PRO-Core Grade 2 Mathematics Standards

Operations and Algebraic Thinking [OAT]

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

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

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

4 [2.OA.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]

5 [2.NBT.1-2] Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones. Count forward and backward within 1,000 by ones, tens, and hundreds, starting at any number; skip count by 5s starting at any multiple of 5.

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

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

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

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

10 [2.NBT.7~9] 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. Explain why addition and subtraction strategies work.

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

Measurement and Data [MDA]

12 [2.MD.1-2] Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. Describe how measurements relate to the size of the unit chosen.

13 [2.MD.3] Estimate lengths using units of inches, feet, centimeters, and meters.

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

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

16 [2.MD.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.

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

18 [2.MD.8] Find the value of a collection of quarters, dimes, nickels, and pennies. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately.

19 [2.MD.9] Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by creating a line plot.

20 [2.MD.10] Complete picture graphs and bar graphs to represent a data set with up to four categories. Solve simple put together, take apart and compare problems using data in the graph.

Geometry [GEO]

21 [2.G.1] Recognize and identify triangles, quadrilaterals, pentagons, and hexagons based on the number of sides or vertices. Recognize and identify cubes, rectangular prisms, cones, and cylinders.

22 [2.G.2-3] Partition a rectangle into rows and columns of same-size squares and count to find the total number of them. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words halves, thirds, fourths, or quarters. Describe the whole as two halves, three thirds, or four fourths in real-world contexts.

PRO-Core Grade 3 Mathematics Standards

Operations and Algebraic Thinking [OAT]
1 [3.OA.1] Interpret products of whole numbers.
2 [3.OA.2] Interpret whole-number quotients of whole numbers.
3 [3.OA.3] Use multiplication and division with 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.
4 [3.OA.4] Determine the unknown whole number in a multiplication or division equation relating three whole numbers.
5 [3.OA.5] Apply properties of operations as strategies to multiply and divide.
6 [3.OA.6] Understand division as an unknown-factor problem.
7 [3.OA.7] Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations.
8 [3.OA.8] Solve two-step word problems using the four operations. Represent these problems using a letter or symbol for the unknown. Assess the reasonableness of answers using mental computation and estimation strategies.
9 [3.OA.9] Identify arithmetic patterns and explain them using properties of operations.

Number and Operations in Base Ten [NBT]
10 [3.NBT.1] Use place value understanding to round whole numbers to the nearest 10 or 100.
11 [3.NBT.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.
12 [3.NBT.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 [NFR]
13 [3.NF.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.
14 [3.NF.2] Understand a fraction as a number on the number line; represent fractions on a number line diagram.
15 [3.NF.3] Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size; use the symbols >, =, or <.

Measurement and Data [MDA]
16 [3.MD.1] Tell and write time to the nearest minute and measure time intervals in minutes. Solve real-world problems involving addition and subtraction of time intervals in minutes. Solve word problems by adding and subtracting dollars with dollars and cents with cents.
17 [3.MD.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.
18 [3.MD.3] Create 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 pictures and scaled bar graphs.

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

20 [3.MD.5-6] Recognize area as an attribute of plane figures and understand concepts of area measurement. Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).

21 [3.MD.7] Relate area to the operations of multiplication and addition. Solve mathematical and real-world problems by finding the areas of rectangles and figures composed of rectangles.

22 [3.MD.8] Solve real-world and mathematical problems involving perimeters of polygons.

Geometry [GEO]

23 [3.G.1] Draw and describe triangles, quadrilaterals (rhombuses, rectangles, and squares), and polygons (up to 8 sides) based on the number of sides and the presence or absence of square corners (right angles).

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

PRO-Core Grade 4 Mathematics Standards

Operations and Algebraic Thinking [OAT]

1 [4.OA.1] Interpret a multiplication equation as a comparison.

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

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

4 [4.OA.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.

5 [4.OA.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]

6 [4.NBT.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 standard form, word form, and expanded form; compare two multi-digit numbers using >, =, and <.

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

8 [4.NBT.4] Fluently add and subtract multi-digit whole numbers using a standard algorithm.

9 [4.NBT.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.

10 [4.NBT.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 [NFR]

11 [4.NF.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.

12 [4.NF.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.

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

14 [4.NF.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.

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

Measurement and Data [MDA]

16 [4.MD.1] Know relative sizes of metric measurement units; express measurements in a larger unit in terms of a smaller unit; record in a two-column table.

17 [4.MD.2] Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money.

18 [4.MD.3] Develop efficient strategies to determine the area and perimeter of rectangles in real-world and mathematical problems.

19 [4.MD.4] Display and interpret data in graphs (picture graphs, bar graphs and line plots) to solve problems.

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

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

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

Geometry [GEO]

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

24 [4.G.2] Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size.

PRO-Core Grade 5 Mathematics Standards

Operations and Algebraic Thinking [OAT]

1 [5.OA.1] Use parentheses in numerical expressions, and evaluate expressions with this symbol.

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

3 [5.OA.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]

4 [5.NBT.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 1/10 of what it represents in its place to its left.

5 [5.NBT.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.

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

7 [5.NBT.4] Use place value understanding to round decimals to any place, millions through hundredths.

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

9 [5.NBT.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.

10 [5.NBT.7] Add and subtract decimals, including decimals and whole numbers. Multiply whole numbers by decimals. Divide whole numbers by decimals and decimal by whole numbers.

Number and Operations—Fractions [NFR]

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

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

13 [5.NF.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.

14 [5.NF.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.

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

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

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

Measurement and Data [MDA]

18 [5.MD.1] Know relative sizes of U.S. customary measurement unit and convert between in solving multi-step, real-world problems.

19 [5.MD.2] Display and interpret data in graphs to solve problems, including those with US. customary units in fractions or decimals.

20 [5.MD.3-4] Recognize volume as an attribute of solid figures and understand concepts of volume measurement. Measure volumes by counting unit cubes, using cubic cm. in, ft, and improvised units.

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

Geometry [GEO]

22 [5.G.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.

23 [5.G.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.

24 [5.G.3-4] Identify and describe commonalities and differences between types of triangles based on angle measures and side lengths. Identify and describe commonalities and differences between types of quadrilaterals based on angle measures, side lengths, and the presence or absence of parallel and perpendicular lines.

PRO-Core Grade 6 Mathematics Standards

Ratios and Proportional Relationships [RPR]

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

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

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

The Number System [NSY]

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

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

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

7 [6.NS.4] Find the GCF of two numbers = 100 and the LCM of two numbers = 12. Use the distributive property to express a sum of two whole numbers with a common factor.

8 [6.NS.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.

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

10 [6.NS.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 and Equations [EAE]

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

12 [6.EE.3-4] Apply properties of operations to generate equivalent expressions. Identify when two equations are equivalent.

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

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

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

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

17 [6.EE.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 [GEO]

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

19 [6.G.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.

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

21 [6.G.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 [SAP]

22 [6.SP.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.

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

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

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

PRO-Core Grade 7 Mathematics Standards

Ratios and Proportional Relationships [RPR]

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

2 [7.RP.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.

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

The Number System [NSY]

4 [7.NS.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.

5 [7.NS.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.

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

Expressions and Equations [EAE]

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

8 [7.EE.2] In a problem context, understand that rewriting an expression in different forms can shed light on the problem and how the quantities in it are related.

9 [7.EE.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.

10 [7.EE.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 [GEO]

11 [7.G.1] Solve problems involving similar figures and scale drawings. Represent proportional relationships within and between similar figures.

12 [7.G.2] Draw (freehand, ruler and protractor, technology) geometric shapes with given conditions. Focus on constructing triangles and quadrilaterals with given conditions and determining how the conditions affect the number and types of figures that can be created.

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

14 [7.G.4] Understand the relationships among the circumference, diameter, area, and radius of a circle. Know the formulas for and solve problems using the area and circumference of a circle.

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

16 [7.G.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 [SAP]

17 [7.SP.1] Understand that statistics are used to gain information about a population by examining a sample of the population. Differentiate between a sample and a population and understand that generalizations from a sample are valid only if the sample is representative of that population.

18 [7.SP.2] Broaden statistical reasoning by using the GAISE model: formulate questions, collect data, analyze data, and interpret results.

19 [7.SP.3] Summarize quantitative data sets in relation to their context by using mean absolute deviation. Informally assess the degree of visual overlap of two numerical data distributions by expressing it as a multiple of a measure of variability.

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

21 [7.SP.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.

22 [7.SP.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.

23 [7.SP.8] Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

PRO-Core Grade 8 Mathematics Standards

The Number System [NSY]

1 [8.NS.1] Know that real numbers are either rational or irrational. Understand that every number has a decimal expansion which is repeating, terminating, or is non-repeating and non-terminating.

2 [8.NS.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 [EAE]

3 [8.EE.1] Understand, explain and apply the properties of integer exponents to generate equivalent numerical expressions.

4 [8.EE.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 v2 is irrational.

5 [8.EE.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.

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

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

8 [8.EE.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 $y = mx + b$.

9 [8.EE.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.

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

Functions [FUN]

11 [8.F.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.

12 [8.F.3] Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.

13 [8.F.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.

14 [8.F.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 [GEO]

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

16 [8.G.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.

17 [8.G.3] Describe the effect of dilations, translations, rotations, and reflections on twodimensional figures using coordinates.

18 [8.G.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.

19 [8.G.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.

20 [8.G.6-8] Analyze and justify a proof of the Pythagorean Theorem and its converse. Apply the Pythagorean Theorem to determine side lengths in right triangles in real-world and problems, including finding the distance between two points in a coordinate system.

21 [8.G.9] Solve real-world and mathematical problems involving volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Statistics and Probability [SAP]

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

23 [8.SP.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 of a linear model to solve problems.

24 [8.SP.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.

PRO-Core High School Integrated Math I Standards

Number and Quantity [NAQ]
1 [N.Q.1-3] Reason quantitatively and use units to solve problems.

Algebra [ALG]
2 [A.SSE.1ab,3] Interpret the structure of expressions: linear, exponential, with integer exponents.
3 [A.CED.1-4] Create equations that describe numbers or relationships: linear, exponential (integer inputs only; linear only for 3).
4 [A.REI.1] Understand solving equations as a process of reasoning and explain the reasoning.
5 [A.REI.3] Solve equations and inequalities in one variable.
6 [A.REI.5-6a] Solve systems of equations: linear systems.
7 [A.REI.10-12] Represent and solve equations and inequalities graphically: linear and exponential.

Functions [FUN]
8 [F.IF.1-3] Understand the concept of a function and use function notation: Focus on linear and exponential.
9 [F.IF.4a,5a] Interpret functions that arise in applications in terms of a context.
10 [F.IF.7a,e,9a] Analyze functions using different representations.
11 [F.BF.1a,2] Build a function that models a relationship between two quantities.
12 [F.BF.4a] Build new functions from existing functions: Linear, exponential; focus on vertical translations for exponential.
13 [F.LE.1abc-2] Construct and compare linear, quadratic, and exponential models and solve problems: linear and exponential.
14 [F.LE.5] Interpret expressions for functions in terms of the situation they model.

Geometry [GEO]
15 [G.CO.1-5] Experiment with transformations in the plane.
16 [G.CO.6-8] Understand congruence in terms of rigid motions.
17 [G.CO.9-11] Prove geometric theorems both formally and informally using a variety of methods.
18 [G.CO.12-13] Make geometric constructions.
19 [G.CO.14] Classify and analyze geometric figures.
20 [G.GPE.5,7] Use coordinates to prove simple geometric theorems algebraically: include distance formula; relate to Pythagorean theorem.
21 [G.C.2-3] Understand and apply theorems about circles.

Statistics and Probability [SAP]
22 [S.ID.1-3] Summarize, represent, and interpret data on a single count or measurement variable.
23 [S.ID.5-6] Summarize, represent, and interpret data on two categorical and quantitative variables: linear focus.
24 [S.ID.7-8] Interpret linear models.

PRO-Core High School Integrated Math II Standards

Algebra [ALG]

1 [A.SSE.1-2] Interpret the structure of expressions: quadratic and exponential.
2 [A.SSE.3] Write expressions in equivalent forms to solve problems: quadratic and exponential.
3 [A.APR.1a] Perform arithmetic operations on polynomials: polynomials that simplify to quadratics.
4 [A.CED.1b,2b,4c] Create equations that describe numbers or relationships: include formulas involving quadratic terms.
5 [A.REI.4a,b] Solve equations and inequalities in one variable: quadratics with real coefficients.
6 [A.REI.7,11] Solve systems of equations: linear-quadratic systems.

Functions [FUN]

7 [F.IF.4b,5b] Interpret functions that arise in applications in terms of the context.
8 [F.IF.7b,8a,b,9b] Analyze functions using different representations.
9 [F.BF.1aii] Build a function that models a relationship between two quantities.
10 [F.BF.3a] Build new functions from existing functions.
11 [F.LE.3] Construct and compare linear, quadratic, and exponential models and solve problems: including quadratic.

Geometry [GEO]

12 [G.SRT.1-3] Understand similarity in terms of similarity transformations.
13 [G.SRT.4-5] Prove and apply theorems both formally and informally involving similarity using a variety of methods.
14 [G.SRT.6-8a] Define trigonometric ratios and solve problems involving right triangles.
15 [G.C.1] Understand and apply theorems about circles.
16 [G.C.5] Find arc lengths and areas of sectors of circles.
17 [G.GPE.1] Translate between the geometric description and the equation for a conic section.
18 [G.GPE.4,6] Use coordinates to prove simple geometric theorems algebraically and to verify specific geometric statements.
19 [G.GMD.1,3] Explain volume formulas and use them to solve problems.
20 [G.GMD.4] Visualize the relation between two-dimensional and three-dimensional objects.
21 [G.GMD.5-6] Understand the relationships between lengths, area, and volumes.
22 [G.MG.1-3] Apply geometric concepts in modeling situations.

Statistics and Probability [SAP]

23 [S.CP.1-5] Understand independence and conditional probability and use them to interpret data.
24 [S.CP.6-7] Use the rules of probability to compute probabilities of compound events in a uniform probability model.

PRO-Core High School Algebra I Standards

Number and Quantity [NAQ]

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

Algebra [ALG]

    2 [A.SSE.1-2] Interpret the structure of expressions

    3 [A.SSE.3] Write expressions in equivalent forms to solve problems

    4 [A.APR.1a] Perform arithmetic operations on polynomials.

    5 [A.CED.1-4] Create equations that describe numbers or relationships.

    6 [A.REI.1] Understand solving equations as a process of reasoning and explain the reasoning.

    7 [A.REI.3-4ab] Solve equations and inequalities in one variable.

    8 [A.REI.7] Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.

    9 [A.REI.5,6a] Verify that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. Solve systems of equations algebraically and graphically.

    10 [A.REI.10-12] Represent and solve linear and exponential equations and inequalities graphically.

Functions [FUN]

    11 [F.IF.1-3] Understand the concept of a function and use function notation.

    12 [F.IF.4b-5b] Interpret linear, exponential, and quadratic functions that arise in applications in terms of the context.

    13 [F.IF.7-9] Analyze functions using different representations.

    14 [F.BF.1a,2] Build a function that models a relationship between two quantities.

    15 [F.BF.3a,4a] Build new functions from existing functions.

    16 [F.LE.1-3] Construct and compare linear, quadratic, and exponential models and solve problems.

    17 [F.LE.5] Interpret expressions for functions in terms of the situation they model.

Statistics and Probability [SAP]

    18 [S.ID.1-3] Summarize, represent, and interpret data on a single count or measurement variable.

    19 [S.ID.5-6c] Summarize, represent, and interpret data on two categorical and quantitative variables.

    20 [S.ID.7-8] Interpret linear models.

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PRO-Core High School Algebra II/Integrated Math III Standards

Number and Quantity [NAQ]

    1 [N.RN.1-3] Extend the properties of exponents to rational exponents. Use properties of rational and irrational numbers.

    2 [N.CN.1-2,7] Perform arithmetic operations with complex numbers. Solve quadratic equations with real coefficients that have complex solutions.

Algebra [ALG]

    3 [A.SSE.1-2,3c] Interpret the structure of expressions. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. Use the properties of exponents to transform expressions for exponential functions.

    4 [A.APR.1b,2-3] Perform arithmetic operations on polynomials. Understand the relationship between zeros and factors of polynomials.

    5 [A.APR.4,6] Prove polynomial identities and use them to describe numerical relationships. Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.

    6 [A.CED.1c,2c,3,4d] Create equations that describe numbers or relationships.

    7 [A.REI.2,6b,11] Understand solving equations as a process of reasoning and explain the reasoning. Solve systems of linear equations algebraically and graphically. Extend to include solving systems of linear equations in three variables, but only algebraically. Represent and solve equations and inequalities graphically.

Functions [FUN]

    8 [F.IF.4,5c,6] Interpret functions that arise in applications in terms of a context.

    9 [F.IF.7-9] Analyze functions using different representations.

    10 [F.BF.1b,3] Write a function that describes a relationship between two quantities. Combine standard function types using arithmetic operations. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

    11 [F.LE.4] Construct and compare linear, quadratic, and exponential models and solve problems.

    12 [F.TF.1-2] Extend the domain of trigonometric functions using the unit circle.

    13 [F.TF.5,8] Model periodic phenomena with trigonometric functions. Prove and apply trigonometric identities.

Geometry [GEO]

    14 [G.C.6] Find arc lengths and areas of sectors of circles.

Statistics and Probability [SAP]

15 [S.ID.4,6a,6b,9] Summarize, represent, and interpret data on a single count or measurement variable, or two categorical and quantitative variables. Interpret linear models.

16 [S.IC.1-2] Understand and evaluate random processes underlying statistical experiments.

17 [S.IC.3-6] Make inferences and justify conclusions from sample surveys, experiments and observational studies.

PRO-Core High School Geometry Standards

Geometry [GEO]

1 [G.CO.1-5] Experiment with transformations in the plane.
2 [G.CO.6-8] Understand congruence in terms of rigid motions.
3 [G.CO.9-11] Prove geometric theorems, both formally and informally, using a variety of methods.
4 [G.CO.12-13] Make geometric constructions.
5 [G.CO.14] Classify and analyze geometric figures.
6 [G.SRT.1-3] Understand similarity in terms of similarity transformations.
7 [G.SRT.4-5] Prove and apply theorems both formally and informally, involving similarity using a variety of methods.
8 [G.SRT.6-8a] Define trigonometric ratios and solve problems involving right triangles.
9 [G.C.1-3] Understand and apply theorems about circles.
10 [G.C.5] Find arc lengths and areas of sectors of circles.
11 [G.GPE.1] Translate between the geometric description and the equation for a conic section.
12 [G.GPE.4-7] Use coordinates to prove simple geometric theorems algebraically and to verify specific geometric statements.
13 [G.GMD.1,3] Explain volume formulas and use them to solve problems.
14 [G.GMD.4] Visualize the relation between two-dimensional and three-dimensional objects.
15 [G.GMD.5-6] Understand the relationships between lengths, area, and volumes.
16 [G.MG.1-3] Apply geometric concepts in modeling situations.

Statistics and Probability [SAP]

17 [S.CP.1-5] Understand independence and conditional probability and use them to interpret data: link to data from simulations or experiments.
18 [S.CP.6-7] Use the rules of probability to compute probabilities of compound events in a uniform probability model.