NC Strawberry Investigations Math Questions for 5th Grade

Standard	Question
5OA1	Order of operations with (), {}, and exponents.
5OA2	Write algebraic expressions without solving
5OA3	Students will use two different strawberry plants and record the growth over a period of time. Plants should have a variable condition that allows for a measurable difference in growth. For example, record weekly measures of height or number of leaves on one plant outside in a garden and one plant inside a greenhouse. Create a chart to show the measurements then create ordered pairs using the data. For example, Week 1, plant A has 9 leaves and plant B has 15 leaves. The ordered pair would be (1,9) for plant A and (1,15) for plant B. (See NCDPI Grade 5 Math Unpacking Documents for an example of the chart.) This information will be used to create a coordinate grid. See 5G1/5G2.
5NBT1	Students will use place value to break apart numbers and recognize that each place to the right is ten times the place to the left. Ex. In 7,536.19 6 is in the ones place which represents 6 ones. 3 is in the tens place which represents 3 times 10, 3 tens and 30 ones. The 5 is in the hundreds place (which is ten times the tens place and 1/10 the thousands place) and represents 5 times 100, 5 hundreds, 50 tens and 500 ones. Students should understand that the 1 is in the tenths place and is 1/10 of the ones place.
5NBT2	Powers of 10
5NBT3	a. Use Strawberry image sheet of 100 strawberries to write and compare decimals. Students will count the number of strawberries of each color and then each size. They will write the decimal name for each and then compare the decimals using number sentences.
5NBT4	Students will use a recipe to make a list of ingredients for a "shopping trip." Have students use internet sites for grocery stores to find the prices of each item needed to create their recipe. Next, have students round the prices to the nearest tenth and the nearest whole number to estimate the cost of the ingredients.
5NBT5/ 5NBT6	Students will use multiplication and division of multi-digit numbers to determine the amount of drip line needed for one acre of strawberries. Give students the following information: an acre is 43,600 sq. feet; average row length is 100 ft; rows are generally 5 feet apart. (Students will need knowledge of area and perimeter to complete this task.)
5NBT7	Use the math assessment at the website below to practice decimal addition and multiplication. http://www.ode.state.or.us/wma/teachlearn/subjects/mathematics/assessment/worksamples/5.1_olgasstrawberries_samples.pdf
5NF1	Students will use a strawberry recipe and find the total number of cups for all ingredients. This will involve adding fractions with unlike denominators. A good example can be found at
5NF2	Use the recipe for Fruit Smoothies found at the following website. Students must manipulate ingredients in fractional portions to determine how much of each ingredient is needed. http://www.clover.okstate.edu/fourh/aitc/lessons/conversion2.pdf
5NF3	Fractions as a division problem
5NF4/5NF7	Access the NC Strawberry Association website, click on recipes and choose "Strawberry Fun Food." Find the recipe for Smooth Stuff. Using this recipe, students will multiply fractions by a whole number. Students will also divide fractions by a whole number. Find the quantities for each ingredient when you double the recipe and then triple the recipe. Find the quantities for each ingredient when you half the recipe (÷ by whole number 2) and quarter the recipe (÷ by whole number 4). *Have students find other strawberry recipes and practice multiplying and dividing fractions by whole numbers.
5NF5/5NF6	a. The strawberry farmer ordered plants for 2 acres of strawberries. The plant company only sent enough plants for 1 1/2 acres. Using multiplication of a whole number times a fraction. Find the

	number of square feet the farmer can plant in strawberries. (43,600 sq. ft. in an acre).
5MD1	Students will measure strawberry plants - height, width - in centimeters or inches then convert to the other system. (cm to in and in to cm)
	*If students have a strawberry garden, have them measure the perimeter of the garden in feet, then convert to inches. Next, measure in meters and convert to centimeters.
5MD2	Students will measure specific attributes of a strawberry plant to the nearest 1/8 of an inch. Then create a line plot showing the height, width, number of leaves, number of berries, etc. Students should be able to analyze the data and make generalizations about the data. For example, if there are more "x" marks over the 3/4 inch mark for length of strawberries, students should be able to conclude that most strawberries (on their plants) are 3/4 inch in length.
	*If students have access to a strawberry garden, they should record data in their notebooks on a weekly or daily basis. Any of this data could be used for this skill. Ex. Plot the number of strawberries harvested from each plant or total harvested each day.
5MD3/ 5MD4/ 5MD5	Understand the concept of volume as a 3 dimensional measure.
	*If students have access to a strawberry garden, they will find volume of the garden (a rectangular prism) using the formula L x W x H = V. Explain to students that soil for their raised beds will be purchased in terms of cubic yards or cubic feet. To give students a real world example of this concept in use, access www.gardeners.com/Soil-Calculator/7588,default,pg.html
5G1/5G2	Using the information from 5OA3, students will create a coordinate grid displaying a double line graph to show change over time and to compare growing conditions of two different plants with one variable growing condition.
5G3	Attributes of one shape belong to categories
5G4	Hierarchy of two-dimensional figures.