

Grade Nine Mathematics Curriculum

Unit of Study: Numbers and Algebra

Curriculum Standards	Learner Outcomes
<p data-bbox="186 469 548 493"><u>Number Sense and Operations</u></p> <p data-bbox="186 537 558 829">Knowing how to represent numbers, recognizing 'how many' are in a group, and using numbers to compare and represent paves the way for grasping number theory, place value and the meaning of operations and how they relate to one another.</p> <p data-bbox="186 873 285 898"><u>Algebra</u></p> <p data-bbox="186 938 564 1101">The ability to sort and order objects or numbers and recognizing and building on simple patterns are examples of ways.</p>	<ul style="list-style-type: none"> <li data-bbox="646 469 1776 493">• Finding formulas for the nth term of linear sequences typically found in geometric problems. <li data-bbox="646 501 905 526">• Review on slopes. <li data-bbox="646 534 1755 558">• Understand and explain sums of the measures of two and three interior angles of a triangle. <li data-bbox="646 566 1808 591">• Understand the properties of the base angles and the vertex angle bisector in isosceles triangles. <li data-bbox="646 599 1482 623">• Understand the inequalities among the sides and angles in triangles. <li data-bbox="646 631 1346 656">• Review the algebra of linear equations and their graphs. <li data-bbox="646 664 1115 688">• Review on solving linear equations. <li data-bbox="646 696 1608 721">• Understand the sum of both interior and exterior angle measures in a polygon. <li data-bbox="646 729 1587 753">• Understand and apply the formula for finding the length of an arc of a circle. <li data-bbox="646 761 1881 826">• Understand the relationships between the measure of an inscribed angle of a circle and the measure of its intercepted arc. <li data-bbox="646 834 1713 859">• Understand π as the relationship between the circumference of a circle and its diameter. <li data-bbox="646 867 1293 891">• Apply the formula for the circumference of a circle. <li data-bbox="646 899 978 924">• Practice visual thinking. <li data-bbox="646 932 1713 956">• Derive formulas and methods for finding the area of triangles, kites, and parallelograms. <li data-bbox="646 964 1556 989">• Solve area application problems using various problem-solving strategies. <li data-bbox="646 997 1398 1021">• Develop reading comprehension and problem solving skills. <li data-bbox="646 1029 1083 1053">• Clarify approximation concepts. <li data-bbox="646 1062 1440 1086">• Understand the methods for finding the surface areas of a solid. <li data-bbox="646 1094 1808 1118">• Understand the relationships among the lengths of the sides of 45-45-90 and 30-60-90 triangles. <li data-bbox="646 1127 1556 1151">• Understand and apply the Pythagorean relationship on a coordinate plane. <li data-bbox="646 1159 1367 1183">• Derive the equation of a circle from the distance formula. <li data-bbox="646 1192 1745 1216">• Understand the formulas for the volume of solids and use them to solve applied problems. <li data-bbox="646 1224 1808 1289">• Derive the formula for the volume of a sphere and use it to solve problems involving spheres or hemispheres. <li data-bbox="646 1297 1713 1321">• Derive the formula for the surface area of a sphere and use it to solve applied problems.

Unit of Study: Geometry and Measurement

Curriculum Standards	Learner Outcomes
<p><u>Geometry and Spatial Sense</u></p> <p>To build on the knowledge of basic shapes to identify more complex 2-D and 3-D shapes by drawing and sorting. Then learn to reason spatially, read maps, visualize objects in space, and use geometric modeling to solve problems. To be able to use coordinate geometry to specify locations, give directions and describe spatial relationships.</p> <p><u>Measurement</u></p> <p>Learning how to measure and compare. Understanding the number system and represents an important life skill.</p> <p><u>Analysis</u></p> <p>Collect information about the world and find its usefulness, to display and represent knowledge.</p>	<ul style="list-style-type: none"> • Understand the characteristic of reflectional and rotational symmetry. Showing or describing examples of geometry on art and nature. • Be aware that the straightedge too is different from a ruler and that curves can be simulated by a set of straight lines. • Develop critical and visual thinking skills. • To write definitions of common kinds of triangles and quadrilaterals. • Begin Defining parts of geometric objects; cross section of a three dimensional solid. • Learn about inductive reasoning and practice finding the next term of numerical and picture sequences. • Formulate mathematical models and Understand that these geometric models can represent, and model, physical situations. • Familiarize about angles formed when a transversal crosses parallel lines. • Constructing figures using compass and straightedge. • Constructing Points of Concurrency. • Become familiar with SSS, SAS, SSA, ASA, SSA, AND AAA as potential shortcuts to proving triangle congruence. • Give explanation that pairs of angles or pairs of sides are congruent by identifying related triangles and applying CPCTC. • Create flowchart proofs. • Understanding isosceles triangle and the ability to construct with a compass and measure angles with a protractor. • Develop reasoning, problem-solving skills. • Understand the properties of chords of circles tangents to a circle. Explore common tangents and tangent circles. • Grasp the meaning of geometric solids.

Math Resources

Educational Support Materials	Technology Integration
<p><i>Geometry</i>, University of Chicago Mathematics Project (UCSMP), Wright Group/McGraw <i>The School Mathematics Project Interact</i>, Cambridge Press 2003</p>	<p>Software: Teacher Assessment Assistant Electronic Teachers' Edition</p> <p>Websites: http://mathforum.org/dr.math http://mathworld.wolfram.com www.allmath.com www.domath.org www.hotmath.org http://mathforum.org/library www.mathbits.com</p>