>Convert equations from point-slope form and standard form to slope-intercept form.</li> <li>Discuss the advantages and disadvantages of point-slope and standard form.</li> </ul>	<ul style="list-style-type: none"> <li>Point-slope form</li> <li>Standard form</li> </ul>
<b>Learning Individually with MATHia or Skills Practice</b>			8.4C 8.5B 8.5F 8.5I	In the MATHia software, students match real-world scenarios to linear equations. They model linear functions using multiple representations. Students determine the slope of a line from a graph.	

# 10 Parallel and Perpendicular Lines

The chapter focuses on translations, rotations, and reflections of geometric figures on a coordinate plane.

**Standards:** 8.4C, 8.5A, 8.5B, 8.5I, 8.8D

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
10.1	<b>Sliding Lines</b>	Translations of Linear Functions	8.5A 8.5B 8.5I	<ul style="list-style-type: none"> <li>Translate linear functions horizontally and vertically.</li> <li>Use multiple representations such as tables, graphs, and equations to represent linear functions and the translations of linear functions.</li> </ul>	
10.2	<b>Parallel or Perpendicular</b>	Slopes of Parallel and Perpendicular Lines	8.4C 8.5A 8.5B 8.5I	<ul style="list-style-type: none"> <li>Determine the slopes of parallel lines.</li> <li>Determine the slopes of perpendicular lines.</li> <li>Identify parallel lines.</li> <li>Identify perpendicular lines.</li> </ul>	<ul style="list-style-type: none"> <li>Reciprocal</li> <li>Negative reciprocal</li> </ul>
10.3	<b>Up, Down, and All Around</b>	Line Transformations	8.4C 8.5B 8.8D	<ul style="list-style-type: none"> <li>Explore transformations related to parallel lines.</li> <li>Explore transformations related to perpendicular lines.</li> <li>Use angles formed by parallel lines and transversals to identify similar triangles.</li> <li>Use angles formed by parallel lines and transversals to justify the Triangle Sum Theorem.</li> </ul>	<ul style="list-style-type: none"> <li>Triangle Sum Theorem</li> </ul>

# 11 Multiple Representations of Linear Functions

This chapter focuses on using the multiple representations of functions to solve real-world problems.

**Standards:** 8.4C, 8.5A, 8.5B, 8.5F, 8.5H, 8.5I, 8.8C

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
11.1	<b>Willie Catchem</b>	Analyzing Problem Situations Using Multiple Representations	8.4C 8.5A 8.5B 8.5F 8.5H 8.5I	<ul style="list-style-type: none"> <li>Analyze problem situations using multiple representations.</li> </ul>	
11.2	<b>Pony Express</b>	Interpreting the Standard Form of a Linear Equation	8.5B 8.5H	<ul style="list-style-type: none"> <li>Use the standard form of a linear equation to represent a problem situation.</li> <li>Use the standard form to analyze and solve problems.</li> <li>Identify the meaning and value of the component expressions in the standard form of a linear equation.</li> </ul>	
11.3	<b>Slopes, Forms, Graphs, and Intercepts</b>	Connecting the Standard Form with the Slope-Intercept Form of Linear Functions	8.4C 8.5B 8.5I	<ul style="list-style-type: none"> <li>Graph linear functions in standard form.</li> <li>Transform linear functions from one form to the other.</li> <li>Determine the slope and the intercepts of linear equations in standard form.</li> </ul>	
11.4	<b>The Journey Starts with a Single Step—but There Are Many Steps After That!</b>	Intervals of Increase, Decrease, and No Change	8.5B 8.5I	<ul style="list-style-type: none"> <li>Analyze a problem situation using multiple representations.</li> <li>Identify intervals of increase, decrease, and constant values of a function.</li> </ul>	<ul style="list-style-type: none"> <li>Increasing function</li> <li>Constant function</li> <li>Decreasing function</li> <li>Interval of increase</li> <li>Interval of decrease</li> <li>Constant interval</li> </ul>
11.5	<b>Piecewise Functions</b>	Developing the Graph of a Piecewise Function	8.4C 8.5B	<ul style="list-style-type: none"> <li>Develop the graph of a piecewise function from a context with or without a table of values.</li> <li>Represent a piecewise function algebraically by using appropriate notation, equations, and their domains.</li> <li>Graph piecewise functions from contexts with or without diagrams.</li> <li>Physically model the graphs of piecewise functions using technology.</li> </ul>	<ul style="list-style-type: none"> <li>Piecewise function</li> </ul>
<b>Learning Individually with MATHia or Skills Practice</b>			8.4C 8.5B 8.5I 8.8C	In the MATHia software, students write equations given an initial point and slope, two points, or the slope and y-intercept. Students graph linear equations given in standard form using different methods. They graph and interpret graphs of linear piecewise functions to solve problems in mathematical and real-world contexts.	

# 12 More with Systems of Equations

This chapter develops strategies to solve linear systems of equations, including graphing and using graphing calculators.

**Standards:** 8.5A, 8.5B, 8.5I, 8.8A, 8.8B, 8.8C

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
12.1	<b>Making Decisions</b>	Using the Best Method to Solve a Linear System	8.5A 8.5B 8.5I 8.8A 8.8B 8.8C 8.9	<ul style="list-style-type: none"> <li>Write a linear system of equations to represent a problem context.</li> <li>Choose the best method to solve a linear system of equations using linear combinations.</li> </ul>	
12.2	<b>Producing and Selling T-Shirts</b>	Using a Graph to Solve a Linear System	8.5A 8.5B 8.5I 8.9	<ul style="list-style-type: none"> <li>Write a system of equations to represent a problem context.</li> <li>Solve a system of equations graphically.</li> <li>Interpret the solution to a system of equations in terms of the original problem's context.</li> </ul>	<ul style="list-style-type: none"> <li>Profit</li> <li>Income</li> <li>Point of intersection</li> <li>Break-even point</li> </ul>
12.3	<b>Saving Money</b>	Graphs and Solutions of Linear Systems	8.5A 8.5B 8.5I 8.9	<ul style="list-style-type: none"> <li>Write a system of equations to represent a problem context.</li> <li>Solve a system of equations graphically.</li> <li>Interpret the solution to a system of equations in terms of the original problem's context.</li> <li>Use slope to determine parallel and perpendicular lines.</li> </ul>	<ul style="list-style-type: none"> <li>System of linear equations</li> <li>Solution of a linear system</li> <li>Consistent system</li> <li>Inconsistent system</li> <li>Independent system</li> <li>Dependent system</li> </ul>
12.4	<b>Going Green</b>	Using a Graphing Calculator to Solve Linear Systems	8.5A 8.5B 8.5I 8.9	<ul style="list-style-type: none"> <li>Write a linear system of equations to represent a problem context.</li> </ul>	
<b>Learning Individually with MATHia or Skills Practice</b>			8.9	In the MATHia software, students are introduced to systems of linear equations. They write and solve systems of linear equations to determine break-even points in real-world scenarios. Students solve systems of linear equations using substitution.	

# 13 Financial Literacy: Your Financial Future

This chapter explores the financial calculations and decisions students must be aware of when making good decisions with money and when planning for their future education and careers.

**Standards:** 8.12A, 8.12B, 8.12C, 8.12D, 8.12E, 8.12F, 8.12G

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
13.1	<b>Terms of Financial Endearment</b>	Simple and Compound Interest	8.12C 8.12D	<ul style="list-style-type: none"> <li>Calculate simple and compound interest.</li> <li>Compare investment earnings from simple and compound interest accounts.</li> <li>Explain how small amounts of money invested regularly grow over time.</li> </ul>	<ul style="list-style-type: none"> <li>Terms of an investment</li> <li>Simple interest</li> <li>Compound interest</li> </ul>
13.2	<b>On Good Terms</b>	Terms of a Loan	8.12A 8.12E 8.12F	<ul style="list-style-type: none"> <li>Analyze the terms of a loan in order to make financially responsible decisions.</li> <li>Choose loans that cost less money based on the terms of the loan.</li> <li>Choose investments that earn more money based on the terms of the investment.</li> </ul>	<ul style="list-style-type: none"> <li>Deferment</li> </ul>
13.3	<b>Tech Savvy and Responsible</b>	Online Calculations	8.12A 8.12B 8.12F	<ul style="list-style-type: none"> <li>Use online calculators to make financially responsible decisions.</li> </ul>	<ul style="list-style-type: none"> <li>Online calculator</li> <li>Cash advance</li> </ul>
13.4	<b>Why All the Fuss Over Post-Secondary Education?</b>	Financing Your Education	8.12G	<ul style="list-style-type: none"> <li>Critically analyze information about college.</li> <li>Research several colleges, determining the admission requirements and cost.</li> <li>Develop a financial plan for attending college.</li> </ul>	
<b>Learning Individually with MATHia or Skills Practice</b>			8.12A 8.12B 8.12D 8.12E	In the MATHia software, students calculate simple and compound interest. They compare the effects of differences in loans on monthly and cumulative costs. Students use a Credit Card Repayment Calculator to learn how to make sound financial decisions.	

# 14 Data Display and Analysis

This chapter develops an understanding for constructing and interpreting scatter plots and investigating patterns of association between two quantities.  
**Standards:** 8.5C, 8.11A, 8.11B, 8.11C

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
14.1	<b>School Spirit and Scatter Plots</b>	Using Scatter Plots to Display and Analyze Two-Variable Relationships	8.11A	<ul style="list-style-type: none"> <li>Define the meaning of two-variable data.</li> <li>Collect and record two-variable data.</li> <li>Construct and interpret a scatter plot.</li> <li>Determine if a change in the value of one variable results in a change in the value of the second variable.</li> <li>Identify patterns in a scatter plot.</li> </ul>	<ul style="list-style-type: none"> <li>Variable</li> <li>Two-variable data set</li> </ul>
14.2	<b>Jump In! The Water's Fine!</b>	Interpreting Patterns in Scatter Plots	8.5C 8.11A	<ul style="list-style-type: none"> <li>Interpret patterns in a scatter plot.</li> <li>Determine if a pattern in a scatter plot has a linear relationship.</li> <li>Identify potential outliers in a scatter plot.</li> </ul>	<ul style="list-style-type: none"> <li>Independent variable (explanatory variable)</li> <li>Dependent variable (response variable)</li> <li>Association</li> <li>Linear association</li> <li>Cluster</li> <li>Positive association</li> <li>Negative association</li> <li>Outlier</li> </ul>
14.3	<b>How Fast Are Your Nerve Impulses?</b>	Connecting Tables and Scatter Plots for Collected Data	8.5C 8.11A	<ul style="list-style-type: none"> <li>Conduct an experiment and collect the data.</li> <li>Connect tables and scatter plots for collected data.</li> <li>Interpret collected data displayed on a scatter plot and in a table.</li> </ul>	
14.4	<b>Picking a Player</b>	Calculating and Interpreting the Mean Absolute Deviation	8.11B	<ul style="list-style-type: none"> <li>Calculate the deviations of each data value from the mean of a data set.</li> <li>Calculate the absolute deviations of each data value from the mean of a data set.</li> <li>Calculate and interpret the mean absolute deviation for a data set.</li> </ul>	<ul style="list-style-type: none"> <li>Measures of variation or variability</li> <li>Deviation</li> <li>Absolute deviation</li> <li>Mean absolute deviation</li> </ul>
14.5	<b>Texas-Sized Loving</b>	Sample Populations	8.11B 8.11C	<ul style="list-style-type: none"> <li>Determine that a random sample has characteristics that are representative of the whole population.</li> </ul>	
<b>Learning Individually with MATHia or Skills Practice</b>			8.11B 8.11C	In the MATHia software, students calculate and compare mean absolute deviation. They use statistics to draw inferences about a population.	

# 15 Lines of Best Fit

This chapter explores real-world bivariate data and the concept of line of best fit. Class experiments will be conducted with the data recorded and plotted in a scatter plot. The line of best is then calculated and used to make predictions.

**Standards:** 8.5C, 8.5D, 8.11A

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
15.1	<b>Where Do You Buy Your Books?</b>	Drawing Lines of Best Fit	8.5D 8.11A	<ul style="list-style-type: none"> <li>Determine the definition of a line of best fit.</li> <li>Use a line of best fit to make predictions.</li> <li>Compare two lines of best fit.</li> </ul>	<ul style="list-style-type: none"> <li>Line of best fit</li> <li>Model</li> <li>Trend line</li> <li>Interpolating</li> <li>Extrapolating</li> </ul>
15.2	<b>Mia Is Growing Like a Weed!</b>	Analyzing the Line of Best Fit	8.5D 8.11A	<ul style="list-style-type: none"> <li>Create a scatter plot.</li> <li>Draw a line of best fit.</li> <li>Write an equation of a line of best fit.</li> <li>Use a line of best fit to make predictions.</li> </ul>	
15.3	<b>Stroop Test</b>	Performing an Experiment	8.5D 8.11A	<ul style="list-style-type: none"> <li>Perform an experiment.</li> <li>Write and use the equations of lines of best fit.</li> <li>Compare results of an experiment.</li> </ul>	
15.4	<b>Human Chain: Shoulder Experiment</b>	Using Technology to Determine a Linear Regression Equation	8.5D 8.11A	<ul style="list-style-type: none"> <li>Perform an experiment.</li> <li>Use technology to determine a linear regression equation.</li> <li>Use a linear regression equation to predict results.</li> </ul>	<ul style="list-style-type: none"> <li>Linear regression</li> <li>Linear regression equation</li> </ul>
15.5	<b>Jumping</b>	Correlation	8.5C 8.5D 8.11A	<ul style="list-style-type: none"> <li>Perform an experiment.</li> <li>Draw a line of best fit.</li> <li>Write and use an equation of a line of best fit.</li> <li>Determine whether data are positively correlated, negatively correlated, or not correlated.</li> </ul>	<ul style="list-style-type: none"> <li>Positive correlation</li> <li>Negative correlation</li> </ul>
15.6	<b>Making a Quilt</b>	Scatter Plots and Non-Linear Data	8.5C 8.5D 8.11A	<ul style="list-style-type: none"> <li>Create scatter plots of linear and non-linear data.</li> <li>Draw lines of best fit.</li> </ul>	<ul style="list-style-type: none"> <li>Non-linear association (non-linear relationship)</li> </ul>
<b>Learning Individually with MATHia or Skills Practice</b>			8.5C 8.5D 8.11A	In the MATHia software, students describe patterns of association in scatter plots and estimate the line of best fit. Students use the lines of best fit to make predictions.	

# 16 Properties of Exponents

This chapter develops the properties of exponents and includes scientific notation.

**Standards:** 6.7A, 8.2C, 9.11B

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
16.1	<b>Exponentially Speaking</b>	Powers of Exponents	6.7A	<ul style="list-style-type: none"> <li>Expand a power into a product.</li> <li>Write a product as a power.</li> <li>Simplify expressions containing integer exponents.</li> </ul>	<ul style="list-style-type: none"> <li>Power</li> <li>Base</li> <li>Exponent</li> </ul>
16.2	<b>Digital Storage</b>	Multiplying and Dividing Powers	6.7A	<ul style="list-style-type: none"> <li>Develop a rule to simplify a product of powers.</li> <li>Develop a rule to simplify a power of a power.</li> <li>Develop a rule to simplify a quotient of powers.</li> </ul>	
16.3	<b>Extending the Rules</b>	Zero and Negative Exponents	6.7A	<ul style="list-style-type: none"> <li>Write numbers as powers.</li> <li>Simplify powers that have an exponent of zero.</li> <li>Simplify powers with negative exponents.</li> </ul>	
16.4	<b>Let's Get Scientific!</b>	Scientific Notation	8.2C	<ul style="list-style-type: none"> <li>Express numbers in scientific notation.</li> <li>Express numbers in standard form.</li> <li>Perform operations using scientific notation.</li> </ul>	<ul style="list-style-type: none"> <li>Scientific notation</li> <li>Order of magnitude</li> <li>Mantissa</li> <li>Characteristic</li> </ul>
16.5	<b>Are We There Yet? What Is the Distance?</b>	Operations with Scientific Notation	8.2C	<ul style="list-style-type: none"> <li>Perform operations using scientific notation.</li> <li>Perform operations on numbers written in scientific notation.</li> <li>Use rules for significant digits in computation.</li> </ul>	
16.6	<b>Watch Your Step!</b>	Identifying the Properties of Powers	9.11B	<ul style="list-style-type: none"> <li>Review the Power of a Power Property.</li> <li>Review the Power of a Product Property.</li> <li>Review the Power of a Quotient Property.</li> <li>Review multiplication and division of numbers written in scientific notation.</li> </ul>	
<b>Learning Individually with MATHia or Skills Practice</b>			6.7A 8.2C	In the MATHia software, students rewrite mathematical expressions using the rules of exponents. They convert between and compare numbers written in standard form and scientific notation. Students operate with numbers in scientific notation.	

# 17 Volume

This chapter develops formulas for the volumes of cones, right circular cylinders, and spheres. Volume formulas are used to solve real-world problems.  
**Standards:** 8.2B, 8.6A, 8.6B, 8.7A, 8.7B

Lesson	Lesson Title / Subtitle	Lesson Subtitle	TEKS	Key Math Objectives	Key Terms
17.1	<b>Drum Roll, Please!</b>	Volume of a Cylinder	8.2B 8.6A 8.7A	<ul style="list-style-type: none"> <li>Explore the volume of a cylinder using unit cubes.</li> <li>Estimate the volume of a right circular cylinder.</li> <li>Write a formula for the volume of a cylinder.</li> <li>Use a formula to determine the volume of a right circular cylinder.</li> <li>Use appropriate units of measure when computing the volume of a right circular cylinder.</li> </ul>	<ul style="list-style-type: none"> <li>Cylinder</li> <li>Right circular cylinder</li> <li>Radius of a cylinder</li> <li>Height of a cylinder</li> <li>Circumference</li> <li>Pi</li> </ul>
17.2	<b>Scratching the Surface</b>	Surface Area of a Cylinder	8.7B	<ul style="list-style-type: none"> <li>Determine the surface area of cylinders.</li> </ul>	<ul style="list-style-type: none"> <li>Surface area of a cylinder</li> </ul>
17.3	<b>Piling On!</b>	Volume of a Cone	8.6B 8.7A	<ul style="list-style-type: none"> <li>Explore the volume of a cone using a cylinder and birdseed.</li> <li>Write a formula for the volume of a cone.</li> <li>Use a formula to determine the volume of a cone.</li> <li>Use appropriate units of measure when calculating the volume of a cone.</li> </ul>	<ul style="list-style-type: none"> <li>Cone</li> <li>Height of a cone</li> </ul>
17.4	<b>All Bubbly</b>	Volume of a Sphere	8.7A	<ul style="list-style-type: none"> <li>Explore the volume of a sphere.</li> <li>Write a formula for the volume of a sphere.</li> <li>Use a formula to determine the volume of a sphere.</li> </ul>	<ul style="list-style-type: none"> <li>Sphere</li> <li>Center of a sphere</li> <li>Radius of a sphere</li> <li>Diameter of a sphere</li> <li>Antipodes</li> <li>Great circle</li> <li>Hemisphere</li> </ul>
17.5	<b>Practice Makes Perfect</b>	Volume Problems	8.6A 8.7A 8.7B	<ul style="list-style-type: none"> <li>Use the volume of a cylinder formula to solve problems.</li> <li>Use the volume of a cone formula to solve problems.</li> <li>Use the volume of a sphere formula to solve problems.</li> </ul>	
<b>Learning Individually with MATHia or Skills Practice</b>			8.6A 8.6B 8.7A	In the MATHia software, students apply the formulas for the volume of a cylinder, cone, and sphere to solve a variety of problems.	