Chocolate Chunk Raisin Oatmeal Cookies

Assignment:
- Working in a group of four, perform all the necessary research and calculation work (outlined on the back of this page). This is to be handed in on: _____.
- Each group will make a batch of cookies, and bring it in to share with the class. Dates will be assigned on a first-come-first-served basis. Marks are awarded for the look and taste of your cookies so make sure that you are accurate with your calculations!
  Your group`s date to bring in cookies is: _____.

Warning:
1. Use only grocery store-bought ingredients. Never use anything from the chemistry classroom or chemical storage area to make these cookies.
2. **Never** use chemistry lab equipment for making food. Only use clean measurement devices from the kitchen.

Ingredients:
- 0.300 moles of white sugar
- 0.600 moles of packed brown sugar
- 165.0 cm^3 butter or margarine (you will need a stick/bar to measure this out)
- 1 teaspoon (5 mL) vanilla extract
- 1 large egg
- ¼ cup milk
- 0.0310 moles of table salt
- 0.0400 moles of baking soda
- 1 teaspoon (5 mL) ground cinnamon
- 1 cup all-purpose flour
- 1 cup raisins
- 3 cups oatmeal (quick or old fashioned, but NOT instant)
- 1 cup coarsely chopped semisweet chocolate, or chocolate chips

Directions:
1. Measure the appropriate length of butter, and allow to soften.
2. Preheat the oven to 450 K.
3. Beat together the butter, brown sugar, white sugar, milk, vanilla extract, and egg until light and fluffy.
4. In a separate bowl, sift together the flour, baking soda, cinnamon, and salt.
5. Gradually add the dry mixture (flour mixture) into the wet mixture, while beating.
6. Stir oatmeal, raisins, and chocolate chips into the dough.
7. Place spoonfuls of dough on cookie sheet and bake for 12 to 15 minutes. Cool on a wire rack, and enjoy!
8. Bring your cookies in for your classmates and teacher.

Research work:

    A. Find the *chemical name* and *formula* for:

          a. Sugar (sucrose) (same for both white and brown)
          b. table salt
          c. baking soda

    B. Identify the following:

          a. The *name* and *formula* for rancid butter
          b. The *name* and *formula* of the main component of egg shells
          c. The *name* and *formula* of the fragrant component of vanilla
          d. The *name* of the main protein component of egg whites
          e. The *name* of the fat component of egg yolks
          f. The *name* of the main protein component of cow's milk
          g. The *Latin name* of the plant from which flour comes
          h. The *Latin name* of the plant from which oatmeal comes
          i. The *Latin name* of the plant from which chocolate comes

Calculations (show *all* work):

    C. Convert moles of white and brown sugar, respectively, to grams. Then, convert grams to cups using the conversion factor: **1 cup = 205.404 g**.
    D. Convert moles of table salt to grams and then teaspoons by using the conversion: **1 tsp = 7.25 g**.
    E. Convert moles of baking soda to grams and then to teaspoons by using the conversion **1 tsp = 6.70 g**. (**note this conversion is different from the one for table salt)
    F. Convert 450 Kelvin to Celsius, and then to Fahrenheit by using the conversions:

$$°C = K - 273 \qquad °F = (°C \times \tfrac{9}{5}) + 32$$

    G. Using a wrapped stick of butter or margarine, carefully find the width and height (in cm) at the end of the stick. Use the formula volume = length x width x height, and solve for the length of butter you need.

Evaluation:

Pre-lab work

A.	Name and formula	0	1	2	3	4	5	6	
B.	Name and formula (a-c)	0	1	2	3	4	5	6	
	Name (d-i)	0	1	2	3	4	5	6	
C-E.	Conversions	0	1	2	3	4	5	6	7	8
F.	Heat conversion	0	1	2					
G.	Butter calculation	0	1	2					

Cookie

Appearance	0	1	
Taste	0	1	2