Standard 2.1 Numbers, Number Systems and Number Relationships

CS2.1.8A. Represent and use numbers in equivalent forms

79. Identify base and exponent
80. Write in exponential form
81. Write in factored form
82. Write a number in scientific notation
83. Change a number in scientific notation to standard form
84. Recognize that the square root of a number is one of two equal factors of that number

CS2.1.8B. Simplify numerical expressions involving exponents and scientific notation, using order of operations

85. Use order of operations to simplify expressions involving
   a. Exponents
   b. Scientific notation

CS2.1.8C. Distinguish between and order rational and irrational numbers

CS2.1.8D. Apply ratio and proportion to mathematical problem situations involving situations, rate, time and similar triangles

89. Set up a ration using similar triangles
90. Set up a ratio and proportion for distance, rate and time

CS2.1.8F. Use the number line model to demonstrate integers and their applications

94. Use the number line to determine if an integer is < or > another integer
95. Graph integers on a number line

CS2.1.8G. Use the inverse relationships between addition, subtraction, multiplication, division, exponentiation and root extraction to determine unknown quantities in equations

98. Solve missing base or radicand equations by raising both sides to the same power or taking the same root of both sides

Standard 2.2 Computation and Estimation

CS2.2.8A. Complete calculations by applying the order of operations
143. Calculate a numerical expression by following the rules for order of operations

CS2.2.8B. Add, subtract, multiply and divide different kinds and forms of rational numbers including integers, decimals, percents and proper and improper fractions

151. Solve word problems using ratio or proportion

CS2.2.8C. Estimate the value of irrational numbers

152. Find the best whole number estimate for an irrational number

**Standard 2.3 Measurement and Estimation**

CS2.3.8A. Develop formulas and procedures for determining measurements

185. Given a formula and measurements, calculate the measurement of
   g. Distance and rate

CS2.3.8B. Solve rate problems

187. Solve distance problems

CS2.3.8C. Measure angles in degrees and determine relations of angles

190. Identify vertical, corresponding, and alternate interior angles

CS2.3.8D. Estimate, use, and describe measures of distance, rate, perimeter, area, volume, weight, mass, and angles

191. Estimate:
   e. Measurement of angles
   f. Volume of a geometric solid

CS2.3.8E. Describe how a change in linear dimension of an object affects its perimeter, area and volume

196. Describe how a change in linear dimension of an object affects its volume

**Standard 2.4 Mathematical Reasoning and Connections**

CS2.4.8B. Combine numeric relationships to arrive at a conclusion

220. Use if...then statements to construct simple, valid arguments
CS2.4.8D. Construct, use and explain algorithmic procedures for computing and estimating with whole numbers, fractions, decimals, and integers

222. Construct, use and explain algorithmic procedures for estimating with whole numbers, fractions, decimals, and integers

CS2.4.8E. Distinguish between inductive and deductive reasoning

223. Identify reasoning statements as inductive or deductive and justify answer

**Standard 2.5 Mathematical Problem Solving and Communications**

CS2.5.8A. Invent, select, use and justify the appropriate methods, materials and strategies to solve problems

248. Justify the methods, materials and strategies used to solve problems

CS2.5.8B. Verify and interpret results using precise language, notation and representations, including numeric tables and equations, simple algebraic equations and formulas, charts, graphs, and diagrams

249. Verify and interpret results using precise language, notation and representations
   c. Simple algebraic equations and formulas

CS2.5.8C. Justify strategies and defend approaches used and conclusions reached

251. Justify conclusion reached in the solution of problems

CS2.5.8D. Determine pertinent information in problem situations and whether any further information is needed for solution

252. Identify pertinent information in a problem and determine if further information is needed to solve the problem

**Standard 2.6 Statistics and Data Analysis**

CS2.6.8A. Compare and contrast different plots of data using values of mean, median, mode, quartiles and range

267. Compare and contrast different plots of data using
   b. Quartiles and range
CS2.6.8C. Fit a line to the scatter plot of two quantities and describe any correlation of the variables

271. Use a plot of two quantities to describe any correlation between the variables

CS2.6.8D. Design and carry out a random sampling procedure

272. Design a random sampling procedure
273. Carry out a random sampling procedure

CS2.6.8E. Analyze and display data in stem-and-leaf and box-and-whisker plot

275. Analyze and display data in box-and-whisker plots

CS2.6.8F. Use scientific and graphing calculators and computers spreadsheets to organize and analyze

277. Use computer spreadsheets to organize and analyze data

CS2.6.8G. Determine the validity of the sampling method described in studies published in local or national newspapers

278. Determine the validity of the sampling method described in studies published in newspapers, magazines, or journals

**Standard 2.7 Probability and Predictions**

CS2.7.8A. Determine the number of combinations and permutations for an event

CS2.7.8A. Present the result of an experiment using visual representations

306. Present the results of an experiment using graphs

CS2.7.8D. Compare and contrast results from observations and mathematical models

309. Compare and contrast results from mathematical models

CS 2.7.8E. Make valid inferences, predictions and arguments based on probability

311. Make valid predictions based on probability
312. Make valid arguments based on probability

**Standard 2.8 Algebra and Functions**

CS2.8.8A. Apply simple algebraic patterns to basic number theory and to spatial relationships

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350. Apply simple algebraic patterns to spatial relationships

**CS2.8.8B. Discover, discover and generalize patterns, including linear, exponential and simple quadratic relationships**

353. Discover, describe and generalize patterns, including exponential and simple quadratic relationships

**CS2.8.8C. Create and interpret expressions, equations or inequalities that model problem situations**

355. Create and interpret equations or inequalities that model problem situations

**CS2.8.8D. Use concrete objects to model algebraic concepts**

356. Use algeblocks to model concepts of simplifying algebraic expressions, multiplying binomials and factoring
357. Use a balance scale to model the concepts of solving equations

**CS2.8.8E. Select and use a strategy to solve an equation or inequality, explain the solution and check the solution for accuracy**

359. Select and use a strategy to solve an inequality, explain the solution and check the solution for accuracy

**CS2.8.8F. Solve and graph equations and inequalities using scientific and graphing calculators and computer spreadsheets**

361. Solve and graph equations and inequalities using graphing calculators
362. Solve and graph equations and inequalities using computer spreadsheets

**CS2.8.8G. Represent relationships with tables or graphs in the coordinate plane and verbal or symbolic rules**

364. Represent relationships with verbal or symbolic rules

**CS2.8.8H. Graph a linear function from a rule or table**

**CS2.8.8I. Generate a table or graph from a function and use graphing calculators and computer spreadsheets to graph and analyze functions**

367. Generate a table from a function and use graphing calculators to graph and analyze functions
368. Generate a graph from a function and use graphing calculators and computer spreadsheets to graph and analyze functions
CS2.8.8J. Show that an inequality relationship between two quantities remains the same as long as the same change is made to both quantities, and explain how a change in one quantity determines another quantity in a functional relationship

369. Show that an inequality relationship remains the same as long as the same change is made to both quantities
370. Explain how a change in one quantity in a functional relationship determines a change in another quantity

**Standard 2.9 Geometry**

CS2.9.8A. Construct figures incorporating perpendicular and parallel lines, the perpendicular bisector of a line segment and an angle bisector using computer software

413. Construct figures incorporating perpendicular bisector of a line segment and an angle bisector using computer software

CS2.9.8B. Draw, label, measure and list the properties of complementary, supplementary and vertical angles

415. Measure and list the properties of complementary, supplementary and vertical angles

CS2.9.8C. Classify familiar polygons as regular or irregular up to a decagon

416. Identify polygons up to a decagon and classify as regular or irregular

CS2.9.8D. Identify, name, draw and list all properties of squares, cubes, pyramids, parallelograms, quadrilaterals, trapezoids, polygons, rectangles, rhombi, circles and triangles

418. Identify, name and draw cubes, pyramids, spheres, prisms, and cylinders
419. List all properties of squares, cubes, parallelograms, trapezoids, polygons, rectangles, rhombi, circles and triangles
420. List all properties of squares, cubes, pyramids, parallelograms, quadrilaterals, trapezoids, polygons, rectangles, rhombi

CS2.9.8E. Construct parallel lines, draw a transversal and measure and compare angles formed such as alternate interior and exterior angles

421. Construct parallel lines, draw a transversal and measure and compare the corresponding and supplementary angles formed
422. Construct parallel lines, draw a transversal and measure and compare the alternate interior and exterior angles formed

CS2.9.8F. Distinguish between similar and congruent polygons
424. Distinguish between similar and congruent triangles
425. Distinguish between similar and congruent polygons up to 10 sides

CS2.9.8H. Use simple geometric figures such as triangles and squares to create, through rotation, transformational figures in three dimensions

428. use squares and rhombi to create, through rotation, transformational figures in three dimensions

CS2.9.8I. Generate transformations using computer software

429. Generate transformations using computer software

CS2.9.8J. Analyze geometric patterns, such as tessellation’s and sequence of shapes, and develop descriptions of the patterns

430. Analyze geometric patterns, such as tessellation’s and sequence of shapes, and develop descriptions of the patterns

CS2.9.8K. Analyze objects to determine whether they illustrate tessellation’s, symmetry, congruence, similarity and scale

431. Analyze objects to determine whether they illustrate tessellation’s, symmetry, or scale
432. Analyze objects to determine whether they illustrate symmetry or congruence

Standard 2.10 Trigonometry

CS2.10.8A. Compute measures of sides and angles using proportions, the Pythagorean theorem and right triangle relationships

438. Compute measures of sides and angles of similar right triangles using proportions
439. Compute measures of sides of right triangles using the Pythagorean theorem
440. Compute measures of sides and angles of right triangles using sine, cosine, and tangent relationships

CS2.10.8B. Solve problems requiring indirect measurements for lengths of sides of triangles

441. Solve problems requiring sine, cosine, or tangent to determine the length of sides of triangles

Standard 2.11 Concepts of Calculus

CS2.11.8A. Analyze graphs of related quantities for maximum values and justify the findings

463. Analyze graphs of related quantities for maximum values
464. Analyze graphs of related quantities for maximum values and justify the findings

**CS2.11.B. Describe the concept of unit rate, ratio and slope in the context of rate of change**

465. Describe the concept of unit rate in the context of rate of change
466. Describe the concept of ratio in the context of rate of change
467. Describe the concept of slope in the context of rate of change
468. Change a fraction to a repeating decimal