| Standard ID | Standard Text | \|Edgenuity Lesson Name |
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| 6.NS | The Number System |  |
| 6.NS.B | Compute fluently with multi-digit numbers and find common factors and multiples. |  |
| 6.NS.B. 3 | Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. | Estimating and Finding Decimal Products |
| 6.NS.B. 4 | Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12 . Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express $36+8$ as $4(9+2)$. | Prime Numbers and Prime Factorization Factors and Multiples |
| 6.NS | The Number System |  |
| 6.NS.C | Apply and extend previous understandings of numbers to the system of rational numbers. |  |
| 6.NS.C. 7 | Understand ordering and absolute value of rational numbers. |  |
| 6.NS.C.7c | Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of -30 dollars, write $\|-30\|=30$ to describe the size of the debt in dollars. | Absolute Value |
| 6.NS.C.7d | Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than - 30 dollars represents a debt greater than 30 dollars. | Absolute Value |


| Standard ID | Standard Text | Edgenuity Lesson Name |
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| 6.RP | Ratios and Proportional Relationships |  |
| 6.RP.A | Understand ratio concepts and use ratio reasoning to solve problems. |  |
| 6.RP.A.3 | Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about <br> tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. |  |
| 6.RP.A.3a | Make tables of equivalent ratios relating quantities with whole-number measurements, find missing <br> values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare <br> ratios. | Equivalent Ratios |
| 6.EE | Expressions and Equations |  |
| 6.EE.A | Apply and extend previous understandings of arithmetic to algebraic expressions. |  |
| 6.EE.A.2 | Write expressions that record operations with numbers and with letters standing for numbers. For <br> example, express the calculation "Subtract $y$ from $5 "$ as $5-y$. | Writing and Evaluating Expressions |
| 6.EE.A.2a | Expressions with and without Parentheses |  |


| Standard ID | Standard Text | Edgenuity Lesson Name |
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| 6.EE.A. 3 | Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2+x)$ to produce the equivalent expression $6+3 x$; apply the distributive property to the expression $24 x+18 y$ to produce the equivalent expression $6(4 x+3 y)$; apply properties of operations to $\mathrm{y}+\mathrm{y}+\mathrm{y}$ to produce the equivalent expression 3 y . | Equivalent Expressions |
| 6.EE.A. 4 | Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions $y+y+y$ and $3 y$ are equivalent because they name the same number regardless of which number y stands for. | Equivalent Expressions |
| 6.EE.B | Reason about and solve one-variable equations and inequalities. |  |
| 6.EE.B.6 | Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. | Writing and Evaluating Expressions |
| 6.G | Geometry |  |
| 6.G.A | Solve real-world and mathematical problems involving area, surface area, and volume. |  |
| 6.G.A. 1 | Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. | Area of Special Quadrilaterals |
| 6.G.A. 3 | Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. | Finding Area on a Coordinate Plane |
| 6.SP | Statistics and Probability |  |
| 6.SP.A | Develop understanding of statistical variability. |  |
| 6.SP.A. 2 | 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. | Summarizing Data Sets with Statistics Box Plots |


| Standard ID | Standard Text | Edgenuity Lesson Name |
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| 6.SP.A. 3 | Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. | Summarizing Data Sets with Statistics |
| 6.SP.B | Summarize and describe distributions. |  |
| 6.SP.B. 4 | Display numerical data in plots on a number line, including dot plots, histograms, and box plots. | Box Plots |
| 6.SP.B. 5 | Summarize numerical data sets in relation to their context, such as by: |  |
| 6.SP.B.5d | Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered. | Summarizing Data Sets with Statistics |
| 7.RP | Ratios and Proportional Relationships |  |
| 7.RP.A | Analyze proportional relationships and use them to solve real-world and mathematical problems. |  |
| 7.RP.A. 1 | Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks $1 / 2$ mile in each $1 / 4$ hour, compute the unit rate as the complex fraction (1/2)/(1/4) miles per hour, equivalently 2 miles per hour. | Unit Rates |
| 7.RP.A. 2 | Recognize and represent proportional relationships between quantities. |  |
| 7.RP.A.2a | Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. | Unit Rates |
| 7.RP.A.2b | Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. | Proportions <br> Solving Scale Problems Using Proportions |
| 7.RP.A. 3 | Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. | Proportions <br> Finding a Percent of a Number <br> Finding a Total Amount |
| 7.NS | The Number System |  |


| Standard ID | Standard Text | Edgenuity Lesson Name |
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| 7.NS.A | Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. |  |
| 7.NS.A. 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. |  |
| 7.NS.A.1b | Understand $\mathrm{p}+\mathrm{q}$ as the number located a distance $\|\mathrm{q}\|$ from p , in the positive or negative direction depending on whether $q$ is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. | Adding Integers <br> Adding and Subtracting Decimals |
| 7.NS.A.1c | Understand subtraction of rational numbers as adding the additive inverse, $\mathrm{p}-\mathrm{q}=\mathrm{p}+(-\mathrm{q})$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. | Subtracting Integers <br> Adding and Subtracting Decimals |
| 7.NS.A. 2 | Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. |  |
| 7.NS.A.2a | Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1)=1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. | Multiplying Fractions |
| 7.NS.A.2b | Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If $p$ and $q$ are integers, then $-(p / q)=(-p) / q=p /(-$ q). Interpret quotients of rational numbers by describing real-world contexts. | Dividing Integers |
| 7.NS.A.2c | Apply properties of operations as strategies to multiply and divide rational numbers. | Multiplying Fractions Dividing Fractions |
| 7.NS.A. 3 | Solve real-world and mathematical problems involving the four operations with rational numbers. | Finding a Percent of a Number Finding a Total Amount |
| 7.EE | Expressions and Equations |  |


| Standard ID | Standard Text | Edgenuity Lesson Name |
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| 7.EE.B | Solve real-life and mathematical problems using numerical and algebraic expressions and equations. |  |
| 7.EE.B. 3 | Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $\$ 25$ an hour gets a $10 \%$ raise, she will make an additional $1 / 10$ of her salary an hour, or $\$ 2.50$, for a new salary of $\$ 27.50$. If you want to place a towel bar $93 / 4$ inches long in the center of a door that is $271 / 2$ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation. | Adding and Subtracting Decimals <br> Multiplying Fractions <br> Dividing Fractions <br> Solving Two-Step Equations |

## 7.EE.B. $4 \quad$ Use variables to represent quantities in a real-world or mathematical problem, and construct simple

 equations and inequalities to solve problems by reasoning about the quantities.7.EE.B.4a Solve word problems leading to equations of the form $p x+q=r$ and $p(x+q)=r$, where $p$, $q$, and $r$ are Solving Two-Step Equations specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm . Its length is 6 cm . What is its width?
7.EE.B.4b Solve word problems leading to inequalities of the form $p x+q>r$ or $p x+q<r$, where $p$, $q$, and $r$ are $\quad$ Solving Two-Step Inequalities specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $\$ 50$ per week plus $\$ 3$ per sale. This week you want your pay to be at least $\$ 100$. Write an inequality for the number of sales you need to make, and describe the solutions.

| 7.G | Geometry |
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| 7.G.A | Draw construct, and describe geometrical figures and describe the relationships between them |

## 7.G.A. 1 Solve problems involving scale drawings of geometric figures, including computing actual lengths and Solving Scale Problems Using Proportions

 areas from a scale drawing and reproducing a scale drawing at a different scale.imagine edgenuity

| Standard ID | Standard Text | Edgenuity Lesson Name |
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## 7.G.A. 2

Draw (freehand, with ruler and protractor, and with 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.
7.G.B Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
7.G.B. $6 \quad$ Solve real-world and mathematical problems involving area, volume and surface area of two- and Surface Area of Composite Figures three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. Volume of Composite Figures
7.SP Statistics and Probability
7.SP.A Use random sampling to draw inferences about a population.
7.SP.A. $1 \quad$ Understand that statistics can be used to gain information about a population by examining a sample Inferences and Predictions of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
7.SP.B Draw informal comparative inferences about two populations.
7.SP.B. $4 \quad$ Use measures of center and measures of variability for numerical data from random samples to draw Comparing Measures of Center and Variability informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourthgrade science book.
7.SP.C Investigate chance processes and develop, use, and evaluate probability models.
7.SP.C. $5 \quad$ Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around $1 / 2$ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

| Standard ID | Standard Text | Edgenuity Lesson Name |  |
| :--- | :--- | :--- | :--- |

7.SP.C.6 Approximate the probability of a chance event by collecting data on the chance process that

Edgenuity Lesson Name
produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.
7.SP.C. 7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
7.SP.C.7a Develop a uniform probability model by assigning equal probability to all outcomes, and use the Experimental vs. Theoretical Probability model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.
7.SP.C. 8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
7.SP.C.8a Understand that, just as with simple events, the probability of a compound event is the fraction of Probability of Compound Events outcomes in the sample space for which the compound event occurs.
7.SP.C.8b Represent sample spaces for compound events using methods such as organized lists, tables and tree Probability of Compound Events diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.
8.NS The Number System
8.NS.A Know that there are numbers that are not rational, and approximate them by rational numbers.
8.NS.A. 1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.

Finding Distance in the Coordinate Plane Exploring Real Numbers Introduction to the Volume of a Cone Introduction to the Volume of a Sphere

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8.NS.A. 2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., Ï€^2). For example, by truncating the decimal expansion of â^š2, show that â^š2 is between 1 and 2 , then between 1.4 and 1.5, and explain how to continue on to get better approximations.
8.EE Expressions and Equations
8.EE.A Work with radicals and integer exponents.
8.EE.A. 1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. Zero and Negative Exponents For example, $3^{\wedge} 2 \times 3^{\wedge}-5=3^{\wedge}-3=1 / 3^{\wedge} 3=1 / 27$.
8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form $x^{\wedge} 2=p$ and $x^{\wedge} 3=p$, where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that â^š2 is irrational.

## Edgenuity Lesson Name

Estimating and Comparing Square Roots

| Standard ID | Standard Text |
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8.EE.C Analyze and solve linear equations and pairs of simultaneous linear equations.

## 8.EE.C. $7 \quad$ Solve linear equations in one variable.

8.EE.C.7b Solve linear equations with rational number coefficients, including equations whose solutions require Using the Distributive Property expanding expressions using the distributive property and collecting like terms.

| 8.F | Functions |  |  |
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| 8.F.A | Define, evaluate, and compare functions. |  |  |
| 8.F.A.1 | Understand that a function is a rule that assigns to each input exactly one output. The graph of a <br> function is the set of ordered pairs consisting of an input and the corresponding output. | Introduction to Functions <br> Constructing Linear Functions <br> Slope-Intercept Form |  |
| 8.F.A.2 | Compare properties of two functions each represented in a different way (algebraically, graphically, <br> numerically in tables, or by verbal descriptions). For example, given a linear function represented by a <br> table of values and a linear function represented by an algebraic expression, determine which <br> function has the greater rate of change. | Interpret the equation $y=m x+b$ as defining a linear function, whose graph is a straight line; give <br> examples of functions that are not linear. For example, the function $A=s^{\wedge} 2$ giving the area of a <br> square as a function of its side length is not linear because its graph contains the points (1,1), ( 2,4 ) <br> and (3,9), which are not on a straight line. | Slope-Intercept Form |


| Standard ID | Standard Text | Edgenuity Lesson Name |
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| 8.G | Geometry |  |
| 8.G.A | Understand congruence and similarity using physical models, transparencies, or geometry software. |  |
| 8.G.A. 1 | Verify experimentally the properties of rotations, reflections, and translations: |  |
| 8.G.A.1a | Lines are taken to lines, and line segments to line segments of the same length. | Congruence and Transformations |
| 8.G.A.1b | Angles are taken to angles of the same measure. | Congruence and Transformations |
| 8.G.A.1c | Parallel lines are taken to parallel lines. | Congruence and Transformations |
| 8.G.A. 2 | Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. | Congruence and Transformations |
| 8.G.A. 3 | Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. | Translations <br> Reflections <br> Rotations in the Coordinate Plane |
| 8.G.A. 5 | Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so. | Parallel Lines Cut by a Transversal |
| 8.G.B | Understand and apply the Pythagorean Theorem. |  |
| 8.G.B. 6 | Explain a proof of the Pythagorean Theorem and its converse. | Exploring the Pythagorean Theorem |
| 8.G.B. 7 | Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. | Unknown Leg Lengths in Right Triangles |
| 8.G.B. 8 | Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. | Finding Distance in the Coordinate Plane |


| Standard ID | Standard Text | Edgenuity Lesson Name |
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| 8.G.C | Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. |  |
| 8.G.C.9 | Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. | Surface Area and Volume of Cylinders Introduction to the Volume of a Cone Introduction to the Volume of a Sphere |
| 8.SP | Statistics and Probability |  |
| 8.SP.A | Investigate patterns of association in bivariate data. |  |
| 8.SP.A. 1 | Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. | Constructing Scatterplots |
| 8.SP.A. 2 | Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. | Using Equations to Represent Trend Lines |
| 8.SP.A. 3 | Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of $1.5 \mathrm{~cm} / \mathrm{hr}$ as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. | Using Equations to Represent Trend Lines |
| HSS | Statistics and Probability |  |
| HSS-CP | Conditional Probability and the Rules of Probability |  |
| HSS-CP.B | Use the rules of probability to compute probabilities of compound events in a uniform probability model |  |
| HSS-CP.B. 9 | (+) Use permutations and combinations to compute probabilities of compound events and solve | Combinations |

