



**2011–2012  
Grade 8**

This three part document serves as a guide for the transition from the Nevada State Standards (NSS) to the Common Core State Standards (CCSS). Users of this document should also refer to the Grade 3 Introduction and Narrative, and the Glossary of the CCSS.

Part I: The tables below list the Common Core State Standards introduced into Grade 8 in school year 2011–2012. Corresponding Nevada State Standards are listed where the content matches in whole or in part. Teachers are expected to maintain the NSS as well as teach these CCSS. In many cases, the expectations of the CCSS exceed the NSS. Teachers must move their instruction, and therefore their students’ mathematical knowledge, from the level of the NSS to the CCSS. Teachers must also incorporate the *Standards for Mathematical Practice* into instruction to complete students’ educational experiences. Additional clarification is provided in the comments for some CCSS.

<b>The Number System</b>			
<b>Know that there are numbers that are not rational, and approximate them by rational numbers.</b>			
<b>Common Core State Standard (CCSS)</b>	<b>Nevada State Standard (NSS)</b>	<b>Change<sup>1</sup></b>	<b>Comments</b>
8.NS.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.			
8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., $\pi^2$ ). For example, by truncating the decimal expansion of $\sqrt{2}$ , show that $\sqrt{2}$ is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.	1.8.3 Compare and order real numbers, including powers of whole numbers in mathematical and practical situations.	0	
	1.12.6 Determine an approximate value of radical and exponential expressions using a variety of methods.	-1	Extend determining values of radicals in the NSS to include cube roots, and using a variety of techniques.

<b>Expressions and Equations</b>			
<b>Work with radicals and integer exponents.</b>			
<b>Common Core State Standard (CCSS)</b>	<b>Nevada State Standard (NSS)</b>	<b>Change<sup>1</sup></b>	<b>Comments</b>
8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$ .	1.12.7 Solve mathematical problems involving exponents and roots.  Perform addition, subtraction, and scalar multiplication on matrices.	-1	

<sup>1</sup> Grade Level Change from current NSS to CCSS. (i.e., -1 indicates that the NSS was previously taught in the grade above.)



**Expressions and Equations**

**Work with radicals and integer exponents.**

Common Core State Standard (CCSS)	Nevada State Standard (NSS)	Change <sup>1</sup>	Comments
8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ , where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	1.8.5 Identify perfect squares to 225 and their corresponding square roots.	0	Extend identifying squares and square roots in the NSS to cubes and their corresponding cube roots.
	1.12.7 Solve mathematical problems involving exponents and roots.  Perform addition, subtraction, and scalar multiplication on matrices.	-1	“Knowing” that $\sqrt{2}$ is irrational requires students to justify why it is.
8.EE.3 Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. <i>For example, estimate the population of the United States as <math>3 \times 10^8</math> and the population of the world as <math>7 \times 10^9</math>, and determine that the world population is more than 20 times larger.</i>	1.8.1 Represent numbers using scientific notation in mathematical and practical situations.	0	Extend to comparing (finding ratios) numbers in scientific notation.
8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	1.8.1 Represent numbers using scientific notation in mathematical and practical situations.	0	Extend representing numbers in scientific notation in the NSS to choosing units and interpreting as specified by this CCSS.
	1.8.7 Calculate with real numbers to solve mathematical and practical situations.  Use order of operations to solve equations in the real number system.	0	

**Analyze and solve linear equations and pairs of simultaneous linear equations.**

Common Core State Standard (CCSS)	Nevada State Standard (NSS)	Change <sup>1</sup>	Comments
8.EE.7 Solve linear equations in one variable.  a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$ , $a = a$ , or $a = b$ results (where $a$ and $b$ are different numbers).			

<sup>1</sup> Grade Level Change from current NSS to CCSS. (i.e., -1 indicates that the NSS was previously taught in the grade above.)



**Expressions and Equations**

**Analyze and solve linear equations and pairs of simultaneous linear equations.**

Common Core State Standard (CCSS)	Nevada State Standard (NSS)	Change <sup>1</sup>	Comments
8.EE.7 Solve linear equations in one variable.  b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the Distributive property and collecting like terms.	2.8.2 Evaluate formulas and algebraic expressions using rational numbers (with and without technology).  Solve and graphically represent equations and inequalities in one variable, including absolute value.	0	
	2.8.5 Solve linear equations and represent the solution graphically.  Solve inequalities and represent the solution on a number line.	0	

**Functions**

**Define, evaluate, and compare functions.**

Common Core State Standard (CCSS)	Nevada State Standard (NSS)	Change <sup>1</sup>	Comments
8.F.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.	2.8.4 Identify, model, describe, and evaluate functions (with and without technology).  Translate among verbal descriptions, graphic, tabular, and algebraic representations of mathematical situations (with and without technology).	0	
8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). <i>For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</i>	2.8.4 Identify, model, describe, and evaluate functions (with and without technology).  Translate among verbal descriptions, graphic, tabular, and algebraic representations of mathematical situations (with and without technology).	0	Extend work with functions in the NSS to comparing functions in multiple forms.

<sup>1</sup> Grade Level Change from current NSS to CCSS. (i.e., -1 indicates that the NSS was previously taught in the grade above.)



<b>Functions</b>			
<b>Define, evaluate, and compare functions.</b>			
<b>Common Core State Standard (CCSS)</b>	<b>Nevada State Standard (NSS)</b>	<b>Change<sup>1</sup></b>	<b>Comments</b>
8.F.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. <i>For example, the function <math>A = s^2</math> giving the area of a square as a function of its side length is not linear because its graph contains the points (1, 1), (2, 4) and (3, 9), which are not on a straight line.</i>	2.7.5 Identify linear equations and inequalities.  Model and solve equations using concrete and visual representations.	+1	These topics were not explicitly part of the NSS, but implied in graphing linear equations in two variables.
	4.12.5 Determine the slope of lines using coordinate geometry and algebraic techniques.  Identify parallel, perpendicular, and intersecting lines by slope.  Graph linear equations and find possible solutions to those equations using coordinate geometry.  Find possible solution sets of systems of equations whose slopes indicate parallel, perpendicular, or intersecting lines.	-1	These topics were not explicitly part of the NSS, but implied in graphing linear equations in two variables.

<b>Geometry</b>			
<b>Understand and apply the Pythagorean Theorem.</b>			
<b>Common Core State Standard (CCSS)</b>	<b>Nevada State Standard (NSS)</b>	<b>Change<sup>1</sup></b>	<b>Comments</b>
8.G.6 Explain a proof of the Pythagorean Theorem and its converse.	4.8.7 Verify and explain the Pythagorean Theorem using a variety of methods.  Determine the measure of the missing side of a right triangle.	0	Extend verifying and explaining the Pythagorean Theorem in the NSS to a proof of it.
8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	4.12.7 Apply the Pythagorean Theorem and its converse in mathematical and practical situations.	-1	Extend the application of the Pythagorean Theorem in the NSS to three-dimensional situations.
8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	4.8.5 Calculate slope, midpoint, and distance using equations and formulas (with and without technology).  Determine the $x$ - and $y$ -intercepts of a line.	0	
	4.12.7 Apply the Pythagorean Theorem and its converse in mathematical and practical situations.	-1	

<sup>1</sup> Grade Level Change from current NSS to CCSS. (i.e., -1 indicates that the NSS was previously taught in the grade above.)



<b>Geometry</b>			
<b>Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.</b>			
<b>Common Core State Standard (CCSS)</b>	<b>Nevada State Standard (NSS)</b>	<b>Change<sup>1</sup></b>	<b>Comments</b>
8.G.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	3.12.3 Select and use appropriate measurement tools, techniques, and formulas to solve problems in mathematical and practical situations.	-1	

Part II: The table below lists the Nevada State Standards (NSS) teachers are expected to continue to teach in Grade 8 in school year 2011–2012. In some cases, only part of the standard is to be maintained. These standards are still eligible to be assessed. Standards in **bold** indicate those found in Part I that link to the CCSS. Standards underlined indicate those that cannot be assessed on the state Criterion Reference Test (CRT). Additional clarification is provided in the comments.

<b>Nevada State Standard (NSS)</b>	<b>Comments</b>
<b>1.8.1</b> , 1.8.2, <b>1.8.3</b> , <b>1.8.5</b> , <b>1.8.7</b> , <u>1.8.8</u> 2.8.1, 2.8.3, <b>2.8.4</b> , <b>2.8.5</b> , 2.8.6 3.8.1, 3.8.3, 3.8.4, 3.8.5 4.8.1, 4.8.2, 4.8.3, <b>4.8.5</b> , 4.8.6, <b>4.8.7</b> , <u>4.8.8</u> , <u>4.8.9</u> 5.8.1, 5.8.2, 5.8.3, 5.8.5, 5.8.6	Continue to teach the entire standard.
<b>2.8.2 (partial)</b> Evaluate formulas and algebraic expressions using rational numbers (with and without technology). <del>Solve and graphically represent</del> equations and inequalities in one variable, including absolute value.	Continue to evaluate formulas and algebraic expressions.  Continue to <u>solve</u> equations and inequalities in one variable. Graphing inequalities is in the CCSS in Grade 7 and High School.

Part III: The table below lists the Nevada State Standards (NSS) teachers are no longer expected to teach in Grade 8 in school year 2011–2012. In some cases, only part of a standard is to be deleted. Additional clarification is provided in the comments.

<b>Nevada State Standard (NSS)</b>	<b>Comments</b>
1.8.6 Use estimation strategies to determine the reasonableness of an answer in mathematical and practical situations.	While this is not a <i>content</i> standard under the CCSS, students <u>must</u> continue to use estimation as part of the <i>Standards for Mathematical Practice</i> .

<sup>1</sup> Grade Level Change from current NSS to CCSS. (i.e., -1 indicates that the NSS was previously taught in the grade above.)



Part III continued:

Nevada State Standard (NSS)	Comments
2.8.2 (partial) <del>Solve and</del> [G]raphically represent equations and inequalities in one variable, including absolute value.	Continue to solve equations and inequalities in one variable. Graphing inequalities is in the CCSS in Grade 7 and High School.
3.8.2 Demonstrate an understanding of precision, error, and tolerance when using appropriate measurement tools.	This topic is not present in the CCSS.
5.8.4 Find the number of combinations possible in mathematical and practical situations. Distinguish between permutations and combinations.	This standard is in the CCSS in High School.

<sup>1</sup> Grade Level Change from current NSS to CCSS. (i.e., -1 indicates that the NSS was previously taught in the grade above.)