NUMBER SENSE (NS)	Standard	Core Concepts	Key terms	Examples
MA.7.NS.1	Compare and solve problems using whole numbers in scientific notation.	• Scientific notation is a shorthand way of writing numbers using powers of ten • Multiply and divide by powers of ten	• Scientific notation • Powers of ten	Write 300,000 in scientific notation.
MA.7.NS.2	Compare and order rational and common irrational numbers and place them on a number line.	• Techniques for comparing and ordering rational numbers • Graphing numbers on a number line	• Rational number • Irrational number • Real numbers	Place in order: -2 , ⅝, -2.45, 0.9, π, $-1\ 3/4$
MA.7.NS.3	Identify rational and common irrational numbers from a list.	• Rational numbers are real numbers that can be written as a ratio of two integers. • Irrational numbers are real numbers that cannot be written as a ratio of two integers. (π, $\sqrt{3}$)		Name all the irrational numbers in the list: -2, ⅝, -2.45, 0.9, π, $-1\ 3/4$

NUMBER SENSE (NS)	Standard	Core Concepts	Key terms	Examples
MA.7.NS.4	Understand and apply the concept of square root of a whole number, a perfect square and an imperfect square.	• The square root of a number is the base of a number being squared • An imperfect square is an irrational number	• Perfect square • Imperfect square	Name all the imperfect squares in the list: $\sqrt{2}, \sqrt{4}, \sqrt{16}, \sqrt{20}$ Explain how you can find the length of the hypotenuse of a right triangle with legs that measure 5 cm and 12 cm.
MA.7.NS.5	Convert terminating and repeating decimals into reduced fractions.	• Any repeating decimal can be written in the form of a fraction	• terminating decimals • repeating decimals	Write 0.95 as fraction in simplest form.

NUMBER SENSE (NS)	Standard	Core Concepts	Key terms	Examples
MA.7.NS.6	Know that every rational number is either a terminating or repeating decimal and that every irrational number is a non-repeating decimal.	• A rational number is a real number that can be written as a ratio of two integers.	• Terminating decimal • repeating decimal • non-terminating non-repeating decimal	Recognize that 2.375 is a terminating decimal, 5.121212… is a repeating decimal, and that π = 3.14159265… is a nonrepeating decimal. Name a rational number. Explain your reasoning.
MA.7.NS.7	Use the inverse relationship between squaring and find the square root of a perfect square integer.	• The square root of an integer is the inverse of squaring an integer.	• Inverse relationship	Compare. Write <, >, or =. 3^2 ( ) $\sqrt{9}$; 4^2 ( ) $\sqrt{4}$

COMPUTATION (C)	Standard	Core Concepts	Key terms	Examples
MA.7.C.1	Solve addition, subtraction, multiplication, and division problems that use integers, fractions & decimals.	• Algorithms for adding, subtracting, multiplying, and dividing fractions, decimals, and integers. • Order of operations	• sum • difference • product • quotient • PEMDAS	The temperature one day is 5^o. It then falls by 3^o each day for 4 days and, after that, rises by 2^o each day for for 3 days. What is the temperature on the last day? Explain your method.
MA.7.C.2	Calculate the percentage increase and decrease of a quantity.	• Calculate the amount of change • Formula: $Percent\ of\ change = \frac{Amount\ of\ change}{Original\ amount}$ $Amount\ of\ change = percent\ of\ change \times original\ amount$	• amount of change	The population of a country was 36 million in 1990 and it rose to 41.4 million during the 1990's. What was the percentage increase in the population?
MA.7.C.3	Solve problems that involve discounts, markups, commissions, taxes and tips.	• Logic statements: $original\ amount - discount = new\ amount$ $original\ amount + markup = new\ amount$ • Formula $Amount\ of\ commision = percent\ of\ commission \times total\ sales$	• Discount • Markup • Commission • sales tax • tip	A merchant buys CD's for $11 wholesale and marks up the price by 35%. What is the retail price?

COMPUTATION (C)	Standard	Core Concepts	Key terms	Examples
MA.7.C.4	Use estimation to decide whether answers are reasonable in problems involving fractions and decimals.	• Round fractions to 0, ½, or 1 • Round mixed numerals to the nearest whole number • Round decimals to any place.		Your friend says that $3\frac{3}{8} \times 2\frac{2}{9} = 10$.Without solving, explain why you think the answer is wrong.
MA.7.C.5	Use mental arithmetic to compute with simple fractions, decimals, and powers.	• Mentally convert simple fractions to common denominators • Mentally line-up place value to add or subtract decimals • Mental computation		Find 3^4without using pencil and paper.

ALGEBRA AND FUNCTIONS (AF)	Standard	Core Concepts	Key terms	Examples
MA.7.AF.1	Use correct algebraic terminology such as variable, equation, term, like terms, coefficient, inequality, expression, and constant.	• Variable: a letter that holds the place of a number • Expression: a value represented by a finite set of numbers and symbols • Term: parts of an expression • Like terms: two or more terms having the same variables raised to the same exponents • Coefficient: a numerical or constant quantity placed before and multiplying the variable in an algebraic expression • Constant: a term in an algebraic expression whose value cannot change • Equation: a statement that two expressions have the same value • Inequality: a relation between two expressions that are not equal, employing inequality symbols	• variable • equation • term • like term • coefficient • inequality • expression • constant	Name the variable, terms, and coefficient in this equation: $7x + 4 = 67$

ALGEBRA AND FUNCTIONS (AF)	Standard	Core Concepts	Key terms	Examples
MA.7.AF.2	Use variables and appropriate operations to write an expression, a formula, an equation, or an inequality that represents a verbal description.	• Convert a word phrase to a numerical or algebraic expression	• Key words or phrases that relate to the four operations	Write in symbols the inequality: 5 less than twice the number is greater than 42
MA.7.AF.3	Write and solve two-step linear equations and inequalities in one variable, using inverse operations and the properties of equations. Check the answers.	• Addition and subtraction are inverse operations • Multiplication and division are inverse operations • Properties of equations: Whatever is done to one side of an equation must be done to the other side in order to maintain equality • Properties of Inequalities: If you multiply or divide an inequality by a negative value, the inequality sign must be reversed.	• Linear equation • inverse operations • properties of equations	Solve the equation $4x - 7 = 12$and check your answer in the original equation.

ALGEBRA AND FUNCTIONS (AF)	Standard	Core Concepts	Key terms	Examples
MA.7.AF.4	Evaluate numerical expressions and simplify algebraic expressions by applying the correct order of operations and the properties of rational numbers (e.g., identity, inverse, commutative, associative, distributive). Justify each step in the process.	• Apply the order of operations • Justify each step in the process of evaluating or simplifying an expression by identifying the property being applied: identity, inverse, commutative, associative, distributive	• Identity • Inverse • Commutative • Associative • distributive properties	Simplify $3(4x + 5x - 1) + 2(x + 3)$ by removing the parentheses and rearranging. Explain each step you take.
MA.7.AF.5	Solve an equation or formula with two variables for a particular variable.	• Apply inverse operations and the properties of equations to solve literal equations for a particular variable	• Literal equation • formula	Solve the formula $C = 2\pi r$ for r.

ALGEBRA AND FUNCTIONS (AF)	Standard	Core Concepts	Key terms	Examples
MA.7.AF.6	Solve problems involving linear functions with integer values. Write the equation and graph the resulting ordered pairs of integers on a grid.	• Write an equation in two variables to represent a real life situation • Graph linear functions on the coordinate plane by creating an input - output table and graphing the resulting ordered pairs	• independent variable • dependent variable	A plant is 3 cm high the first time you measure it (on Day 0). Each day after that the plant grows by 2 cm. Write an equation connecting the height and the number of the day and draw its graph.
MA.7.AF.7	Investigate how a change in one variable relates to a change in a second variable.	• As the input value of a function changes, the resulting output value changes with respect to the conditions of the function	• input value • output value	In the last example, what do you notice about the shape of the graph?
MA.7.AF.8	Identify constant or varying rates of change and know that a constant rate of change describes a linear function.	• The rate of change is represented by the slope of the line of a linear function • Constant rate of change • Varying rates of change • Linear function	• linear function • constant rate of change	A plant is growing taller according to the formula $H = 2d + 3$, where $H$is the height after d days. Draw a graph of this function. How will the graph be different if the plant's speed of growth changes?

GEOMETRY (G)	Standard	Core Concepts	Key terms	Examples
MA.7.G.1	Understand coordinate graphs and use them to plot simple shapes, find lengths and areas related to the shapes and find images under translations (slides), rotations (turns), and reflections (flips).	• Graphing on the coordinate plane • Identifying and graphing transformations • Calculating the lengths of horizontal and vertical line segments graphed on the coordinate plane	• coordinate plane • axis • quadrant • origin • ordered pair • transformation, • translation • rotation • reflection	Draw the triangle with vertices (0,0), (3,0), and (0,4). Find the lengths of the sides and the area of the triangle. Translate (slide) the triangle 2 units to the right. What are the coordinates of the new triangle?
MA.7.G.2	Understand that transformations such as slides, turns, and flips preserve the length of segments, and that figures resulting from slides, turns, and flips are congruent to the original figures.	• Congruent figures have exactly the same size and shape. • Corresponding sides and angles of congruent figures are equal.	• congruent • corresponding slides • turns • flips	In the last example, find the lengths of the sides and the area of the new triangle. Discuss your results.

GEOMETRY (G)	Standard	Core Concepts	Key terms	Examples
MA.7.G.3	Know and understand the Pythagorean Theorem and use it to find the length of the missing side of a right triangle. Use direct measurement to test conjectures about triangles.	• Pythagorean Theorem: $a^2 + b^2 = c^2$ • The Pythagorean Theorem applies only to right triangles • The variable c in the Pythagorean Theorem is the value of the hypotenuse, which is the longest side of the right triangle.	• Pythagorean Theorem • right triangle • hypotenuse	Use the length and width of your classroom to calculate the distance across the room diagonally. Check by measuring.
MA.7.G.4	Construct two-dimensional patterns (nets) for three-dimensional objects, such as right prisms, pyramids, cylinders, and cones.	• A net is a two-dimensional representation of a three-dimensional figure	• Net • Prism • right prism • pyramid • cylinder • cone	Draw a rectangle and two circles that will fit together to make a cylinder.

MEASUREMENT (M)	Standard	Core Concepts	Key terms	Examples
MA.7.M.1	Compare lengths, areas, volumes, weights, capacities, times, and temperatures within measurement systems.	• Converting customary units of measurement within the customary system • Converting metric units of measurement within the metric system	• area • volume • capacity	The area of the school field is 3 acres. How many square yards is that? Explain your method.
MA.7.M.2	Use experimentation and modeling to visualize similarity problems. Solve problems using similarity.	• Similar figures have the same shape, but may not have the same size • Identify corresponding angles and sides of similar figures • Write and solve proportions involving similar figures	• similar figures • corresponding angles and sides of figures • proportion	At a certain time, the shadow of your school building is 36 feet long. At the same time, the shadow of a yardstick held vertically is 4 feet long. How high is the school building?
MA.7.M.3	Read and create drawings made to scale, construct scale models, and solve problems related to scale using proportion	• A scale drawing shows a real object with accurate sizes reduced or enlarged by a certain amount, called the scale. • Write and solve proportions involving scale drawings	• scale drawing • scale • ratio • proportion	On a plan of your school, your classroom is 5 cm long and 3 cm wide. The actual classroom is 10 m long. How wide is it? Explain your answer.

MEASUREMENT (M)	Standard	Core Concepts	Key terms	Examples
MA.7.M.4	Use formulas for finding the perimeter and area of basic two-dimensional shapes and the surface area and volume of basic three-dimensional shapes, including rectangles, parallelograms, trapezoids, triangles, circles, right prisms, and cylinders.	• Formulas for the perimeter and area of rectangles, squares, triangles, parallelograms, and trapezoids • Formulas for the circumference and area of circles • Surface area is the sum of the area of the surfaces of a three-dimensional shape • Volume is the number of cubic units needed to fill a three-dimensional shape • A right prism is a three-dimensional shape with two congruent ends that are polygons and all other faces are rectangles	• formula • perimeter • area • volume • parallelogram • trapezoid • right prism • cylinder	Find the surface area of a cylindrical can 15 cm high and with a diameter of 8 cm.
MA.7.M.5	Estimate and compute the area of more complex irregular two-dimensional shapes by dividing them into more basic shapes.	• The whole is the sum of its parts • Determine unknown information about parts of a figure from given information about the figure	• irregular two-dimensional shapes	A room to be carpeted is a rectangle 5 m x 4 m. A semicircular fireplace of diameter 1.5 m takes up some of the floor space. Find the area to be carpeted.

MEASUREMENT (M)	Standard	Core Concepts	Key terms	Examples
MA.7.M.6	Students will use concrete materials to build a 3-dimensional object, using it to compute the surface area of the faces and the volume of the three-dimensional object.	• Surface area is the sum of the area of the faces of a three-dimensional object • Volume is the number of cubic units needed to fill a three-dimensional object	• 3-dimensional object • Faces • surface area • volume	Build a model of an apartment building with blocks. Find its volume and total surface area.

DATA ANALYSIS AND PROBABILITY (DP)	Standard	Core Concepts	Key terms	Examples
MA.7.DP.1	Analyze, interpret, and display data in appropriate bar, line, and circle graphs and stem-and-leaf plots, and justify the choice of display.	• Labeling and displaying data on a bar, line, and circle graph • Creating a stem-and-leaf plot from a set of data • Interpreting and drawing conclusions from data displayed on graphs • Choosing an appropriate type of graph to display data for a particular situation	• bar graph • line graph • circle graph • stem-and-leaf plot	You survey the students in your school to find which of three designs for a magazine cover they prefer. To display the results, which would be more appropriate: a bar chart or a circle graph? Explain your answer.
MA.7.DP.2	Make predictions from statistical data.	• Analyze and interpret data to draw conclusions and make predictions		Record the temperature and weather conditions (sunny, cloudy, or rainy) at 1 p.m. each day for two weeks. In the third week, use your results to predict the temperature from the weather conditions.

DATA ANALYSIS AND PROBABILITY (DP)	Standard	Core Concepts	Key terms	Examples
MA.7.DP.3	Describe how additional data, particularly outliers, added to a data set may affect the mean, median, mode and range.	• An outlier is a data point that is distinctly separate from the rest of the data • The mean is the average value of a data set • The median is the value that divides a set of data, written in order of size, into two equal parts • The mode is the most common value in a given data set • Analyze and describe the impact additional data has on a given data set with regards to mean, median, mode, and range	• outlier • mean • median • mode • range	You measure the heights of the students in your grade on a day when the basketball team is playing an away game. Later you measure the players on the team and include them in your data. What kind of effect will including the team have on the mean, median, and mode? Explain your answer.

DATA ANALYSIS AND PROBABILITY (DP)	Standard	Core Concepts	Key terms	Examples
MA.7.DP.4	Analyze data displays, including ways that they can be misleading. Analyze ways in which the wording of questions can influence survey results.	• The scale used on a data display can result in a misleading representation of the data • The wording of questions can impact the answers given	• scale	On a bar graph of a company's sales, it appears that sales have more than doubled since last year. Then you notice that the vertical axis starts at $5 million and can see that sales have in fact increased from $5.5 million to $6.2 million.
MA.7.DP.5	Know that if P is the probability of an event occurring, then 1 – P is the probability of that event not occurring.	• Probability is the ratio of the number of outcomes favoring an event to the total number of possible outcomes • A probability of 1 means the event is certain to occur • A probability of 0 means the event is certain not to occur	• probability	The weather forecast says that the probability of rain today is 0.3. What is the probability that it won't rain?

DATA ANALYSIS AND PROBABILITY (DP)	Standard	Core Concepts	Key terms	Examples
MA.7.DP.6	Understand that the probability of either one or the other of two disjoint events occurring is the sum of the two individual probabilities.	• Disjoint events are events that cannot happen at the same time	• disjoint events	Find the probability of rolling 9 with two number cubes. Also find the probability of rolling 10. What is the probability of rolling 9 or 10?
MA.7.DP.7	Find the number of possible arrangements of several objects using a tree diagram.	• A tree diagram is a visual display of all of the possible outcomes of an event	• tree diagram	A state's license plates contain 6 digits and one letter. How many different license plates can be made if the letter must always be in the third position and the first digit cannot be a zero?

DATA ANALYSIS AND PROBABILITY (DP)	Standard	Core Concepts	Key terms	Examples
MA.7.DP.8	Understand the meaning of, and be able to identify or compute the minimum value, the lower quartile, the median, the upper quartile, the interquartile range and the maximum value of a data set. Use these values to construct a box-and-whisker plot.	• Box-and-whisker plots are used for visually displaying not only the center (median) but also the range and spread of data • The lower quartile is the value that separates the lowest one-fourth of the values from the rest of the values • The upper quartile is the value that separates the highest one-fourth of the values from the rest of the values • The interquartile range is the difference between the lower and upper quartiles (Q3 - Q1), or the range of the middle 50% of the data	• Box-and-whisker plot • quartile • lower quartile • upper quartile • interquartile range	Arrange a set of test scores in increasing order and find the lowest and highest scores, the median, and the upper and lower quartiles.