



# Introduction to the Revised Mathematics TEKS

A VERTICAL LOOK AT KEY CONCEPTS  
AND PROCEDURES  
GEOMETRY



The materials are copyrighted (c) and trademarked (tm) as the property of the Texas Education Agency (TEA) and may not be reproduced without the express written permission of TEA, except under the following conditions:

- Texas public school districts, charter schools, and Education Service Centers may reproduce and use copies of the Materials and Related Materials for the districts' and schools' educational use without obtaining permission from TEA.
- Residents of the state of Texas may reproduce and use copies of the Materials and Related Materials for individual personal use only without obtaining written permission of TEA.
- Any portion reproduced must be reproduced in its entirety and remain unedited, unaltered and unchanged in any way.
- No monetary charge can be made for the reproduced materials or any document containing them; however, a reasonable charge to cover only the cost of reproduction and distribution may be charged.

Private entities or persons located in Texas that are not Texas public school districts, Texas Education Service Centers, or Texas charter schools or any entity, whether public or private, educational or non-educational, located outside the state of Texas **MUST** obtain written approval from TEA and will be required to enter into a license agreement that may involve the payment of a licensing fee or a royalty.

For information contact:

Office of Copyrights, Trademarks, License Agreements, and Royalties,  
Texas Education Agency,  
1701 N. Congress Ave., Austin, TX 78701-1494;  
phone: 512-463-9270 or 512-463-9437;  
email: [copyrights@tea.state.tx.us](mailto:copyrights@tea.state.tx.us)

©2014 Texas Education Agency All Rights Reserved 2014.

**Revised TEKS (2012): Building to Geometry Coordinate and Transformational Geometry – A Vertical Look at Key Concepts and Procedures**

Geometry	Grade 8	Grade 7	Grade 6
<p>Derive and use the distance formula to verify geometric relationships.</p> <p>Determine an equation of a line parallel or perpendicular to a given line that passes through a given point.</p> <p>Describe and perform transformations of figures in a plane using coordinate notation.</p> <p>Determine the image or pre-image of a given two-dimensional figure under a composition of transformations.</p> <p>Identify the sequence of transformations that will carry a given pre-image onto an image on and off the coordinate plane.</p>	<p>Determine the distance between two points on a coordinate plane using Pythagorean Theorem.</p>		
	<p>Use similar right triangles to develop an understanding that slope is the same for any two points on the same line.</p>		<p><b>Algebra 1</b></p> <p>Write the equation of a line that contains a given point and is parallel to a given line.</p>
	<p>Use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems.</p>		<p>Write the equation of a line that contains a given point and is perpendicular to a given line.</p>
	<p>Use an algebraic representation to explain the effect of a scale factor applied to a figure with origin as the center of dilation.</p>		
	<p>Explain the effect of translations, reflections over the x- or y-axis, and rotations using an algebraic representation.</p>		
<p>Generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane.</p> <p>Explain the effect of translations, reflections over the x- or y-axis, and rotations using an algebraic representation.</p>			

**Revised TEKS (2012): Building to Geometry Logical Argument and Constructions – A Vertical Look at Key Concepts and Procedures**

Geometry	Grade 8	Grade 7	Grade 6
<p>Distinguish between undefined terms, definitions, postulates, conjectures, and theorems.</p> <p>Identify and determine the validity of a conditional statement.</p> <p>Verify that a conjecture is false using a counterexample.</p> <p>Investigate patterns to make conjectures about geometric relationships.</p> <p>Construct figures using a compass and a straightedge.</p> <p>Use constructions to make conjectures about geometric relationships.</p>	<p>Use informal arguments to explain specific angle relationships with triangles and those created by transversals and parallel lines.</p>	<p>Write and solve equations using geometry concepts, including the sum of the angles in a triangle and angle relationships.</p>	<p>Identify the sum of angles of a triangle, the relationship between the lengths of the sides and measures of angles in a triangle, and whether or not a triangle is formed by three lengths.</p>

**Revised TEKS (2012): Building to Geometry Proof and Congruence – A Vertical Look at Key Concepts and Procedures**

Geometry	Grade 8	Grade 7	Grade 6
<p>Verify theorems about geometric relationships and apply these relationships to solve problems.</p>	<p>Use informal arguments to explain specific angle relationships with triangles and those created by transversals and parallel lines.</p>	<p>Write and solve equations using geometry concepts, including the sum of the angles in a triangle and angle relationships.</p>	<p>Identify the sum of angles of a triangle, the relationship between the lengths of the sides and measures of angles in a triangle, and whether or not a triangle is formed by three lengths.</p>
<p>Prove two triangles are congruent by applying the Side-Angle-Side, Angle-Side-Angle, Side-Side-Side, Angle-Angle-Side, and Hypotenuse-Leg congruence conditions.</p>	<p>Differentiate between transformations that preserve congruence and those that do not.</p>		
<p>Apply the definition of congruence, in terms of rigid transformations, to identify congruent figures and their corresponding sides and angles.</p>	<p>Differentiate between transformations that preserve congruence and those that do not.</p>		
<p>Verify theorems about the relationships in triangles, including proof of the Pythagorean Theorem, the sum of interior angles, base angles of isosceles triangles, midsegments, and medians, and apply these relationships to solve problems.</p>	<p>Use models and diagrams to explain the Pythagorean Theorem.</p>		
<p>Prove a quadrilateral is a parallelogram, rectangle, square, or rhombus using opposite sides, opposite angles, or diagonals and apply these relationships to solve problems.</p>	<p>Use the Pythagorean Theorem and its converse to solve problems.</p>		
			<p><b>Grade 5</b></p> <hr/> <p>Classify 2–D figures based on attributes and properties.</p>

## Revised TEKS (2012): Building to Geometry Similarity, Proof, and Trigonometry – A Vertical Look at Key Concepts and Procedures

Geometry	Grade 8	Grade 7	Grade 6
<p>Apply the definition of similarity in terms of a dilation to identify similar figures and their proportional sides and the congruent corresponding angles.</p> <p>Apply the Angle-Angle criterion to verify similar triangles and apply the proportionality of the corresponding sides to solve problems.</p> <p>Prove theorems about similar triangles, and apply these theorems to solve problems.</p> <p>Determine the lengths of sides and measures of angles in a right triangle by applying the trigonometric ratios to solve problems.</p> <p>Apply the relationships in special right triangles and the Pythagorean Theorem to solve problems.</p>	<p>Model the effect on linear and area measurements of dilated two-dimensional shapes.</p> <p>Generalize that the ratio of corresponding sides of similar shapes are proportional including a shape and its dilation.</p> <p>Use informal arguments to establish the facts about the angle sum and exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.</p> <p>Use models and diagrams to explain the Pythagorean Theorem.</p> <p>Use the Pythagorean Theorem and its converse to solve problems.</p>	<p>Generalize the critical attributes of similarity, including ratios within and between similar shapes.</p> <p>Solve mathematical and real-world problems involving similar shape and scale drawings.</p>	

Revised TEKS (2012): Building to Geometry Two-dimensional and Three-dimensional Figures – A Vertical Look at Key Concepts and Procedures

Geometry	Grade 8	Grade 7	Grade 6
<p>Determine and describe how changes in the linear dimensions of a shape affect its perimeter, area, surface area, or volume, including proportional and non-proportional dimensional change.</p>	<p>Model the effect of dilating 2-D shapes by a positive, rational scale factor on linear and area measurements.</p> <p>Generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation.</p> <p>Compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane.</p> <p>Use an algebraic representation to explain the effect of a scale factor applied to figures on a coordinate plane with the origin as the center of dilation.</p>		
<p>Apply the formula for the area of regular polygons to solve problems.</p> <p>Determine the area of composite two-dimensional figures.</p> <p>Apply the formulas for the total and lateral surface area of three-dimensional figures to solve problems.</p>	<p>Solve problems with lateral and total surface area of prisms, pyramids, and cylinders.</p>	<p>Model the relationship between attributes and formulas of circles.</p> <p>Determine the area of circles and composite figures.</p> <p>Solve problems involving lateral and total surface area of prisms and pyramids using the shape's net.</p>	<p>Model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes.</p> <p>Solve problems with area of rectangles, parallelograms, trapezoids, and triangles.</p>
<p>Apply the formulas for the volume of three-dimensional figures and composite figures, to solve problems.</p>	<p>Model the relationship between attributes and formulas for volume of cylinders and cones.</p> <p>Solve problems with volume of cylinders, cone, and spheres.</p>	<p>Model the relationship between attributes and formulas for volume of prisms and pyramids.</p> <p>Solve problems with volume of prisms and pyramids.</p>	<p>Solve problems with volume of rectangular prisms.</p>

Revised TEKS (2012): Building to Geometry Circles – A Vertical Look at Key Concepts and Procedures

Geometry	Grade 8	Grade 7	Grade 6
<p>Apply theorems about circles to solve non-contextual problems.</p> <p>Apply the proportional relationship between the measure of an arc length of a circle and the circumference of the circle to solve problems.</p> <p>Apply the proportional relationship between the measure of the area of a sector of a circle and the area of the circle to solve problems.</p> <p>Describe radian measure of an angle as the ratio of the length of an arc intercepted by a central angle and the radius of the circle.</p> <p>Determine the equation for the graph of a circle.</p>	<p>Determine the distance between two points on a coordinate plane using the Pythagorean Theorem.</p>	<p>Describe pi as the ratio of the circumference of a circle to its diameter.</p> <p>Determine the circumference and area of circles.</p>	



Revised TEKS (2012): Building to Geometry Probability – A Vertical Look at Key Concepts and Procedures

Geometry	Grade 8	Grade 7	Grade 6
<p>Develop strategies to use permutations and combinations to solve contextual problems.</p> <p>Determine probabilities based on area to solve contextual problems.</p> <p>Identify whether two events are independent, and compute the probability of the two events occurring together with or without replacement.</p> <p>Apply conditional probability in contextual problems.</p> <p>Apply independence in contextual problems.</p>		<p>Represent sample spaces for simple and compound events using lists and tree diagrams.</p> <p>Select and use different simulations to represent simple and compound events with and without technology.</p> <p>Make predictions and determine solutions using experimental data for simple and compound events.</p> <p>Make predictions and determine solutions using theoretical probability for simple and compound events.</p> <p>Find the probabilities of a simple event and its complement, and describe the relationship between the two.</p> <p>Determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces.</p>	