Project: CCSSM Standards Investigation   **Names** _____

This project involves the Common Core State Standard for Mathematics elaborated on the following site: http://www.corestandards.org/Math . Complete the following quote.

"The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. These practices rest on important 'processes and proficiencies' with longstanding importance in mathematics education. The first of these are the NCTM process standards of _____ _____, _____ and _____, communication, _____, and connections. The second are the strands of mathematical proficiency specified in the National Research Council's report _____ *It Up*: adaptive reasoning, _____ _____ , conceptual understanding (comprehension of mathematical concepts, operations and relations), _____ _____ (skill in carrying out procedures flexibly, _____ , efficiently and appropriately), and _____ _____ (habitual inclination to see mathematics as sensible, _____, and worthwhile, coupled with a belief in diligence and one's own efficacy)."

Fill in the blank with the appropriate term from the list: Clusters, Domains, Standards.

_____ define what students should understand and be able to do.

_____ summarize groups of related standards. Note that standards from different clusters may sometimes be closely related, because mathematics is a connected subject.

_____ are larger groups of related standards. Standards from different domains may sometimes be closely related.

Here is an example from grade 3:
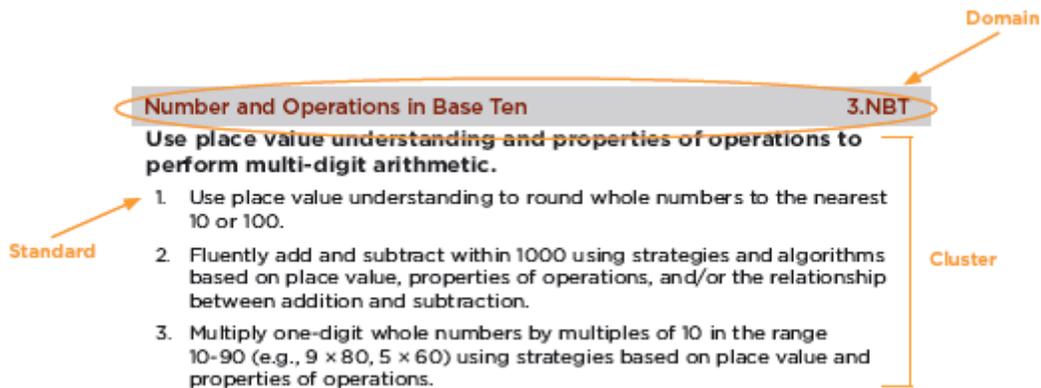
Statistics & Probability standards in the Common Core officially start in Grade 6. True or False. _____

To illustrate the overlap between various content areas, notice the following measurement and data standards:

- CCSS.Math.Content.2.MD.D.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 making a _____ _____, where the horizontal scale is marked off in whole-number units.

- CCSS.Math.Content.2.MD.D.10 Draw a _____ graph and a _____ graph (with single-unit scale) to represent a data set with up to _____ categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

These are clearly statistical concepts. They are taught in what grade here in CCSSM? _____

Focus now on the "Measurement and Data" standards. Complete the following K-5 level standards.

Kindergarten—
Describe and compare measurable attributes.
CCSS.Math.Content.K.MD.A.1
Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
CCSS.Math.Content.K.MD.A.2
Directly _____ two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter*.

Classify objects and count the number of objects in each category.
CCSS.Math.Content.K.MD.B.3
Classify objects into given categories; count the numbers of objects in each category and _____ the categories by count.[1]

Grade 1—
Measure lengths indirectly and by iterating length units.
CCSS.Math.Content.1.MD.A.1
Order three objects by length; compare the lengths of two objects indirectly by using a third object.
CCSS.Math.Content.1.MD.A.2
Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no _____ or _____. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps*.

Tell and write time.
CCSS.Math.Content.1.MD.B.3
Tell and write time in hours and half-hours using analog and digital clocks.

Represent and interpret data.
CCSS.Math.Content.1.MD.C.4
Organize, represent, and interpret data with up to _____ categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Grade 2—
Measure and estimate lengths in standard units.

CCSS.Math.Content.2.MD.A.1
Measure the length of an object by selecting and using appropriate tools such as _____ , yardsticks, meter sticks, and measuring tapes.

CCSS.Math.Content.2.MD.A.2
Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.

CCSS.Math.Content.2.MD.A.3
Estimate lengths using units of inches, _____ , centimeters, and meters.

CCSS.Math.Content.2.MD.A.4
Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

CCSS.Math.Content.2.MD.B.5
Use addition and subtraction within _____ to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

CCSS.Math.Content.2.MD.B.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 on a number line diagram.

Work with time and money.

CCSS.Math.Content.2.MD.C.7
Tell and write time from analog and digital clocks to the nearest _____ minutes, using a.m. and p.m.

CCSS.Math.Content.2.MD.C.8
Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Represent and interpret data.

CCSS.Math.Content.2.MD.D.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 making a line plot, where the horizontal scale is marked off in _____ units.

CCSS.Math.Content.2.MD.D.10
Draw a _____ graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems[1] using information presented in a _____ graph.

Grade 3—
Solve problems involving measurement and estimation.

CCSS.Math.Content.3.MD.A.1
Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.

[CCSS.Math.Content.3.MD.A.2](#)
Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).[1] Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.[2]

Represent and interpret data.

[CCSS.Math.Content.3.MD.B.3](#)
Draw a scaled _____ graph and a scaled bar graph to represent a data set with several categories. Solve _____ and _____-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*

[CCSS.Math.Content.3.MD.B.4](#)
Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

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

[CCSS.Math.Content.3.MD.C.5](#)
Recognize area as an attribute of plane figures and understand concepts of area measurement.

[CCSS.Math.Content.3.MD.C.5.a](#)
A square with side length 1 unit, called "a unit square," is said to have "one _____ _____" of area, and can be used to measure area.

[CCSS.Math.Content.3.MD.C.5.b](#)
A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

[CCSS.Math.Content.3.MD.C.6](#)
Measure areas by counting _____ _____ (square cm, square m, square in, square ft, and improvised units).

[CCSS.Math.Content.3.MD.C.7](#)
Relate area to the operations of multiplication and addition.

[CCSS.Math.Content.3.MD.C.7.a](#)
Find the area of a rectangle with whole-number side lengths by _____ it, and show that the area is the same as would be found by multiplying the side lengths.

[CCSS.Math.Content.3.MD.C.7.b](#)
Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving _____ _____ and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.

[CCSS.Math.Content.3.MD.C.7.c](#)
Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.

[CCSS.Math.Content.3.MD.C.7.d](#)
Recognize area as _____ . Find areas of rectilinear figures by _____ them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.

Geometric measurement: recognize perimeter.

CCSS.Math.Content.3.MD.D.8

Solve real world and mathematical problems involving perimeters of _____ , including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Grade 4—
Solve problems involving measurement and conversion of measurements.

CCSS.Math.Content.4.MD.A.1

Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is _____ times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, ____), (3, 36), ...*

CCSS.Math.Content.4.MD.A.2

Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

CCSS.Math.Content.4.MD.A.3

Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the _____ of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*

Represent and interpret data.

CCSS.Math.Content.4.MD.B.4

Make a _____ _____ to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*

Geometric measurement: understand concepts of angle and measure angles.

CCSS.Math.Content.4.MD.C.5

Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

CCSS.Math.Content.4.MD.C.5.a

An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "_____ angle," and can be used to measure angles.

CCSS.Math.Content.4.MD.C.5.b

An angle that turns through n one-degree angles is said to have an angle measure of n degrees.

CCSS.Math.Content.4.MD.C.6

Measure angles in whole-number degrees using a _____ . Sketch angles of specified measure.

CCSS.Math.Content.4.MD.C.7

Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts,

the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Grade 5—
Convert like measurement units within a given measurement system.
CCSS.Math.Content.5.MD.A.1
Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Represent and interpret data.
CCSS.Math.Content.5.MD.B.2
Make a line plot to display a data set of measurements in _____ of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

Geometric measurement: understand concepts of volume.
CCSS.Math.Content.5.MD.C.3
Recognize volume as an attribute of _____ figures and understand concepts of volume measurement.
CCSS.Math.Content.5.MD.C.3.a
A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
CCSS.Math.Content.5.MD.C.3.b
A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.
CCSS.Math.Content.5.MD.C.4
Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
CCSS.Math.Content.5.MD.C.5
Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
CCSS.Math.Content.5.MD.C.5.a
Find the volume of a right rectangular prism with whole-number side lengths by packing it with _____ cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
CCSS.Math.Content.5.MD.C.5.b
Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
CCSS.Math.Content.5.MD.C.5.c
Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

This project is worth 100 points and is due no later than _____.