

## PC-CCSS Grade 2 Mathematics Standards

### Operations and Algebraic Thinking [OA]

*A. Represent and solve problems involving addition and subtraction.*

OAT 1 [1] Use addition and subtraction within 100 to solve one- and two-step word problems.

*B. Add and subtract within 20.*

OAT 2 [2] Fluently add and subtract within 20 using mental strategies.

*C. Work with equal groups of objects to gain foundations for multiplication.*

OAT 3 [3] Determine whether a group of objects (up to 20) has an odd or even number of members.

OAT 4 [4] Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns.

### Number and Operations in Base Ten [NBT]

*A. Understand place value.*

NBT 5 [1-2] Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. Count within 1000; skip-count by 5s, 10s, and 100s.

NBT 6 [3] Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

NBT 7 [4] Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using  $>$ ,  $=$ , and  $<$  symbols.

*B. Use place value understanding and properties of operations to add and subtract.*

NBT 8 [5] Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

NBT 9 [6] Add up to four two-digit numbers using strategies based on place value and properties of operations.

NBT 10 [7] Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

NBT 11 [8] Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

NBT 12 [9] Explain why addition and subtraction strategies work, using place value and the properties of operations.

### Measurement and Data [MD]

*A. Measure and estimate lengths in standard units.*

MDA 13 [1] Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.

MDA 14 [2] Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

MDA 15 [3] Estimate lengths using units of inches, feet, centimeters, and meters.

MDA 16 [4] Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

*C. Relate addition and subtraction to length.*

MDA 17 [5] Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units.

MDA 18 [6] Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100. -

*D. Work with time and money.*

MDA 19 [7] Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

MDA 20 [8] Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately.

*E. Represent and interpret data.*

MDA 21 [9] Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. -

MDA 22 [10] Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories.

**Geometry [G]**

*A. Reason with shapes and their attributes.*

GEO 23 [1] Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

GEO 24 [2] Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

GEO 25 [3] Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, half of, a third of, etc.

**PC-CCSS Grade 3 Mathematics Standards****Operations and Algebraic Thinking [OA]**

*A. Represent and solve problems involving multiplication and division.*

OAT 1 [1] Interpret products of whole numbers.

OAT 2 [2] Interpret whole-number quotients of whole numbers.

OAT 3 [3] Use multiplication and division with 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.

OAT 4 [4] Determine the unknown whole number in a multiplication or division equation relating three whole numbers.

*B. Understand properties of multiplication and the relationship between multiplication and division.*

OAT 5 [5] Apply properties of operations as strategies to multiply and divide.

OAT 6 [6] Understand division as an unknown-factor problem.

OAT 7 [7] Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations.

*C. Solve problems involving the four operations, and identify and explain patterns in arithmetic.*

OAT 8 [8] Solve two-step word problems using the four operations, a letter variable, mental computation and estimation strategies including rounding.

OAT 9 [9] Identify arithmetic patterns and explain them using properties of operations.

**Number and Operations in Base Ten [NBT]**

*A. Use place value understanding and properties of operations to perform multi-digit arithmetic.*

NBT 10 [1] Use place value understanding to round whole numbers to the nearest 10 or 100.

NBT 11 [2] Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

NBT 12 [3] Multiply one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value and properties of operations.

**Number and Operations—Fractions [NF]**

*A. Develop understanding of fractions as numbers.*

NFR 13 [1] Understand a fraction  $1/b$  as the quantity formed by 1 part when a whole is partitioned into  $b$  equal parts; understand a fraction  $a/b$  as the quantity formed by  $a$  parts of size  $1/b$ .

NFR 14 [2] Understand a fraction as a number on the number line; represent fractions on a number line diagram.

NFR 15 [3] Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size; use the symbols  $>$ ,  $=$ , or  $<$ .

**Measurement and Data [MD]**

*A. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.*

MDA 16 [1] Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes.

MDA 17 [2] Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l); solve one-step word problems.

*B. Represent and interpret data.*

MDA 18 [3] Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories; solve one- and two-step problems using information presented in scaled bar graphs.

MDA 19 [4] Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch; show the data by making a line plot.

*C. Geometric measurement: understand concepts of area and relate area to multiplication and to addition.*

MDA 20 [5] Recognize area as an attribute of plane figures and understand concepts of area measurement.

MDA 21 [6] Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

MDA 22 [7] Relate area to the operations of multiplication and addition; use rectangles and rectilinear figures to solve real world problems.

*D. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.*

MDA 23 [8] Solve real world and mathematical problems involving perimeters of polygons.

### **Geometry [G]**

*A. Reason with shapes and their attributes.*

GEO 24 [1] Understand that shapes in different categories may share attributes, and that the shared attributes can define a larger category: rhombuses, rectangles, and squares as quadrilaterals.

GEO 25 [2] Partition shapes into parts with equal areas; express the area of each part as a unit fraction of the whole.

**PC-CCSS Grade 4 Mathematics Standards****Operations and Algebraic Thinking [OA]**

*A. Use the four operations with whole numbers to solve problems.*

OAT 1 [1] Interpret a multiplication equation as a comparison.

OAT 2 [2] Multiply or divide to solve word problems involving multiplicative comparison by using drawings and equations with a symbol for the unknown number.

OAT 3 [3] Solve multistep word problems using the four operations and a letter variable; assessing the reasonableness of answers by using estimation strategies including rounding.

*B. Gain familiarity with factors and multiples.*

OAT 4 [4] When given a whole number in the range 1-100, find all factor pairs, or determine whether the number is a multiple, prime or composite.

*C. Generate and analyze patterns.*

OAT 5 [5] Generate a number or shape pattern that follows a given rule and identify features of the pattern that were not explicit in the rule itself.

**Number and Operations in Base Ten [NBT] (whole numbers less or equal to 1,000,000)**

*A. Generalize place value understanding and for multi-digit whole number.*

NBT 6 [1,2] Recognize in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right; read and write multi-digit numbers using base-ten numerals, number names, and expanded form; compare two multi-digit numbers using  $>$ ,  $=$ , and  $<$

NBT 7 [3] Use place value understanding to round multi-digit whole numbers to any place.

*B. Use place value understanding and properties of operations to perform multi digit arithmetic.*

NBT 8 [4] Fluently add and subtract multi-digit whole numbers.

NBT 9[5] Multiply a whole number of up to four digits by a one digit whole number and multiply two digit numbers. Illustrate and explain by using equations, rectangular arrays, and/or area models.

NBT 10 [6] Find whole-number quotients and remainders with up to 4 digit dividends and one-digit divisors. Illustrate and explain by using equations, rectangular arrays, and/or area models.

**Number and Operations—Fractions [NF] (fractions with denominators 2, 4, 6, 8, 10, 12, 100)**

*A. Extend understanding of fraction equivalence and ordering.*

NFR 11 [1, 2] Explain why a fraction  $a/b$  is equivalent to a fraction by using fraction models; recognize and generate equivalent fractions; compare two fractions with different numerators and denominators using  $>$ ,  $=$ ,  $<$  or visual models.

*B. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.*

NFR 12 [3] Understand a fraction  $a/b$  with  $a > 1$  as a sum of fractions  $1/b$ ; add and subtract fractions and mixed numbers with like denominators in equations and story problems

NFR 13 [4] Apply and extend previous understandings of multiplication to multiply a fraction by a whole number in equations and story problems.

*C. Understand decimal notation for fractions, and compare decimal fractions.*

NFR 14 [5] Express a fraction with denominator 10 as an equivalent fraction with denominator 100 and use this technique to be able to add the fractions.

NFR 15 [6, 7] Use decimal notation for fractions with denominators 10 or 100; compare two decimals to hundredths using  $>$ ,  $=$ ,  $<$  or visual models.

### **Measurement and Data [MD]**

*A. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit*

MDA 16 [1] Know relative sizes of measurement units within one system of units; express measurements in a larger unit in terms of a smaller unit; record in a two-column table.

MDA 17 [2] Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money; represent measurement quantities using diagrams.

MDA 18 [3] Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

*B. Represent and interpret data*

MDA 19 [4] Make a line plot to display a data set of measurements in fractions of a unit; use information to solve problems involving addition and subtraction of fractions.

*C. Geometric measurement: understand concepts of angle and measure angles.*

MDA 20 [5] Recognize angles as geometric shapes, and understand concepts of angle measurement

MDA 21 [6] Measure angles using a protractor. Sketch angles of specific measure.

MDA 22 [7] Recognize angle measure as additive; use this knowledge to find the measure of unknown angles.

### **Geometry [G]**

*A. Reason with shapes and their attributes.*

GEO 23 [1] Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines. Identify these in two-dimensional figures.

GEO 24 [2] Classify two-dimensional figures. Identify right triangles.

GEO 25 [3] Recognize a lines of symmetry, line symmetric figures and draw lines of symmetry for two-dimensional shapes.

## PC-CCSS Grade 5 Mathematics Standards

### Operations and Algebraic Thinking [OA]

*A. Write and interpret numerical expressions.*

OAT 1 [1] Use and evaluate numerical expressions with parentheses, brackets, or braces.

OAT 2 [2] Write and interpret (without evaluating) simple expressions that record calculations with numbers.

*B. Analyze patterns and relationships.*

OAT 3 [3] Generate two numerical patterns using two given rules. Identify corresponding relationships, form ordered pairs, and graph on a coordinate plane.

### Number and Operations in Base Ten [NBT]

*A. Understand the place value system.*

NBT 4 [1] Recognize in a multi-digit number, a digit in one place represents ten times as much as it represents in the place to its right and  $\frac{1}{10}$  of what it represents in its place to its left.

NBT 5 [2] When multiplying or dividing by powers of ten, explain patterns of zeros or the placement of a decimal point. Use whole-number exponents to denote powers of 10.

NBT 6 [3] Read, write, and compare decimals to thousandths.

NBT 7 [4] Use place value understanding to round decimals to any place.

*B. Perform operations with multi-digit whole numbers and with decimals to hundredths.*

NBT 8 [5] Fluently multiply multi-digit whole numbers using the standard algorithm.

NBT 9 [6] Find whole number quotients of whole numbers with up to four-digit dividends and two digit divisors; illustrate and explain using equations, arrays, and/or models.

NBT 10 [7] Add, subtract, multiply, and divide decimals to hundredths.

### Number and Operations—Fractions [NF]

*A. Use equivalent fractions as a strategy to add and subtract fractions*

NFR 11 [1] Add and subtract fractions with unlike denominators (including mixed fractions).

NFR 12 [2] Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators.

*B. Apply and extend previous understandings of multiplication and division to multiply and divide fractions.*

NFR 13 [3] Interpret a fraction as division of the numerator by the denominator. Solve word problems with the division of whole numbers resulting in an answer of a fraction or whole number.

NFR 14 [4] Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. Interpret products of fractions and/or be able to display such products in arrays.

NFR 15 [5] Interpret multiplication of fractions as scaling (resizing)

NFR 16 [6] Solve real world problems involving multiplication of fractions and mixed numbers using models or equations.

NFR 17 [7] Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

### Measurement and Data [MD]

*A. Convert like measurement units within a given measurement system.*

MDA 18 [1] Convert among different-sized standard measurement units within a given measurement system, and use in solving multi-step problems.

*B. Represent and interpret data.*

MDA 19 [2] Make a line plot to display a data set of measurements in fractions of a unit; use operations on fractions to solve problems.

*C. Geometric measurement: understand concepts of volume and relate volume to multiplication and addition.*

MDA 20 [3] Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

MDA 21 [4] Measure volumes by counting unit cubes; using cubic cm. in, ft, and improvised units.

MDA 22 [5] Relate volume to the operations of multiplication and addition and solve problems involving volume.

**Geometry [G]**

*A. Graph points on the coordinate plane to solve real-world and mathematical problems.*

GEO 23 [1] Use axes to define a coordinate system, understand the parts of a coordinate system and the process involved in locating and representing ordered pairs.

GEO 24 [2] Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

*B. Classify two-dimensional figures into categories based on their properties.*

GEO 25 [3,4] Classify two-dimensional figures in a hierarchy based on properties; understand that attributes belonging to a category of 2D figures also belong to all subcategories of that category.



**PC-CCSS Grade 6 Mathematics Standards****Ratios & Proportional Relationships [RP]**

*A. Understand ratio concepts and use ratio reasoning to solve problems*

RPR 1 [1] Understand the concept of a ratio and use language to describe a ratio relationship between two quantities.

RPR 2 [2] Understand the concept of a unit rate associated with a ratio (limited to non-complex fractions).

RPR 3 [3] Use ratio and rate reasoning to solve real-world and mathematical problems.

**The Number System [NS]**

*A. Apply and extend previous understandings of multiplication and division to divide fraction by fractions.*

NSY 4 [1] Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions.

*B. Compute fluently with multi-digit numbers and find common factors and multiples.*

NSY 5 [2] Fluently divide multi-digit numbers using the standard algorithm.

NSY 6 [3] Fluently add, subtract, multiply, and divide multi-digit decimals using standard algorithms.

NSY 7[4] Find the GCF of two numbers  $\leq 100$  and the LCM of two numbers  $\leq 12$ . Use the distributive property to express a sum of two whole numbers with a common factor.

*C. Apply and extend previous understandings of numbers to the system of rational numbers.*

NSY 8 [5, 6] Understand a rational number as a point on a number line. Extend number lines and coordinates to include negative numbers; understanding that used together positive and negative numbers describe quantities having opposite directions or values.

NSY 9 [7] Understand ordering and absolute value of rational numbers.

NSY 10 [8] Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane; using absolute value to find distances between points with the same first or second coordinate.

**Expressions & Equations (EE)**

*A. Apply and extend previous understandings of arithmetic to algebraic expressions.*

EEQ 11 [1, 2] Write and evaluate expressions involving exponents. Write, read, and evaluate expressions in which letters stand for numbers.

EEQ 12 [3, 4] Apply properties of operations to generate equivalent expressions. Identify when two equations are equivalent.

*B. Reason about and solve one-variable equations and inequalities*

EEQ 13 [5] Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

EEQ 14 [6] Use variables to represent numbers and write expressions; understand that a variable can represent an unknown number.

EEQ 15 [7] Solve real-world and mathematical problems by writing and solving equations.

EEQ 16 [8] Write inequalities to represent a constraint or condition. Recognize inequalities have infinitely many solutions; represent solutions of inequalities on number line diagrams.

*C. Represent and analyze quantitative relationships between dependent and independent variables.*

EEQ 17 [9] Use variables to represent two quantities that change in relationship to one another.

Analyze the relationship between the two using graphs and tables, and relate these to the equation.

**Geometry (G)**

*A. Solve real-world and mathematical problems involving area, surface area, and volume.*

GEO 18 [1] Find the area of triangles, quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes..

GEO 19 [2] Find the volume of a rectangular prism with fractional edge lengths by packing it with unit cubes. Apply the formulas  $V=lwh$  and  $V = bh$  to find volumes of right rectangular prisms with fractional edge lengths.

GEO 20 [3] Draw polygons in the coordinate plane given coordinates for the vertices.

GEO 21 [4] Represent 3D figures using nets made of rectangles and triangles, and use the nets to find the surface area of these figures. Apply techniques to real-world and mathematical problems.

**Statistics and Probability (SP)**

*A. Develop understanding of statistical variability.*

SPR 22 [1, 2] Recognize a statistical question anticipates variability in the data related to the question.

Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape

SPR 23 [3] Recognize the difference between a measure of center and a measure of variation.

SPR 24 [4] Display numerical data in plots on a number line, including dot plots, histograms, and box plots

SPR 25 [5] Summarize numerical data sets in relation to their context.

**PC-CCSS Grade 7 Mathematics Standards****Ratios and Proportional Relationships [RP]**

*A. Analyze proportional relationships and use them to solve real-world and mathematical problems.*

RPR 1 [1] Compute unit rates associated with ratios of fractions, including lengths, areas and other quantities measured in like or different units.

RPR 2 [2] Recognize and represent proportional relationships between quantities; identify constant of proportionality; represent with equations; explain  $(x,y)$  in the graph of a proportional relationship.

RPR 3 [3] Use proportional relationships to solve multistep ratio and percent problems.

**The Number System [NS]**

*A. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.*

NSY 4 [1] Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

NSY 5 [2] Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers; change fraction to decimal using long division.

NSY 6 [3] Solve real-world and mathematical problems involving the four operations with rational numbers.

**Expressions and Equations [EE]**

*A. Use properties of operations to generate equivalent expressions.*

EEQ 7 [1] Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

EEQ 8 [2] Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

*B. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.*

EEQ 9 [3] Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form; convert between forms as appropriate; assess reasonableness of answers using mental computation and estimation.

EEQ 10 [4] Use variables to represent quantities in a real-world or mathematical problem; construct and solve simple equations and inequalities to solve problems by reasoning about the quantities.

**Geometry [G]**

*A. Draw, construct, and describe geometrical figures and describe the relationships between them.*

GEO 11 [1] Solve problems involving scale drawings of geometric figures, compute actual lengths and areas from a scale drawing; reproduce a scale drawing at a different scale.

GEO 12 [2] Draw (freehand, ruler and protractor, technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

GEO 13 [3] Describe the two-dimensional figures that result from slicing three-dimensional figures.

*B. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.*

GEO 14 [4] Know the formulas for and solve problems using the area and circumference of a circle; give an informal derivation of the relationship between circumference and area of a circle.

GEO 15 [5] Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

GEO 16 [6] Solve real-world and mathematical problems involving area, volume, surface area of two- and three-dimensional objects made of triangles, quadrilaterals, polygons, cubes, and right prisms.

### **Statistics and Probability [SP]**

*A. Use random sampling to draw inferences about a population.*

SPR 17 [1] Understand that statistics are used to gain information about a population by examining a sample of the population; generalizations from a sample are valid only if the sample is representative of that population; understand random sampling.

SPR 18 [2] Use data from a random sample to draw inferences about a population with an unknown characteristic; Generate multiple samples of the same size to gauge the variation in estimates or predictions.

*B. Draw informal comparative inferences about two populations.*

SPR 19 [3] Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measure the difference between the centers by expressing it as a multiple of a measure of variability.

SPR 20 [4] Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

*C. Investigate chance processes and develop, use, and evaluate probability models.*

SPR 21 [5] Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring.

SPR 22 [6] Approximate the probability of a chance event by collecting data on the chance process that produces it; predict the approximate relative frequency given the probability.

SPR 23 [7] Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; explain possible sources of discrepancy.

SPR 24 [8] Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

## PC-CCSS Grade 8 Mathematics Standards

### The Number System [NS]

*A. Know that there are numbers that are not rational, and approximate them by rational numbers.*

NSY 1 [1] Know that numbers that are not rational are called irrational. Understand that every number has a decimal expansion and convert a repeating decimal into a rational number.

NSY 2 [2] Use rational approximations of irrational numbers to compare irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions.

### Expressions and Equations [EE]

*A. Work with radicals and integer exponents.*

EEQ 3 [1] Know and apply the properties of integer exponents to generate equivalent numerical expressions.

EEQ 4 [2] Use square root and cube root symbols to represent solutions to equations ( $x^2 = p$ ;  $x^3 = p$ ). Evaluate roots of small perfect squares and cubes. Know that  $\sqrt{2}$  is irrational.

EEQ 5 [3] Use numbers in the form of a single digit times an integer power of 10 to estimate very large or small quantities; express how many times as much one is than the other.

EEQ 6 [4] Use and perform operations with numbers expressed in scientific notation, including problems using both decimal and scientific notation.

*B. Understand the connections between proportional relationships, lines, and linear equations.*

EEQ 7 [5] Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.

EEQ 8 [6] Use similar triangles to explain why the slope  $m$  is the same between any two distinct points on a non-vertical line; derive the equations  $y = mx$  and  $y = mx + b$

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

EEQ 9 [7] Solve linear equations in one variable, including those with 0, 1 or infinitely many solutions, rational coefficients, and requiring distributive property and collecting like terms.

EEQ 10 [8] Analyze and solve pairs of simultaneous linear equations algebraically, graphically; solve real world problems using two linear equations in two variables.

### Functions [F]

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

FUN 11 [1-2] Understand that a function is a rule that assigns to each input exactly one output; compare properties of two functions represented in different ways: algebraically, graphically, tables, verbal descriptions.

FUN 12 [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.

*B. Use functions to model relationships between quantities.*

FUN 13 [4] Construct a function to model a linear relationship or situation. Determine and interpret the rate of change and initial value from a description or two  $(x, y)$  values; from a table or graph.

FUN 14 [5] Describe qualitatively the functional relationship between two quantities by analyzing a graph; sketch a graph that that represents a function that has been described verbally.

**Geometry [G]**

*A. Understand congruence and similarity using physical models, transparencies, or geometry software.*

GEO 15 [1] Verify experimentally the properties of rotations, reflections, and translations.

GEO 16 [2] Understand that two-dimensional figures are congruent if one can be obtained from the other by a sequence of rotations, reflections, and translations; describe a congruence sequence.

GEO 17 [3] Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

GEO 18 [4] Understand that two-dimensional figures are similar if one can be obtained from another by a sequence of rotations, reflections, translations, and dilations; describe a similarity sequence.

GEO 19 [5] Informally establish facts about the angle sum and exterior angle of triangles, angles created when parallel lines and a transversal, and the angle-angle criterion for similar triangles.

*B. Understand and apply the Pythagorean Theorem.*

GEO 20 [6] Explain a proof of the Pythagorean Theorem and its converse.

GEO 21 [7-8] Apply the Pythagorean Theorem to determine side lengths in right triangles in real-world and math problems in two and three dimensions and find the distance between two points.

*C. Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.*

GEO 22 [9] Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

**Statistics and Probability [SP]**

*A. Investigate patterns of association in bivariate data.*

SPR 23 [1] Construct and interpret scatter plots for bivariate measurement data. Describe patterns (clustering, outliers, positive or negative association, linear association, nonlinear association).

SPR 24 [2-3] Informally fit a straight line for scatterplots that suggest a linear relationship, assess the fit by judging the closeness of the data points to the line; use the equation to solve problems.

SPR 25 [4] Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects; describe possible association between the two variables.

## PC-CCSS Mathematics: Algebra I – Conceptual Categories

### Number and Quantity [N]

#### A. The Real Number System [RN]

NAQ 1 [1-2] Extend the properties of exponents to rational exponents.

NAQ 2 [3] Use properties of rational and irrational numbers.

#### B. Quantities [Q]

NAQ 3 [1-3] Reason quantitatively and use units to solve problems.

### Algebra [A]

#### A. Seeing Structure in Expressions [SSE]

ALG 4 [1-2] Interpret the structure of expressions: linear, exponential, quadratic.

ALG 5 [3] Write expressions in equivalent forms to solve problems: quadratic and exponential.

#### B. Arithmetic with Polynomials and Rational Expressions [APR]

ALG 6 [1] Perform arithmetic operations on polynomials: linear and quadratic.

#### C. Creating Equations [CED]

ALG 7 [1-4] Create equations that describe numbers or relationships: Linear, quadratic, and exponential (integer inputs only; linear only for 3).

#### D. Reasoning with Equations and Inequalities [REI]

ALG 8 [1] Understand solving equations as a process of reasoning and explain the reasoning: master linear; learn as general principle.

ALG 9 [3-4] Solve equations and inequalities in one variable: linear inequalities; literal that are linear in the variables being solved for; quadratics with real solutions.

ALG 10 [5-7] Solve systems of equations: Linear-linear and linear-quadratic.

ALG 11 [10-12] Represent and solve equations and inequalities graphically: Linear and exponential; learn as general principle.

### Functions [F]

#### A. Interpreting Functions [IF]

FUN 12 [1-3] Understand the concept of a function and use function notation: Learn as general principle; focus on linear and exponential and on arithmetic and geometric sequences.

FUN 13 [4-6] Interpret functions that arise in applications in terms of a context: Linear, exponential, and quadratic.

FUN 14 [7-9] Analyze functions using different representations. Linear, exponential, quadratic, absolute value, step, piecewise defined.

#### B. Building Functions [BF]

FUN 15 [1-2] Build a function that models a relationship between two quantities: linear, exponential, and quadratic.

FUN 16 [3-4] Build new functions from existing functions: Linear, exponential, quadratic, and absolute value; linear only for 4a.

#### C. Linear, Quadratic, and Exponential Models [LE]

FUN 17 [1-3] Construct and compare linear, quadratic, and exponential models and solve problems.

FUN 18 [5] Interpret expressions for functions in terms of the situation they model: Linear and exponential of form  $f(x)=bx+k$ .

### Statistics and Probability [S]

#### A. Interpreting Categorical and Quantitative Data [ID]

SAP 19 [1-3] Summarize, represent, and interpret data on a single count or measurement variable.

SAP 20 [5-6] Summarize, represent, and interpret data on two categorical and quantitative variables: Linear focus, discuss general principles.

SAP 21 [7-9] Interpret linear models.

*\*NOTE: Conceptual categories target clusters of specific standards within domains In the Ohio Department of Education mathematics model curriculum.*

## PC-CCSS Mathematics: Algebra II – Conceptual Categories

### Number and Quantity [N]

#### A. The Complex Number System [CN]

NAQ 1 [1-2] Perform arithmetic operations with complex numbers

NAQ 2 [7-9+] Use complex numbers in polynomial identities and equations: Polynomials with real coefficients.

### Algebra [A]

#### A. Seeing Structure in Expressions [SSE]

ALG 3 [1-2] Interpret the structure of expressions: polynomial and rational.

ALG 4 [4] Write expressions in equivalent forms to solve problems.

#### B. Arithmetic with Polynomials and Rational Expressions [APR]

ALG 5 [1] Perform arithmetic operations on polynomials: beyond quadratic.

ALG 6 [2-3] Understand the relationship between zeros and factors of polynomials.

ALG 7 [4-5+] Use polynomial identities to solve problems.

ALG 8 [6-7+] Rewrite rational expressions: linear and quadratic denominators.

#### C. Creating Equations [CED]

ALG 9 [1-4] Create equations that describe numbers or relationships: equations using all available types of expressions, including simple root functions.

#### D. Reasoning with Equations and Inequalities [REI]

ALG 10 [2] Understand solving equations as a process of reasoning and explain the reasoning: simple radical and rational.

ALG 11 [11] Represent and solve equations and inequalities graphically: combine polynomial, rational, radical, absolute value, and exponential functions.

### Functions [F]

#### A. Interpreting Functions [IF]

FUN 12 [4-6] Interpret functions that arise in applications in terms of a context: emphasize selection of appropriate models.

FUN 13 [7-9] Analyze functions using different representations: focus on using key features to guide selection of appropriate type of model function.

#### B. Building Functions [BF]

FUN 14 [1] Build a function that models a relationship between two quantities: include all types of functions studied.

FUN 15 [3-4] Build new functions from existing functions: include simple radical, rational, and exponential functions; emphasize common effect of each transformation across function types.

#### C. Linear, Quadratic, and Exponential Models [LE]

FUN 16 [4] Construct and compare linear, quadratic, and exponential models and solve problems: logarithms as solutions for exponentials.

#### C. Trigonometric Functions [TF]

FUN 17 [1-2] Extend the domain of trigonometric functions using the unit circle..

FUN 18 [5] Model periodic phenomena with trigonometric functions.

FUN 19 [8] Prove and apply Trigonometric identities.

### Statistics and Probability [S]

#### A. Interpreting Categorical and Quantitative Data [ID]

SAP 20 [4] Summarize, represent, and interpret data on a single count or measurement variable.



***B. Making Inferences and Justifying Conclusions [IC]***

SAP 21 [1-2] Understand and evaluate random processes underlying statistical experiments

SAP 22 [5-6] Make inferences and justify conclusions from sample surveys, experiments and observational studies.

***C. Conditional Probability and the Rules of Probability [CP]***

SAP 23 [1-5] Understand independence and conditional probability and use them to interpret data: link to data from simulations or experiments.

SAP 24 [6-9+] Use the rules of probability to compute probabilities of compound events in a uniform probability model.

***D. Using Probability to Make Decisions. [MD]***

SAP 25 [+6-7] Use probability to evaluate outcomes of decisions: include more complex situations.

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## PC-CCSS Mathematics: Geometry – Conceptual Categories

### Geometry [G]

#### A. Congruence [CO]

- GEO 1 [1-5] Experiment with transformations in the plane.
- GEO 2 [6-8] Understand congruence in terms of rigid motions.
- GEO 3 [9-11] Prove geometric theorems.
- GEO 4 [12-13] Make geometric constructions.

#### B. Similarity, Right Triangles, and Trigonometry [SRT]

- GEO 5 [1-3] Understand similarity in terms of similarity transformations.
- GEO 6 [4-5] Prove theorems involving similarity.
- GEO 7 [6-8] Define trigonometric ratios and solve problems involving right triangles.
- GEO 8 [9-11] Apply trigonometry to general triangles.

#### C. Circles [C]

- GEO 9 [1-4+] Understand and apply theorems about circles.
- GEO 10 [5] Find arc lengths and areas of sectors of circles: radian introduced only as unit of measure.

#### D. Expressing Geometric Properties with Equations [GPE]

- GEO 11 [1-2] Translate between the geometric description and the equation for a conic section.
- GEO 12 [4-7] Use coordinates to prove simple geometric theorems algebraically: include distance formula; relate to Pythagorean theorem.

#### E. Geometric Measurement and Dimension [GMD]

- GEO 13 [1~3] Explain volume formulas and use them to solve problems.
- GEO 14 [4] Visualize the relation between two-dimensional and three-dimensional objects.

#### F. Modeling with Geometry [MG]

- GEO 15 [1-3] Apply geometric concepts in modeling situations.

### Statistics and Probability [S]

#### A. Conditional Probability and the Rules of Probability [CP]

- SAP 16 [1-5] Understand independence and conditional probability and use them to interpret data: link to data from simulations or experiments.
- SAP 17 [6-9+] Use the rules of probability to compute probabilities of compound events in a uniform probability model.

#### B. Using Probability to Make Decisions [MD]

- SAP 18 [+6-7] Use probability to evaluate outcomes of decisions: introductory; apply counting rules.

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## PC-CCSS Integrated Mathematics I – Conceptual Categories

### Number and Quantity [N]

#### A. Quantities [Q]

NAQ 1 [1-3] Reason quantitatively and use units to solve problems

### Algebra [A]

#### A. Seeing Structure in Expressions [SSE]

ALG 2 [1] Interpret the structure of expressions: linear, exponential, with integer exponents.

#### B. Creating Equations [CED]

ALG 3 [1-4] Create equations that describe numbers or relationships: Linear, exponential (integer inputs only; linear only for 3).

#### C. Reasoning with Equations and Inequalities [REI]

ALG 4 [1] Understand solving equations as a process of reasoning and explain the reasoning.

ALG 5 [3] Solve equations and inequalities in one variable.

ALG 6 [5-6] Solve systems of equations: Linear system.

ALG 7 [10-12] Represent and solve equations and inequalities graphically: Linear and exponential.

### Functions [F]

#### A. Interpreting Functions [IF]

FUN 8 [1-3] Understand the concept of a function and use function notation: Focus on linear and exponential.

FUN 9 [4-6] Interpret functions that arise in applications in terms of a context.

FUN 10 [7-9] Analyze functions using different representations.

#### B. Building Functions [BF]

FUN 11 [1-2] Build a function that models a relationship between two quantities.

FUN 12 [3] Build new functions from existing functions: Linear, exponential; focus on vertical translations for exponential.

#### C. Linear, Quadratic, and Exponential Models [LE]

FUN 13 [1-3] Construct and compare linear, quadratic, and exponential models and solve problems: linear and exponential.

FUN 14 [5] Interpret expressions for functions in terms of the situation they model.

### Geometry [G]

#### A. Congruence [CO]

GEO 15 [1-5] Experiment with transformations in the plane.

GEO 16 [6-8] Understand congruence in terms of rigid motions.

GEO 17 [12-13] Make geometric constructions.

#### B. Expressing Geometric Properties with Equations [GPE]

GEO 18 [4-7] Use coordinates to prove simple geometric theorems algebraically: include distance formula; relate to Pythagorean theorem.

### Statistics and Probability [S]

#### A. Interpreting Categorical and Quantitative Data [ID]

SAP 19 [1-3] Summarize, represent, and interpret data on a single count or measurement variable.

SAP 20 [5-6] Summarize, represent, and interpret data on two categorical and quantitative variables: Linear focus, discuss general principles.

SAP 21 [7-9] Interpret linear models.

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## C-CCSS Integrated Mathematics 2 – Conceptual Categories

### Number and Quantity [N]

#### A. The Real Number System [RN]

NAQ 1 [1-2] Extend the properties of exponents to rational exponents.

NAQ 2 [3] Use properties of rational and irrational numbers.

#### B. The Complex Number System [CN]

NAQ 3 [1-2] Perform arithmetic operations with complex numbers.

NAQ4 [7-9+] Use complex numbers in polynomial identities and equations: quadratics with real coefficients.

### Algebra [A]

#### A. Seeing Structure in Expressions [SSE]

ALG 5 [1-2] Interpret the structure of expressions: quadratic and exponential.

ALG 6 [3] Write expressions in equivalent forms to solve problems: quadratic and exponential.

#### B. Arithmetic with Polynomials and Rational Expressions [APR]

ALG 7 [1] Perform arithmetic operations on polynomials: polynomials that simplify to quadratics.

#### C. Creating Equations [CED]

ALG 8 [1-4] Create equations that describe numbers or relationships: include formulas involving quadratic terms.

#### D. Reasoning with Equations and Inequalities [REI]

ALG 9 [4] Solve equations and inequalities in one variable: quadratics with real coefficients.

ALG 10 [7] Solve systems of equations: linear-quadratic systems.

### Functions [F]

#### A. Interpreting Functions [IF]

FUN 11 [4-9] Interpret functions that arise in applications in terms of a context; and analyze functions using different representations.

#### B. Building Functions [BF]

FUN 12 [1-4] Build a function that models a relationship between two quantities; and build new functions from existing functions.

#### C. Linear, Quadratic, and Exponential Models [LE]

FUN 13 [3] Construct and compare linear, quadratic, and exponential models and solve problems: including quadratic.

#### C. Trigonometric Functions [TF]

FUN 14 [8] Prove and apply trigonometric identities.

### Geometry [G]

#### A. Congruence [CO]

GEO 15 [9-11] Prove geometric theorems.

#### B. Similarity, Right Triangles, and Trigonometry [SRT]

GEO 16 [1-5] Understand similarity in terms of similarity transformations and prove theorems involving similarity

GEO 17[6-8] Define trigonometric ratios and solve problems involving right triangles.

#### C. Circles [C]

GEO 18[1-4] Understand and apply theorems about circles.

GEO 19[5] Find arc lengths and areas of sectors of circles: radian introduced only as unit of measure.

**D. Expressing Geometric Properties and Equations [GPE]**

GEO 20 [1-2] Translate between the geometric description and the equation for a conic section.

GEO 21 [4] Use coordinates to prove simple geometric theorems algebraically: include simple circle theorems.

**E. Geometric Measurement and Dimension [GMD]**

GEO 22 [1-3] Explain volume formulas and use them to solve problems.

**Statistics and Probability [S]**

**A. Conditional Probability and the Rules of Probability [CP]**

SAP 23 [1-5] Understand independence and conditional probability and use them to interpret data.

SAP 24 [6-9+] Use the rules of probability to compute probabilities of compound events in a uniform probability model.

**B. Using Probability to Make Decisions. [MD]**

SAP 25 [+6-7] Use probability to evaluate outcomes of decisions.

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## PC-CCSS Integrated Mathematics 3 – Conceptual Categories

### Number and Quantity [N]

#### A. Complex Number System [CN]

NAQ 1 [8-9] Use complex numbers in polynomial identities and equations.

### Algebra [A]

#### A. Seeing Structure in Expressions [SSE]

ALG 2 [1-2] Interpret the structure of expressions: polynomial and rational.

ALG 3 [4] Write expressions in equivalent forms to solve problems.

#### B. Arithmetic with Polynomials and Rational Expressions [APR]

ALG 4 [1] Perform arithmetic operations on polynomials: beyond quadratic..

ALG 5 [2-3] Understand the relationship between zeros and factors of polynomials.

ALG 6 [4-5+] Use polynomial identities to solve problems.

ALG 7 [6-7+] Rewrite rational expressions: linear and quadratic denominators.

#### B. Creating Equations [CED]

ALG 8 [1-4] Create equations that describe numbers or relationships: equations using all available types of expressions including simple root functions.

#### C. Reasoning with Equations and Inequalities [REI]

ALG 9 [2] Understand solving equations as a process of reasoning and explain the reasoning: simple radical and rational.

ALG 10 [11] Represent and solve equations and inequalities graphically: combine polynomial, rational, radical, absolute value, and exponential functions.

### Functions [F]

#### A. Interpreting Functions [IF]

FUN 11 [4-6] Interpret functions that arise in applications in terms of a context: include rational, square root and cube root; emphasize selection of appropriate models.

FUN 12 [7-9] Analyze functions using different representations: include rational and radical; focus on using key features to guide selection of appropriate type of model function.

#### B. Building Functions [BF]

FUN 13 [1] Build a function that models a relationship between two quantities: include all types of functions studied.

FUN 14 [3-4] Build new functions from existing functions: include simple radical, rational, and exponential functions; emphasize common effect of each transformation across function types.

#### C. Linear, Quadratic, and Exponential Models [LE]

FUN 15 [4] Construct and compare linear, quadratic, and exponential models and solve problems: logarithms as solutions for exponentials.

#### D. Trigonometric Functions [TF]

FUN 16 [1-2] Extend the domain of trigonometric functions using the unit circle.

FUN 17 [5] Model periodic phenomena with trigonometric functions.

### Geometry [G]

#### A. Similarity, Right Triangles, and Trigonometry [SRT]

GEO 18 [9-11] Apply trigonometry to general triangles.

#### B. Geometric Measurement and Dimension [GMD]

GEO 19 [4] Visualize the relation between two-dimensional and three-dimensional objects.

#### C. Modeling with Geometry [MG]

GEO 20 [1-3] Apply geometric concepts in modeling situations.

### **Statistics and Probability [S]**

#### ***A. Interpreting Categorical and Quantitative Data [ID]***

SAP 21 [4] Summarize, represent, and interpret data on a single count or measurement variable.

#### ***B. Making Inferences and Justifying Conclusions [IC]***

SAP 22 1-2] Understand and evaluate random processes underlying statistical experiments.

SAP 23 [3-6] Make inferences and justify conclusions from sample surveys, experiments, and observational studies.

#### ***C. Using Probability to Make Decisions [MD]***

SAP 24 [6-7] Use probability to evaluate outcomes of decisions: include more complex situations.

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## PC-CCSS Grade 2 Reading Standards

### Literature [RL]

#### *A. Key Ideas and Details*

LIT 1: [1] Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

LIT 2: [2] Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.

LIT 3: [3] Describe how characters in a story respond to major events and challenges.

#### *B. Craft and Structure*

LIT 4: [4] Describe how words and phrases (e.g., regular beats, alliteration, rhymes, repeated lines) supply rhythm and meaning in a story, poem, or song.

LIT 5: [5] Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.

LIT 6: [6] Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.

#### *C. Integration of Knowledge and Ideas*

LIT 7: [7] Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.

LIT 8: [9] Compare and contrast two or more versions of the same story (e.g., Cinderella stories) by different authors or from different cultures.

### Informational Text [RI]

#### *A. Key Ideas and Details*

INF 9: [1] Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

INF 10: [2] Identify the main topic of a multi-paragraph text as well as focus of specific paragraphs within text.

INF 11: [3] Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.

#### *B. Craft and Structure*

INF 12: [4] Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.

INF 13: [5] Know and use various text features (e.g., captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) to locate key facts or information in a text efficiently.

INF 14: [6] Identify the main purpose of a text, including what the author wants to answer, explain, or describe.

#### *C. Integration of Knowledge and Ideas*

INF 15: [7] Explain how specific images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

INF 16: [8] Describe how reasons support specific points the author makes in a text.

INF 17: [9] Compare and contrast the most important points presented by two texts on the same topic.

### Foundational Skills [RF]

#### *A. Phonics and Word Recognition*

FOU 18: [3] Know and apply grade-level phonics and word analysis skills in decoding words. (long and short vowels, vowel teams, 2-syllable w/ long vowels, common prefixes, suffixes, inconsistent commonly spelled, irregular words)

### Language [L]

#### *A. Vocabulary Acquisition and Use*

VOC 19: [4] Determine word meanings of unknown or multiple-meaning words and phrases through the use of one or more strategies. (context clue, word parts, compound words, glossaries or dictionaries)

VOC 20: [5] Understand word relationships and nuances. (real-life connections, shades of meaning in verbs and adjectives).



## PC-CCSS Grade 3 Reading Standards

### Literature [RL]

#### *A. Key Ideas and Details*

LIT 1: [1] Demonstrate understanding of a text, referring to the text as a basis for the answers.

LIT 2: [2] Use key details in stories from diverse cultures (fables, folktales, myths) to determine central message, lesson, or moral.

LIT 3: [3] Describe characters in a story (traits, motivations, or feelings) and explain how they contribute to the sequence of events.

#### *B. Craft and Structure*

LIT 4: [4] Determine the meaning of words and phrases, distinguishing literal from non-literal language.

LIT 5: [5] Describe how successive parts of stories, dramas, poems, (chapter, scene, and stanza) build on earlier sections.

LIT 6: [6] Distinguish their own point of view from that of the narrator or characters.

#### *C. Integration of Knowledge and Ideas*

LIT 7: [7] Explain how aspects of a text's illustrations contribute to what is conveyed by the words (mood, character, setting).

LIT 8: [9]. Compare and contrast themes, setting, plots of stories written by the same author about the same or similar characters (books in a series).

### Informational Text [RI]

#### *A. Key Ideas and Details*

INF 9: [1] Demonstrate understanding of a text, explicitly referring to the text as the basis for the answers.

INF 10: [2] Determine the main idea of a text, recount key details, and explain how they supported the main idea.

INF 11: [3] Describe the relationships between historical events, scientific ideas, or concepts, or steps using language that pertains to time, sequence, and cause/effect.

#### *B. Craft and Structure*

INF 12: [4] Determine the meaning of general academic and domain-specific words and phrases in a text.

INF 13: [5] Use text features and search tools (key words, sidebars, hyperlinks) to locate information relevant to a given topic.

INF 14: [6] Distinguish their own point of view from that of the author of a text.

#### *C. Integration of Knowledge and Ideas*

INF 15: [7] Use information from illustrations (maps, photos) and words to demonstrate understanding of the text (where, when, why, and how key events occur).

INF 16: [8] Describe the logical connection between particular paragraphs and sentences in a text (comparison, cause/effect, first, second, third in a sequence).

INF 17: [9] Compare and contrast most important points and key details presented in two texts on the same topic.

### Foundational Skills [RF]

#### *A. Phonics and Word Recognition*

FOU 18: [3] Know and apply grade-level phonics and word analysis skills in decoding words. (common prefixes, suffixes, multi-syllable, irregular spelled words)

### Language [L]

#### *A. Vocabulary Acquisition and Use*

VOC 19: [4] Determine word meanings of unknown or multiple-meaning words and phrases through the use of one or more strategies. (context clue, word parts, glossaries or dictionaries)

VOC 20: [5] Understand word relationships.(literal and non-literal meanings, real-life connections, shades of meaning).

**PC-CCSS GRADE 4 READING STANDARDS****Literature [RL]***A. Key Ideas and Details*

LIT 1: [1] Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

LIT 2: [2] Determine a theme of a story, drama, or poem from details in the text; summarize the text.

LIT 3: [3] Describe in depth a character, setting, or event in a story or drama, drawing on specific details in the text (e.g., a character's thoughts, words, or actions).

*B. Craft and Structure*

LIT 4: [4] Determine the meaning of words and phrases as they are used in a text, including those that allude to significant characters found in mythology (e.g., Herculean).

LIT 5: [5] Explain major differences between poems, drama, and prose, and refer to the structural elements of poems (e.g., verse, rhythm, meter) and drama (e.g., casts of characters, settings, descriptions, dialogue, stage directions) ~~when writing or speaking about a text.~~

LIT 6: [6] Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.

*C. Integration of Knowledge and Ideas*

LIT 7: [7] Make connections between the text of a story or drama and a visual or oral presentation of the text, identifying where each version reflects specific descriptions and directions in the text.

LIT 8: [9] Compare and contrast the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.

**Informational Text [RI]***A. Key Ideas and Details*

INF 9: [1] Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

INF 10: [2] Determine the main idea of a text and explain how it is supported by key details; summarize the text.

INF 11: [3] Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

*B. Craft and Structure*

INF 12: [4] Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

INF 13: [5] Describe the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in a text or part of a text.

INF 14: [6] Compare and contrast a firsthand and secondhand account of the same event or topic; describe the differences in focus and the information provided.

*C. Integration of Knowledge and Ideas*

INF 15: [7] Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

INF 16: [8] Explain how an author uses reasons and evidence to support particular points in a text.

INF 17: [9] Integrate information from two texts on the same topic.

**Foundational Skills (RF)***A. Phonics and Word Recognition*

FOU 18: [3] Know and apply grade-level phonics and word analysis skills in decoding words. (all letter-sound correspondences, syllabication patterns, roots and affixes)

**Language: (L)***A. Vocabulary Acquisition and Use*

VOC 19: [4] Determine or clarify the meaning of unknown and multiple-meaning words and phrases, choosing flexibly from a range of strategies. (definitions, examples, or restatements in text; Greek and Latin affixes and roots; reference materials).

VOC 20: [5] Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. (simple similes and metaphors in context; common idioms, adages, and proverbs; antonyms, synonyms).

## PC-CCSS GRADE 5 READING STANDARDS

### Literature [RL]

#### A. Key Ideas and Details

- LIT 1: [1] Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
- LIT 2: [2] Determine a theme of a story, drama, or poem from details in the text, including how characters in a story or drama respond to challenges or how the speaker in a poem reflects upon a topic; summarize text.
- LIT 3: [3] Compare and contrast two or more characters, settings, or events in a story or drama, drawing on specific details in the text (e.g., how characters interact).

#### B. Craft and Structure

- LIT 4: [4] Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.
- LIT 5: [5] Explain how a series of chapters, scenes, or stanzas fits together to provide the overall structure of a particular story, drama, or poem.
- LIT 6: [6] Describe how a narrator's or speaker's point of view influences how events are described.

#### C. Integration of Knowledge and Ideas

- LIT 7: [7] Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).
- LIT 8: [9] Compare and contrast stories in the same genre (e.g., mysteries and adventure stories) on their approaches to similar themes and topics.

### Informational Text [RI]

#### A. Key Ideas and Details

- INF 9: [1] Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
- INF 10: [2] Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.
- INF 11: [3] Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

#### B. Craft and Structure

- INF 12: [4] Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- INF 13: [5] Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.
- INF 14: [6] Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.

#### C. Integration of Knowledge and Ideas

- INF 15: [7] Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
- INF 16: [8] Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).
- INF 17: [9] Integrate information from several texts on the same topic.

### Foundational Skills (RF)

#### A. Phonics and Word Recognition

- FOU 18: [3] Know and apply grade-level phonics and word analysis skills in decoding words. (all letter-sound correspondences, syllabication patterns, roots and affixes)

### Language: (L)

#### A. Vocabulary Acquisition and Use

- VOC 19: [4] Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 5 reading and content, choosing flexibly from a range of strategies. (context, cause/effect relationships and comparisons in text; Greek and Latin affixes and roots; reference materials)
- VOC 20: [5] Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. (Interpret similes and metaphors, in context.; common idioms, adages, and proverbs; synonyms, antonyms, homographs).

**PC-CCSS GRADE 6 READING STANDARDS****Literature [RL]***A. Key Ideas and Details*

LIT 1: [1] Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

LIT 2: [2] Determine a theme or central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.

LIT 3: [3] Describe how a particular story's or drama's plot unfolds in a series of episodes as well as how the characters respond or change as the plot moves toward a resolution.

*B. Craft and Structure*

LIT 4: [4] Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of a specific word choice on meaning and tone.

LIT 5: [5] Analyze how a particular sentence, chapter, scene, or stanza fits into the overall structure of a text and contributes to the development of the theme, setting, or plot.

LIT 6: [6] Explain how an author develops the point of view of the narrator or speaker in a text.

*C. Integration of Knowledge and Ideas*

LIT 7: [7] Compare and contrast the experience of reading a story, drama, or poem to listening to or viewing an audio, video, or live version of the text, including contrasting what they "see" and "hear" when reading the text to what they perceive when they listen or watch.

LIT 8: [9] Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.

**Informational Text [RI]***A. Key Ideas and Details*

INF 9: [1] Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

INF 10: [2] Determine a central idea of a text and how it is conveyed through particular details; provide a summary of the text distinct from personal opinions or judgments.

INF 11: [3] Analyze in detail how a key individual, event, or idea is introduced, illustrated, and elaborated in a text (e.g., through examples or anecdotes).

*B. Craft and Structure*

INF 12: [4] Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

INF 13: [5] Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.

INF 14: [6] Determine an author's point of view or purpose in a text and explain how it is conveyed in the text.

*C. Integration of Knowledge and Ideas*

INF 15: [7] Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

INF 16: [8] Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not.

INF 17: [9] Compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person).

**Language: (L)***A. Vocabulary Acquisition and Use*

VOC 18: [4] Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies. (context, cause/effect relationships and comparisons in text; Greek and Latin affixes and roots; reference materials)

VOC 19: [5] Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. (Interpret figures of speech in context.; relationship between words, connotations of words with similar denotations.)

## PC-CCSS GRADE 7 READING STANDARDS

### Literature [RL]

#### A. Key Ideas and Details

LIT 1: [1] Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

LIT 2: [2] Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.

LIT 3: [3] Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).

#### B. Craft and Structure

LIT 4: [4] Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds on a specific verse or stanza of a poem or section of a story or drama.

LIT 5: [5] Analyze how a drama's or poem's form or structure (e.g., soliloquy, sonnet) contributes to its meaning.

LIT 6: [6] Analyze how an author develops and contrasts the points of view of different characters or narrators in a text.

#### C. Integration of Knowledge and Ideas

LIT 7: [7] Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).

LIT 8: [9] Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.

### Informational Text [RI]

#### A. Key Ideas and Details

INF 9: [1] Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

INF 10: [2] Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

INF 11: [3] Analyze the interactions between individuals, events, and ideas in a text (e.g., how ideas influence individuals or events, or how individuals influence ideas or events).

#### B. Craft and Structure

INF 12: [4] Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of a specific word choice on meaning and tone.

INF 13: [5] Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to the development of the ideas.

INF 14: [6] Determine an author's point of view or purpose in a text and analyze how the author distinguishes his or her position from that of others.

#### C. Integration of Knowledge and Ideas

INF 15: [7] Compare and contrast a text to an audio, video, or multimedia version of the text, analyzing each medium's portrayal of the subject (e.g., delivery, impact of the words).

INF 16: [8] Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims.

INF 17: [9] Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.

### Language: (L)

#### A. Vocabulary Acquisition and Use

VOC 18: [4] Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 7 reading and content, choosing flexibly from a range of strategies. (context, cause/effect relationships and comparisons in text; Greek and Latin affixes and roots; reference materials)

VOC 19: [5] Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. (Interpret figures of speech in context.; relationship between words, connotations of words with similar denotations.)

## PC-CCSS GRADE 8 READING STANDARDS

### Literature [RL]

#### A. Key Ideas and Details

LIT 1: [1] Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.

LIT 2: [2] Determine a theme or central idea of a text and analyze its development over the course of the text, including its relationship to the characters, setting, and plot; provide an objective summary.

LIT 3: [3] Analyze how particular lines of dialogue or incidents in a story or drama propel the action, reveal aspects of a character, or provoke a decision.

#### B. Craft and Structure

LIT 4: [4] Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

LIT 5: [5] Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.

LIT 6: [6] Analyze how differences in the points of view of the characters and the audience or reader (e.g., created through the use of dramatic irony) create such effects as suspense or humor.

#### C. Integration of Knowledge and Ideas

LIT 7: [7] Analyze the extent to which a filmed or live production of a story or drama stays faithful to or departs from the text or script, evaluating the choices made by the director or actors.

LIT 8: [9] Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.

### Informational Text [RI]

#### A. Key Ideas and Details

INF 9: [1] Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.

INF 10: [2] Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.

INF 11: [3] Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).

#### B. Craft and Structure

INF 12: [4] Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts.

INF 13: [5] Analyze in detail the structure of a specific paragraph in a text, including the role of particular sentences in developing and refining a key concept.

INF 14: [6] Determine an author's point of view or purpose in a text and analyze how the author acknowledges and responds to conflicting evidence or viewpoints.

#### C. Integration of Knowledge and Ideas

INF 15: [7] Evaluate the advantages and disadvantages of using different mediums (e.g., print or digital text, video, multimedia) to present a particular topic or idea.

INF 16: [8] Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.

INF 17: [9] Analyze a case in which two or more texts provide conflicting information on the same topic and identify where the texts disagree on matters of fact or interpretation.

### Language: (L)

#### A. Vocabulary Acquisition and Use

VOC 18: [4] Determine or clarify the meaning of unknown and multiple-meaning words or phrases based on grade 8 reading and content, choosing flexibly from a range of strategies. (context, cause/effect relationships and comparisons in text; Greek and Latin affixes and roots; reference materials)

VOC 19: [5] Demonstrate understanding of figurative language, word relationships, and nuances in word meanings. (Interpret figures of speech in context.; relationship between words, connotations of words with similar denotations.)

**PC-CCSS GRADE 9/10 READING STANDARDS****Literature [RL]\****A. Key Ideas and Details*

LIT 1: [1] Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

LIT 2: [2] Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

LIT 3: [3] Analyze how complex characters (e.g., those with multiple or conflicting motivations) develop over the course of a text, interact with other characters, and advance the plot or develop the theme.

*B. Craft and Structure*

LIT 4: [4] Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language evokes a sense of time and place; how it sets a formal or informal tone).

LIT 5: [5] Analyze how an author's choices concerning how to structure a text, order events within it (e.g., parallel plots), and manipulate time (e.g., pacing, flashbacks) create such effects as mystery, tension, or surprise.

LIT 6: [6] Analyze a particular point of view or cultural experience reflected in a work of literature from outside the United States, drawing on a wide reading of world literature.

**Informational Text [RI]***A. Key Ideas and Details*

INF 7: [1] Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

INF 8: [2] Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.

INF 9: [3] Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.

*B. Craft and Structure*

INF 10: [4] Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).

INF 11: [5] Analyze in detail how an author's ideas or claims are developed and refined by particular sentences, paragraphs, or larger portions of a text (e.g., a section or chapter).

INF 12: [6] Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.

*C. Integration of Knowledge and Ideas*

INF 13: [7] Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.

INF 14: [8] Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.

INF 15: [9] Analyze seminal U.S. documents of historical and literary significance (e.g., Washington's Farewell Address, the Gettysburg Address, Roosevelt's Four Freedoms speech, King's "Letter from Birmingham Jail"), including how they address related themes and concepts.

**Language: (L)***A. Vocabulary Acquisition and Use*

VOC 16: [4] Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on *grade 9-10 reading and content*, choosing flexibly from a range of strategies.

VOC 17: [5] Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

**\*Integration of Knowledge and Ideas** in Literature is to be applied to in-class instruction

## PC-ODE Grade 2 Social Studies Learning Expectations *People Working Together*

### History

#### *A. Historical Thinking and Skills*

HIS 1: [1] Measure calendar time by days, weeks, months and years; place a series of related events in chronological order on a time line.

HIS 2: [2] Use artifacts, maps and photographs to describe how daily life has changed over time.

#### *B. Heritage*

HIS 3: [3] Describe how science and technology have changed daily life.

HIS 4: [4] Use information from a biography to describe how the actions of individuals have impacted the world today..

### Geography

#### *A. Spatial Thinking and Skills*

GEO 5: [5] Describe the information provided on print and electronic maps using a map and its symbols; construct a map that includes a map title and key.

#### *B. Places and Regions*

GEO 6: [6] Explain the connection between the work people do and the human and physical characteristics of the place where they live.

#### *C. Human Systems*

GEO 7: [7] Describe positive and negative results of human changes to the physical environment.

GEO 8: [8] Describe how cultures are influenced by their physical environments to meet basic needs.

GEO 9: [9] Describe examples of cultural sharing with respect to food, language and customs.

### Government

#### *A. Civic Participation and Skills*

GOV 10: [10] Demonstrate personal accountability, including making responsible choices, taking responsibility for personal actions and respecting others.

GOV 11: [11] Work effectively in a group to complete a task or solve a problem for which the group is held accountable.

#### *B. Rules and Laws*

GOV 12: [12] Demonstrate an understanding of the different rules in different settings.

### Economics

#### *A. Economic Decision Making and Skills*

ECO 13: [13] Construct a bar graph to compare quantities.

#### *B. Scarcity*

ECO 14: [14] Describe various uses for a resource.

#### *C. Production and Consumption*

ECO 15: [15] Explain why most people work in jobs where specific goods and services are produced.

#### *D. Markets*

ECO 16: [16] Explain how people buy and sell goods and services using money.

#### *E. Financial Literacy*

ECO 17: [17] Explain how people earn income.



## PC-ODE Grade 3 Social Studies Learning Expectations *Communities: Past and Present, Near and Far*

### History

#### *A. Historical Thinking and Skills*

HIS 1: [1] Place events accurately on a timeline organized by years, decades and centuries.

HIS 2: [2] Use artifacts, maps and photographs to evaluate change in the local community.

#### *B. Heritage*

HIS 3: [3] Research, analyze, organize and present historical information about a characteristic of the local community that has changed over time.

### Geography

#### *A. Spatial Thinking and Skills*

GEO 4: [4] Describe characteristics of physical and political maps and identify the purpose for each; use the map title, key, alphanumeric grid and cardinal

#### *B. Places and Regions*

GEO 5: [5] Evaluate the influence of agriculture, industry and natural resources on daily life.

#### *C. Human Systems*

GEO 6: [6] Describe examples of human modification to the environment in the local community.

GEO 7: [7] Describe systems of transportation used to move people and products from place to place; systems of communication used to move ideas from place to place.

GEO 8: [8] Compare cultural products and practices of different groups who live in the local community.

### Government

#### *A. Civic Participation and Skills*

GOV 9: [9] Explain the social and political responsibilities of local community members.

GOV 10: [10] Explain how individuals make the community a better place by solving problems in a way that promotes the common good.

#### *B. Rules and Laws*

GOV 11: [11] Explain how laws affect the behavior of individuals and groups in a community; the benefits of having laws in a local community.

#### *C. Roles and Systems of Government*

GOV 12: [12] Explain why governments have authority to make and enforce laws.

GOV 13: [13] Explain the structure of the local government.

### Economics

#### *A. Economic Decision Making and Skills*

ECO 14: [14] Construct line graphs showing change over time using data related to a specific topic.

ECO 15: [15] Give examples of positive and negative incentives that affect people's choices and behaviors.

#### *B. Scarcity*

ECO 16: [16] Describe the opportunity cost of an individual economic decision.

#### *C. Production and Consumption*

ECO 17: [17] Identify consumers and producers in the local community.

#### *D. Markets*

ECO 18: [18] Describe markets that exist in the local community.

#### *E. Financial Literacy*

ECO 19: [19] Evaluate the costs and benefits of an individual economic decision.

ECO 20: [20] Explain how using a budget helps individuals make responsible economic decisions.

## PC-ODE Grade 4 Social Studies Learning Expectations *Ohio in the United States*

### History

#### *A. Historical Thinking and Skills*

HIS 1: [1] Construct a timeline of significant events in Ohio and the United States to demonstrate an understanding of units of time and chronological order.

HIS 2: [2] Research, organize and evaluate information from primary and secondary sources to create an historical narrative.

#### *B. Heritage*

HIS 3: [3] Explain how interactions among prehistoric peoples and between historic American Indians and European settlers resulted in both cooperation and conflict.

HIS 4: [4] Explain why the American colonists united to fight for independence from Great Britain and form a new nation.

HIS 5: [5] Explain how Ohio progressed from territory to statehood, including the terms of the Northwest Ordinance; how the Northwest Ordinance influenced the incorporation of democratic ideals in the states formed from the Northwest Territory.

HIS 6: [6] Explain how the inability to resolve standing issues with Great Britain and ongoing conflicts with American Indians led to the War of 1812; the significance of the Battle of Lake Erie to American success in the War of 1812.

HIS 7: [7] Describe the sectional issues that divided the United States after the War of 1812; explain the role Ohio played with the anti-slavery movement and the Underground Railroad.

HIS 8: [8] Identify important inventions in communication, technology and transportation that began in Ohio; explain how technological innovations that originated in Ohio benefitted the United States and products of the Western Hemisphere.

### Geography

#### *A. Spatial Thinking and Skills*

GEO 9: [9] Use a map scale and cardinal and intermediate directions to describe the relative location of physical and human characteristics of Ohio and the United States.

#### *B. Places and Regions*

GEO 10: [10] Explain how Ohio's agriculture, industry and natural resources continue to both influence and be influenced by the economic development of the United States.

GEO 11: [11] Describe physical and economic characteristics of the northern, southern and western regions of the United States in the early 1800s.

#### *C. Human Systems*

GEO 12: [12] Describe ways humans have modified the environment and explain the positive and negative consequences resulting from those modifications.

GEO 13: [13] Explain how Ohio's population is increasingly reflective of the cultural diversity of the United States.

GEO 14: [14] Explain how Ohio's location and its transportation systems have influenced the movement of people, products and ideas.

### Government

#### *A. Civic Participation and Skills*

GOV 15: [15] Describe the ways citizens participate in and influence their state and national government. Explain the rights and responsibilities of citizens in a democratic government.

GOV 16: [16] Use information effectively to make an informed decision.

GOV 17: [17] Describe a strategy for compromise in a situation where there are differences of opinion on a matter.

*B. Rules and Laws*

GOV 18: [18] Describe ways in which laws protect rights, provide benefits and assign responsibilities to citizens.

GOV 19: [19] Explain how the U.S. Constitution limits the power of government and protects the rights of citizens.

*C. Roles and Systems of Government*

GOV 20: [20] Describe the purpose of democratic constitutions in Ohio and the United States.

GOV 21: [21] Explain major responsibilities of each of the three branches of government in Ohio and the United States.

**Economics**

*A. Economic Decision Making and Skills*

ECO 22: [22] Use tables and charts to interpret information.

*B. Production and Consumption*

ECO 23: [23] Explain characteristics of entrepreneurship, including the risks and benefits.

*C. Financial Literacy*

ECO 24: [24] Demonstrate how saving a portion of income contributes to an individual's financial well-being; explain how individuals can save more of their income by reducing spending.

## **PC-ODE Grade 5 Social Studies Learning Expectations *Regions and People of the Western Hemisphere***

### **History**

#### *A. Historical Thinking*

HIS 1: [1] Construct a multiple-tier timeline and analyze the relationships among events.

#### *B. Early Civilizations*

HIS 2: [2] Compare characteristics of early Indian civilizations.

#### *C. Heritage*

HIS 3: [3] Describe lasting effects of European exploration and colonization on the cultural practices and products of the Western Hemisphere.

### **Geography**

#### *A. Spatial Thinking and Skills*

GEO 4: [4] Use appropriate maps, globes and geographic tools to gather, process and report information about people, places and environments.

GEO 5: [5] Use location to make generalizations about climate.

#### *B. Places and Regions*

GEO 6: [6] Identify and describe regions within the Western Hemisphere using criteria related to landform, climate, population, culture and economics.

#### *C. Human Systems*

GEO 7: [7] Explain how variations among physical environments in the Western Hemisphere influence human activities; how human activities have altered the physical environments.

GEO 8: [8] Make generalizations about the cultural ways of life among American Indian cultural groups in North and South America.

GEO 9: [9] Explain political, environmental, social and economic factors that cause the movement of people, products and ideas in the Western Hemisphere.

GEO 10: [10] Describe the cultural diversity of the Western Hemisphere as evidenced by artistic expression, language, religion and food.

### **Government**

#### *A. Civic Participation and Skills*

GOV 11: [11] Use multiple sources and appropriate communication tools to locate, investigate, organize and communicate information on a public issue.

#### *B. Roles and systems of government*

GOV 12: [12] Explain the relationship between those in power and individual citizens in a democracy, a dictatorship and a monarchy.

### **Economics**

#### *A. Economic Decision Making and Skills*

ECO 13: [13] Construct a circle graph that displays information on part-to-whole relationships of data.

ECO 14: [14] Explain the present and future consequences of an economic decision.

#### *B. Scarcity*

ECO 15: [15] Explain how the availability of productive resources in a specific region promotes specialization and results in trade.

#### *C. Production and Consumption*

ECO 16: [16] Explain how the availability of productive resources and the division of labor influence productive capacity.

#### *D. Markets*

ECO 17: [17] Explain how specialization and trade lead to interdependency among countries of the Western Hemisphere.

#### *E. Financial Literacy*

ECO 18: [18] Identify a career of personal interest and research the knowledge, skills and experiences required to be successful.

## PC-ODE Social Studies 6 Learning Expectations *Regions and People of the Eastern Hemisphere*

### History

#### *A. Historical Thinking and Skills*

HIS 1: [1] Apply the conventions of B.C.E. and C.E. or B.C. and A.D. to arrange and analyze events in chronological order.

#### *B. Early Civilizations*

HIS 2: [2] Describe the influence of geography on the development of unique civilizations in India, Egypt, China and Mesopotamia. Describe the governments, cultures, economic systems, technologies and agricultural practices and products of early civilizations and their enduring influence in the Eastern Hemisphere today.

### Geography

#### *A. Spatial Thinking and Skills*

GEO 3: [3] Use appropriate maps, globes and geographic tools to gather, process and report information about people, places and environments. Understand that maps are created for specific purposes and represent the context in which they were created.

GEO 4: [4] Use latitude and longitude coordinates to identify absolute location.

#### *B. Places and Regions*

GEO 5: [5] Use various criteria to describe, classify and compare regions within the Eastern Hemisphere.

#### *C. Human Systems*

GEO 6: [6] Explain how variations among physical environments in the Eastern Hemisphere influence human activities. Explain how human activities have altered the physical environments of the Eastern Hemisphere.

GEO 7: [7] Explain political, environmental, social and economic factors that cause the movement of people, products and ideas in the Eastern Hemisphere. Describe the lasting impact of the movement of people, products and ideas in the Eastern Hemisphere.

GEO 8: [8] Explain how tradition and diffusion have influenced modern cultural practices and products in the Eastern Hemisphere. Describe the influence of religious diffusion in the modern world.

### Government

#### *A. Civic Participation and Skills*

GOV 9: [9] Use a variety of historic and contemporary sources to obtain multiple perspectives on a topic. Examine a variety of sources for accuracy.

#### *B. Roles and Systems of Government*

GOV 10: [10] Describe the relationship between those in power and individual citizens in a democracy, dictatorship, monarchy and theocracy. Understand that the characteristics of governments often overlap and can misrepresent the actual relationship between those governing and those being governed.

### Economics

#### *A. Economic Decision Making and Skills*

ECO 11: [11] Compare economic data sets to identify relationships and draw conclusions.

ECO 12: [12] Predict the present and future consequences of an economic decision and explain how individuals and societies may evaluate the choices differently.

*B. Scarcity*

ECO 13: [13] Explain how individuals and societies answer the fundamental questions of economics.

ECO 14: [14] Explain how specialization leads to global trade.

*C. Markets*

ECO 15: [15] Explain how supply, demand and competition interact to determine price. Explain how supply, demand and competition interact to influence quantities of inputs and outputs.

*D. Financial Literacy*

ECO 16: [16] Explain how individuals compare price and quality when selecting goods and services to buy.

## **PC-ODE Social Studies 7 Learning Expectations** **World Studies from 750 B.C. to 1600 A.D.: Ancient Greece to the First Global Age**

### **History**

#### *A. Historical Thinking*

HIS 1: [1] Describe historical events and issues from the perspectives of people living at the time, avoiding evaluating the past in terms of today's norms and values.

#### *B. Early Civilizations*

HIS 2: [2] Cite examples and explain the enduring impact that Ancient Greece and Ancient Rome had on later civilizations.

#### *C. Feudalism and Transitions*

HIS 3: [3] Describe how Germanic invasions helped to break up the Roman Empire and set the stage for the development of feudal and manorial systems. Describe how the dominance of Mongols in Asia led to the destruction of the Byzantine Empire by the Turks.

HIS 4: [4] Explain how the Mongol influence led to unified states in China and Korea and how their failure to conquer Japan allowed a feudal system to persist.

HIS 5: [5] Describe achievements by the Islamic civilization and how these achievements were introduced into Western Europe.

HIS 6: [6] Analyze how revolutionary ideas introduced during the Renaissance in Europe led to cultural, scientific and social changes.

HIS 7: [7] Analyze how the rise of Protestant faiths during the Reformation resulted in the decline of the political power and social influence of the Roman Catholic Church.

#### *D. First Global Age*

HIS 8: [8] Describe how empires in Africa (Ghana, Mali and Songhay) and Asia (Byzantine, Ottoman, Mughal and China) grew as commercial and cultural centers along trade routes.

HIS 9: [9] Describe the trans-Saharan slave trade and explain the effects on both West and Central Africa and the receiving societies.

HIS 10: [10] Describe how European economic and cultural influence increased through explorations, conquests and colonization.

HIS 11: [11] Explain how the Columbian Exchange reshaped previously unconnected societies in ways still evident today.

### **Geography**

#### *A. Spatial Thinking*

GEO 12: [12] Demonstrate how maps and other geographic representations can be used to trace the development of human settlement from past to present.

#### *B. Human Systems*

GEO 13: [13] Describe how geographic factors can promote or impede the movement of people, products and ideas.

GEO 14: [14] Explain how trade routes connecting Africa, Europe and Asia fostered the spread of technology and major world religions.

GEO 15: [15] Select examples of improvements in transportation, communication and technology and explain how they have facilitated cultural diffusion among peoples around the world.

### **Government**

#### *A. Civic Participation and Skills*

GOV 16: [16] Demonstrate how understanding individual and group perspectives is essential to analyzing historic and contemporary issues.

#### *B. Roles and Systems of Government*

GOV 17: [17] Describe how Greek democracy and the Roman Republic were radical departures from monarchy and theocracy. Explain how they influenced the structure and function of modern democratic governments.

GOV 18: [18] Explain how the decline of feudalism in Western Europe and consolidation of power resulted in the emergence of nation states.

**Economics**

*A. Economic Decision Making and Skills*

ECO 19: [19] Explain why individuals, governments and businesses must analyze costs and benefits when making economic decisions. Describe how a cost-benefit analysis consists of determining the potential costs and benefits of an action.

*B. Scarcity*

ECO 20: [20] Discuss how the variability in the distribution of productive resources in the various regions of the world contributed to specialization, trade and interdependence.

*C. Markets*

ECO 21: [21] Explain how the growth of cities and empires fostered the growth of markets. Describe how market exchanges encouraged specialization and the transition from barter to monetary economies.



## PC-ODE Social Studies 8 Learning Expectations

### *U.S. Studies from 1492 to 1877: Exploration through Reconstruction*

#### History

##### *A. Historical Thinking Skills*

HIS 1: [1] Analyze primary and secondary sources to describe the different perspectives on an issue relating to a historical event in U.S. history and to present and defend a position.

##### *B. Colonization to Independence.*

HIS 2: [2] Explain the economic and religious reasons for the exploration and colonization of North America by Europeans.

HIS 3: [3] Explain how competition for control of territory and resources in North America led to conflicts among colonizing powers.

HIS 4: [4] Explain how the practice of race-based slavery led to the forced migration of Africans to the American colonies. Describe the contributions of enslaved and free Africans to cultural and economic development in different regions of the American colonies.

HIS 5: [5] Connect the ideas of the Enlightenment and dissatisfaction with colonial rule to the writing of the Declaration of Independence and launching of the American Revolution.

##### *C. A New Nation*

HIS 6: [6] Analyze the new political, social and economic relationships for the American people that resulted from the American Revolution.

HIS 7: [7] Explain how the problems arising under the Articles of Confederation led to debate over the adoption of the U.S. Constitution.

HIS 8: [8] Explain how the actions of early presidential administrations established a strong federal government, provided peaceful transitions of power and repelled a foreign invasion.

##### *D. Expansion*

HIS 9: [9] Describe how the United States added to its territory through treaties and purchases.

HIS 10: [10] Explain how westward expansion contributed to economic and industrial development, debates over sectional issues, war with Mexico and the displacement of American Indians.

##### *E. The Civil War and Reconstruction*

HIS 11: [11] Distinguish between the positions of the sections of the United States on sectional issues of the 1820s through the 1850s. Illustrate how disputes over the nature of federalism fed into sectional issues and helped lead to the American Civil War.

HIS 12: [12] Describe how the Reconstruction period resulted in changes to the U.S. Constitution, an affirmation of federal authority, and lingering social and political differences.

#### Geography

##### *A. Spatial Thinking Skills*

GEO 13: [13] Analyze the ways in which historical events are shaped by geography using modern and historical maps and other geographic tools.

##### *B. Human Systems*

GEO 14: [14] Analyze how the availability of natural resources contributed to the geographic and economic expansion of the United States. Explain how this sometimes resulted in unintended environmental consequences.

GEO 15: [15] Describe the movement of people, products and ideas that resulted in new patterns of settlement and land use and analyze its impact on the political and economic development of the United States.

GEO 16: [16] Explain how cultural biases, stereotypes and prejudices had social, political and economic consequences for minority groups and the population as a whole.

GEO 17: [17] Identify the developments that helped bring about a common national identity for Americans and describe the democratic ideals around which that identity is based.

#### Government

##### *A. Civic Participations and Skills*

GOV 18: [18] Explain how participation in social and civic groups can lead to the attainment of individual and public goals.

GOV 19: [19] Explain how media and communication technology influence public opinion.

*B. Roles and Systems of Government*

GOV 20: [20] Describe and give examples of how the U.S. Constitution created a federal system, representative democracy, separation of powers, and checks and balances.

GOV 21: [18] Describe and evaluate how the U.S. Constitution protects citizens' rights by limiting the powers of government.

**Economics**

*A. Economic Decision Making and Skills*

ECO 22: [22] Analyze how choices made by individuals, businesses and governments have both present and future consequences.

*B. Production and Consumption*

ECO 23: [23] Analyze how the Industrial Revolution in the late 18th and early 19th centuries changed the means of production.

*C. Markets*

ECO 24: [24] Explain the impact government can have on markets by spending, regulating, taxing and creating trade barriers.

*D. Financial Literacy*

ECO 25: [25] Demonstrate how effective management of one's personal finances includes using basic banking services (e.g., savings accounts, checking accounts) and credit.

## **Pro-Core - ODE Social Studies Standards** ***American History 9/10 Learning Expectations\****

### **Historic Documents**

- HIS 1: [5] Explain a grievance listed in the Declaration of Independence in terms of its relationship to Enlightenment ideas.
- HIS 2: [6] Show how the Northwest Ordinance established a precedent for governing the United States.
- HIS 3: [7] Develop an argument that a particular provision of the Constitution of the United States would help address a problem facing the U.S. in the 1780s.
- HIS 4: [8] Compare the arguments of the Federalists/Anti-Federalists on a common topic related to the ratification of the Constitution of the U.S. and hypothesize why the winning argument was more persuasive.
- HIS 5: [9] Cite evidence for historical precedents to the rights incorporated in the Bill of Rights.

### **Industrialization and Progressivism**

- IND 6: [10-11] Analyze the events that led to the U.S. transitioning from an agrarian to an urban industrial society. Explain the social and economic effects of industrialization following Reconstruction.
- IND 7: [12] Analyze and evaluate how immigration, internal migration and urbanization transformed American life.
- IND 8: [13] Analyze the post-Reconstruction political and social developments that led to institutionalized racism in the United States. Describe institutionalized racist practices in post-Reconstruction America.
- IND 9: [14] Analyze and evaluate the success of progressive reforms during the late 19th and early 20th centuries in addressing problems associated with industrial capitalism, urbanization and political corruption.

### **Foreign Affairs from Imperialism to Post World War I**

- FOR 10: [15] Analyze the circumstances which enabled the United States to emerge as a world power in the early 1900s.
- FOR 11: [16] Explain why and how the United States moved to a policy of isolationism following World War I.

### **Prosperity, Depression and the New Deal**

- PRO 12: [17-18] Describe how racial intolerance, anti-immigrant attitudes and the Red Scare contributed to social unrest after WWI. Describe how improvements in, technology, transportation and industry resulted in social and cultural changes and tensions.
- PRO 13: [19] Describe social changes that came from the Harlem Renaissance, African-American migration, women's suffrage and Prohibition.
- PRO 14: [20] Describe how the federal government's monetary policies, stock market speculation and increasing consumer debt led to the Great Depression and explain the federal government's role in combating this.
- PRO 15: [21] Analyze the reasons for American isolationist sentiment in the interwar period.
- PRO 16: [22] Identify and explain changes American society experienced with the mobilization of its economic and military resources during World War II.

### **The Cold War**

- COL 17: [23] Summarize how atomic weapons have changed the nature of war, altered the balance of power and started the nuclear age.
- COL 18: [24-25] Analyze the policy of containment the United States followed during the Cold War in response to the spread of communism. Explain the events that reflected American fears during the Cold War.
- COL 19: [26] Analyze how the Cold War and conflicts in Korea and Vietnam influenced domestic and international politics between the end of World War II and 1992.
- COL 20: [27] Explain how the collapse of communist governments in Eastern Europe and the USSR brought an end to the Cold War era.

**Social Transformations in the United States**

SOC 21: [28] Summarize the struggle for racial and gender equality and the extension of civil rights that occurred in the United States in the postwar period.

SOC 22: [29-30] Describe how American life in the postwar period was impacted by the postwar economic boom and by advances in science. Analyze the social and political effects immigration both internally and from passage of the 1965 Immigration Act.

SOC 23: [31] Explain why the government's role in the economy, environmental protection, social welfare and national security became the topic of political debates between 1945 and 1994.

**United States and the Post-Cold War World**

UNI 24: [32] Analyze how the U.S. economy has been impacted by global communications, international trade, transnational business organizations, overseas competition & the shift from manufacturing to service industries.

UNI 25: [33] Describe political, national security and economic challenges the United States faced in the post-Cold War period and following the attacks on Sept. 11, 2001.

**\*Historical Thinking Skills** are to be incorporated into each unit

## **Pro-Core - ODE Social Studies Standards** ***American Government 10/11 Learning Expectations***

### **Civic Involvement**

- CIV 1: [1] Devise and implement a plan to address a societal problem by engaging either the political process or the public policy process.
- CIV 2: [2] Select a political party or interest group to address a civic issue, identify a type of media as a means of communication, then defend the viability of the choices made in an effort to achieve a successful result in resolving the civic issue.
- CIV 3: [3] Prepare a collection of documents pertaining to a civic issue that contains examples from at least two distinct information types, explain how each source is relevant, describe the perspective or position of each source and evaluate the credibility of each source.
- CIV 4: [4] Identify a civic issue and explain how persuasion, compromise, consensus building and/or negotiation were used to resolve the opposing positions on the issue.

### **Basic Principles of the U.S. Constitution**

- BAS 5: [5] Explain in context one of the basic principles which help define the government of the United States.
- BAS 6: [6] Cite arguments from the Federalist Papers and/or the Anti-Federalist Papers that supported their position on the issue of how well the Constitution upheld the principle of limited government.
- BAS 7: [7] Select an example of how constitutional government in the United States has changed the meaning and application of any one of the basic principles which help define the government of the United States and summarize the nature of the change.
- BAS 8: [8] Relate one of the arguments over the need for a bill of rights to the wording of one of the first 10 Amendments to the Constitution of the United States.
- BAS 9: [9] Summarize how the 13th through the 15th Amendments addressed the aftermath of slavery and the Civil War.
- BAS 10: [10] Summarize how the 16th through the 19th Amendments addressed the calls for reform during the Progressive Era.
- BAS 11: [11] Cite evidence to show that the Constitution of the United States has been repeatedly amended to extend suffrage to disenfranchised groups.
- BAS 12: [12] Explain the historical circumstances surrounding the adoption of constitutional amendments pertaining to presidential election, terms and succession.
- BAS 13: [13] Describe the unique circumstances surrounding the adoption of Amendments 11, 21 and 27.

### **Structure and Functions of the Federal Government**

- STR14: [14] Compare the powers and responsibilities of each branch of government as they pertain to law and public policy.
- STR 15: [15] Use historical or contemporary examples of interactions among two or three branches of the federal government to analyze the political dynamics involved.

### **Role of the People**

- ROL 16: [16] Explain how the fulfillment of civic responsibilities is related to the exercise of rights in the United States.
- ROL 17: [17] Identify an issue related to the denial of civil rights to a particular minority group and explain how at least one branch of the federal government helped to extend civil rights or opportunities for participation to that group of people.

### **Ohio's State and Local Governments**

- OHI 18: [18] Provide examples of how the 1851 Ohio Constitution addressed difficulties in governing Ohio at that time.

OHI 19: [19] Determine how the Ohio Constitution complements the federal structure of government in the United States and compare the structures, powers and relationships between both levels of government as defined in the Constitution of Ohio and the Constitution of the United States.

OHI 20: [20] Identify and explain roles that Ohio's citizens can play in helping state and local government address problems facing their communities.

**Public Policy**

PUB 21: [21] Analyze a public policy issue in terms of collaboration or conflict among the levels of government involved and the branches of government involved.

PUB 22: [22] Take different positions on public policy issues and determine an approach for providing effective input to the appropriate level and branch (agency) of the government.

**Government and the Economy**

GOV 23: [23] Explain how the federal government uses spending and tax (fiscal) policy to effect changes in the nation's economic conditions.

GOV 24: [24] Explain how the Federal Reserve System uses monetary tools to regulate the nation's money supply and moderate the effects of expansion and contraction in the economy.

## **Pro-Core - ODE Social Studies Standards** ***Modern World History 11/12 Learning Expectations\****

### **Age of Enlightenment (1600-1800)**

- ENL 1: [5] Describe how the Scientific Revolution's impact on religious, political and cultural institutions challenged how people viewed the world.
- ENL 2: [6] Recognize that Enlightenment thinkers applied reason to discover natural laws guiding human nature in social, political and economic systems and institutions.
- ENL 3: [7] Analyze how Enlightenment ideas challenged practices related to religious authority, absolute rule and mercantilism.

### **Age of Revolutions (1750-1914)**

- REV 4: [8] Explain how Enlightenment ideas influenced the American Revolution, French Revolution and Latin American wars for independence.
- REV 5: [9] Analyze the social, political and economic effects of industrialization on Western Europe and the world.

### **Imperialism (1800-1914)**

- IMP 6: [10] Describe the political, economic and social roots of imperial expansion.
- IMP 7: [11] Describe how imperialism involved land acquisition, extraction of raw materials, the spread of Western values and maintenance of political control.
- IMP 8: [12] Describe how the consequences of imperialism were viewed differently by the colonizers and the colonized.

### **Achievements and Crises (1900-1945)**

- ACH 9: [13] Select examples of advancements in technology, communication and transportation and explain how some have improved lives and others have had negative consequences.
- ACH 10: [14] Explain how militarism, imperialism, nationalism and alliances were causes of World War I.
- ACH 11: [15] Explain how the consequences of World War I and the worldwide depression set the stage for the Russian Revolution, the rise of totalitarianism, aggressive Axis expansion, and the policy of appeasement, which, in turn, led to World War II.
- ACH 12: [16] Explain how and why oppression and discrimination resulted in the Armenian Genocide during World War I and the Holocaust, the state-sponsored mass murder of Jews and other groups, during World War II.
- ACH 13: [17] Describe how World War II devastated most of Europe and Asia, led to the occupation of Eastern Europe and Japan, and started the atomic age.

### **The Cold War (1945-1991)**

- COL 14: [18] Analyze how the United States and the Soviet Union became superpowers and competed for global influence.
- COL 15: [19] Describe how treaties and agreements at the end of World War II changed national boundaries and created multinational organizations.
- COL 16: [20] Explain how religious diversity, the end of colonial rule and rising nationalism have led to regional conflicts in the Middle East.
- COL 17: [21] Explain how postwar global politics led to the rise of nationalist movements in Africa and Southeast Asia.
- COL 18: [22] Explain examples of how political and social struggles have resulted in expanded rights and freedoms for women and indigenous peoples.

**Globalization (1991-Present)**

GLO 19: [23] Describe how the breakup of the Soviet Union ended the Cold War and analyze the challenges it created for its former allies, the former Soviet republics, Europe, the United States and the non-aligned world.

GLO 20: [24] Describe how regional and ethnic conflicts in the post-Cold War era have resulted in acts of terrorism, genocide and ethnic cleansing.

GLO 21: [25] Select an example of a political or cultural group and explain how they struggled to achieve self-governance and self-determination.

GLO 22: [26] Analyze the factors that have created a more interdependent global economy since 1991.

GLO 23: [27] Describe how proliferation of nuclear weapons since the end of the Cold War has created a challenge to world peace.

GLO 24: [28] Describe societal and governmental challenges resulting from the rapid increase of global population, increased life expectancy and mass migrations.

GLO 25: [29] Describe the reasons for the new environmental consciousness and movement for sustainability.

**\*Historical Thinking Skills** are to be incorporated into each unit



**PC-ODE Model Science 2 Curriculum – Topics and Content Statements\***  
***Theme: Observations of the Environment***

**Earth and Space Science [ESS]**

*The Atmosphere*

ESS 1: [1] The atmosphere is made up of air.

ESS 2: [2] Water is present in the air.

ESS 3: [3] Long- and short-term weather changes occur due to changes in energy.

**Physical Science [PS]**

*Changes in Motion*

PHS 4: [1] Forces change the motion of an object.

**Life Science [LS]**

*Interactions within Habitats*

LIS 5: [1] Living things cause changes on Earth.

LIS 6: [2] Some kinds of individuals that once lived on Earth have completely disappeared, although they were something like others that are alive today.

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**PC-ODE Model Science 3 Curriculum – Topics and Content Statements\***  
***Theme: Interconnections within Systems***

**Earth and Space Science [ESS]**

*Earth's Resources*

ESS 1: [1] Earth's nonliving resources have specific properties.

ESS 2: [2] Earth's resources can be used for energy.

ESS 3: [3] Some of Earth's resources are limited.

**Physical Science [PS]**

*Matter and Forms of Energy*

PHS 4: [1] All objects and substances in the natural world are composed of matter.

PHS 5: [2] Matter exists in different states, each of which has different properties.

PHS 6: [3] Heat, electrical energy, light, sound and magnetic energy are forms of energy.

**Life Science [LS]**

*Behavior, Growth, and Changes*

LIS 7: [1] Offspring resemble their parents and each other.

LIS 8: [2] Individuals of the same kind differ in their traits and sometimes the differences give individuals an advantage in surviving and reproducing.

LIS 9: [3] Plants and animals have life cycles that are part of their adaptations for survival in their natural environments.

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**PC-ODE Model Science 4 Curriculum – Topics and Content Statements\***  
***Theme: Interconnections within Systems***

**Earth and Space Science [ESS]**

*Earth's Surface*

ESS 1: [1] Earth's surface has specific characteristics and landforms that can be identified.

ESS 2: [2] The surface of Earth changes due to weathering.

ESS 3: [3] The surface of Earth changes due to erosion and deposition.

**Physical Science [PS]**

*Electricity, Heat, and Matter*

PHS 4: [1] The total amount of matter is conserved when it undergoes a change.

PHS 5: [2] Energy can be transformed from one form to another or can be transferred from one location to another.

**Life Science [LS]**

*Earth's Living History*

LIS 6: [1] Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful.

LIS 7: [2] Fossils can be compared to one another and to present day organisms according to their similarities and differences.

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**PC-ODE Model Science 5 Curriculum – Topics and Content Statements\***  
***Theme: Interconnections within Systems***

**Earth and Space Science [ESS]**

*Cycles and Patterns in the Solar System*

ESS 1: [1] The solar system includes the sun and all celestial bodies that orbit the sun. Each planet in the solar system has unique characteristics.

ESS 2: [2] The sun is one of many stars that exist in the universe.

ESS 3: [3] Most of the cycles and patterns of motion between the Earth and sun are predictable.

**Physical Science [PS]**

*Light, Sound, and Motion*

PHS 4: [1] The amount of change in movement of an object is based on the mass of the object and the amount of force exerted.

PHS 5: [2] Light and sound are forms of energy that behave in predictable ways.

**Life Science [LS]**

*Interactions within Ecosystems*

LIS 6: [1] Organisms perform a variety of roles in an ecosystem.

LIS 7: [2] All of the processes that take place within organisms require energy.

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**PC-ODE Model Science 6 Curriculum – Topics and Content Statements\***  
***Theme: Order and Organization***

**Earth and Space Science [ESS]**

*Rocks, Minerals and Soil*

ESS 1: [1] Minerals have specific, quantifiable properties.

ESS 2: [2] Igneous, metamorphic and sedimentary rocks have unique characteristics that can be used for identification and/or classification.

ESS 3: [3] Igneous, metamorphic and sedimentary rocks form in different ways.

ESS 4: [4] Soil is unconsolidated material that contains nutrient matter and weathered rock.

ESS 5: [5] Rocks, minerals and soils have common and practical uses.

**Physical Science [PS]**

*Matter and Motion*

PHS 6: [1] All matter is made up of small particles called atoms.

PHS 7: [2] Changes of state are explained by a model of matter composed of atoms and/or molecules that are in motion.

PHS 8: [3] There are two categories of energy: kinetic and potential.

PHS 9: [4] An object's motion can be described by its speed and the direction in which it is moving.

**Life Science [LS]**

*Cellular to Multicellular*

LIS 10: [1] Cells are the fundamental unit of life.

LIS 11: [2] All cells come from pre-existing cells.

LIS 12: [3] Cells carry on specific functions that sustain life.

LIS 13: [4] Living systems at all levels of organization demonstrate the complementary nature of structure and function.

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**PC-ODE Model Science 7 Curriculum – Topics and Content Statements\***  
***Theme: Order and Organization***

**Earth and Space Science [ESS]**

*Cycles and Patterns of Earth and the Moon*

ESS 1: [1] The hydrologic cycle illustrates the changing states of water as it moves through the lithosphere, biosphere, hydrosphere and atmosphere.

ESS 2: [2] Thermal-energy transfers in the ocean and the atmosphere contribute to the formation of currents, which influence global climate patterns.

ESS 3: [3] The atmosphere has different properties at different elevations and contains a mixture of gases that cycle through the lithosphere, biosphere, hydrosphere and atmosphere.

ESS 4: [4] The relative patterns of motion and positions of the Earth, moon and sun cause solar and lunar eclipses, tides, and phases of the moon.

**Physical Science [PS]**

*Conservation of Mass and Energy*

PHS 5: [1] The properties of matter are determined by the arrangement of atoms.

PHS 6: [2] Energy can be transformed or transferred but is never lost.

PHS 7: [3] Energy can be transferred through a variety of ways.

**Life Science [LS]**

*Cycles of Matter and Flow of Energy*

LIS 8: [1] Matter is transferred continuously between one organism to another and between organisms and their physical environments.

LIS9: [2] In any particular biome, the number, growth and survival of organisms and populations depend on biotic and abiotic factors.

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**PC-ODE Model Science 8 Curriculum – Topics and Content Statements\***  
***Theme: Order and Organization*****Earth and Space Science [ESS]***Physical Earth*

ESS 1: [1] The composition and properties of Earth's interior are identified by the behavior of seismic waves.

ESS 2: [2] Earth's crust consists of major and minor tectonic plates that move relative to each other.

ESS 3: [3] A combination of constructive and destructive geologic processes formed Earth's surface.

ESS 4: [4] Evidence of the dynamic changes of Earth's surface through time is found in the geologic record.

**Physical Science [PS]***Forces and Motion*

PHS 5: [1] Forces between objects act when the objects are in direct contact or when they are not touching.

PHS 6: [2] Forces have magnitude and direction.

PHS 7: [3] There are different types of potential energy.

**Life Science [LS]***Species and Reproduction*

LIS 8: [1] Diversity of species occurs through gradual processes over many generations. Fossil records provide evidence that changes have occurred in number and types of species.

LIS 9: [2] Reproduction is necessary for the continuation of every species.

LIS 10: [3] The characteristics of an organism are a result of inherited traits received from parent(s).

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## PC-ODE Biology Model Curriculum – Course Content\*

### Heredity [HER]

- HER 1: [1] Cellular genetics
- HER 2: [2] Structure and function of DNA in cells
- HER 3: [3] Genetic mechanisms and inheritance
- HER 4: [4] Mutations
- HER 5: [5] Modern genetics

### Evolution [EVO]

#### *Mechanisms*

- EVO 6: [1] Natural selection
- EVO 7: [2] Mutation
- EVO 8: [3] Genetic drift
- EVO 9: [4] Gene flow (immigration, emigration)
- EVO 10: [5] Sexual selection
- EVO 11: [6] History of life on Earth

#### *Diversity of Life*

- EVO 12: [7] Speciation and biological classification based on molecular evidence
- EVO 13: [8] Variation of organisms within a species due to population genetics and gene frequency

### Diversity and Interdependence of Life [DIV]

- DIV 14: [1] Classification systems are frameworks created by scientists for describing the vast diversity of organisms indicating the degree of relatedness between organisms.
- DIV 15: [2] Ecosystems: Homeostasis (Carrying capacity; Equilibrium and disequilibrium)

### Cells [CEL]

#### *Cell structure and function*

- CEL16: [1] Structure, function and interrelatedness of cell organelles
- CEL17: [2] Eukaryotic cells and prokaryotic cells

#### *Cellular processes*

- CEL18: [3] Characteristics of life regulated by cellular processes
- CEL19: [4] Photosynthesis, chemosynthesis, cellular respiration
- CEL20: [5] Cell division and differentiation

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## PC-ODE Chemistry Model Curriculum – Course Content\*

### Structure and Properties of Matter [STR]

STR 1: [1] Atomic structure

- Evolution of atomic models/theory
- Electrons
- Electron configurations

STR 2: [2] Periodic table

- Properties
- Trends

STR 3: [3] Intramolecular chemical bonding

- Ionic
- Polar/covalent

STR 4: [4] Representing compounds

- Formula writing
- Nomenclature
- Models and shapes (Lewis structures, ball and stick, molecular geometries)

STR 5: [5] Quantifying matter

STR 6: [6] Phases of matter

STR 7: [7] Intermolecular chemical bonding

- Types and strengths
- Implications for properties of substances
  - Melting and boiling point
  - Solubility
  - Vapor pressure

### Interactions of Matter [INT]

INT 8: [1] Chemical reactions

- Types of reactions
- Kinetics
- Energy
- Equilibrium
- Acids/bases

INT 9: [2] Gas laws

- Pressure, volume and temperature
- Ideal gas law

INT 10: [3a] Stoichiometry, Part A

- standard stoichiometry

INT 11: [3b] Stoichiometry, Part B

- percent yield/ molarity

INT 12: [4] Nuclear Reactions

- Radioisotopes
- Nuclear energy

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## PC-ODE Physical Science Model Curriculum – Course Content\*

### Study of Matter [MAT]

MAT 1: [1] Classification of matter

- Heterogeneous vs. homogeneous
- Properties of matter
- States of matter and its changes

MAT 2: [2] Atoms

- Models of the atom (components)
- Ions (cations and anions)
- Isotopes

MAT 3: [3] Periodic trends of the elements

- Periodic law
- Representative groups

MAT 4: [4] Bonding and compounds

- Bonding (ionic and covalent)
- Nomenclature

MAT 5: [5] Reactions of matter

- Chemical reactions
- Nuclear reactions

### Energy and Waves [ENE]

ENE 6: [1] Conservation of Energy

- Quantifying kinetic energy
- Quantifying gravitational potential energy
- Energy is relative

ENE 7: [2] Transfer and transformation of energy (including work)

ENE 8: [3] Waves

- Refraction, reflection, diffraction, absorption, superposition
- Radiant energy and the electromagnetic spectrum
- Doppler shift

ENE 9: [4] Thermal energy

ENE 10: [5] Electricity

- Movement of electrons
- Current
- Electric potential (voltage)
- Resistors and transfer of energy

### Forces and Motion [FOR]

FOR 11: [1] Motion

- Introduction to one-dimensional vectors
- Displacement, velocity (constant, average and instantaneous) and acceleration
- Interpreting position vs. time and velocity vs. time graphs

FOR 12: [2] Forces

- Force diagrams
- Types of forces (gravity, friction, normal, tension)
- Field model for forces at a distance

FOR 13: [3] Dynamics (how forces affect motion)

- Objects at rest
- Objects moving with constant velocity
- Accelerating objects

### The Universe [UNI]

UNI 14: [3] History of the universe

UNI 15: [3] Galaxy formation

UNI 16: [3] Stars

- Formation; stages
- Fusion in stars

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