



### **Delicious Didn't Happen by Accident**

Do you know how food science is used to increase customer appeal and satisfaction? Learn how Iowa's food industry is developing appealing food products and bring to life Agriculture, Food and Natural Resources standard CS.01.02.02.b and FCS standard 11.10.6.

#### **Event Date & Time:**

April 19th, 2021

1:30 PM - 2:00 PM

#### **Event Components:**

A mixture of live and pre-recorded video. Join some of Iowa's largest food production companies to explore how food science impacts decisions related to customer appeal and developing new products.

Questions:

- What types of guidelines & regulations are you required to follow for food handling safety?
- How are new product concepts presented and developed? What are the steps taken to have a product go from idea to store shelves?
- How is customer feedback utilized?
- How do current food trends impact product development?
- What types of technology are used to maximize productivity?
- How has technology changed in the industry over the past 10 years? What advancements do you predict for the future?

#### **Service Area:**

Family & Consumer Sciences

Agriculture

#### **Audience:**

9th - 12th Family & Consumer Sciences Students

9th - 12th Agriculture Students

Middle School FCS exploratory class

Students in grades 5-14 interested in careers in food science

#### **State Standards Covered:**

**FCS - Hospitality, Food Production, and Nutrition Services**

- 11.10.6 Analyze new products utilizing most current guidelines and innovations in technology

**Agriculture, Food and Natural Resources Cluster Skills**

- CS.01.02.02.b. Analyze how technology is used in AFNR systems to maximize productivity.

**Classroom Assignment:**

Design Your Own Experiment - Chocolate Chip Cookie Science

**Design Your Own Experiment with Chocolate Chip Cookies**

**Total Points available from this lab report: \_\_\_\_/16 Points**

**Introduction:**

For this lab, you will be designing your own chocolate chip experiment with different fats.

**Question:** What type of fat makes the perfect chocolate chip cookie texture?

**Hypothesis:**

**Worth 2 points**

**Materials:**

**Chocolate Chip Cookies #1 Recipe  
#2 Recipes**

1 cup + 2 Tablespoon flour

½ teaspoon baking soda

½ teaspoon salt

**½ cup butter softened**

6 Tablespoons brown sugar  
sugar

6 Tablespoons sugar

½ teaspoon vanilla

1 egg

**Chocolate Chip Cookies**

1 cup + 2 Tablespoon flour

½ teaspoon baking soda

½ teaspoon salt

**½ cup shortening**

6 Tablespoons brown

6 Tablespoons sugar

½ teaspoon vanilla

1 egg

1 cup chocolate chips

1 cup chocolate chips

### Chocolate Chip Cookies #3 Recipe

Refrigerated pre-prepared cookies, brand of your choice (you will need to bake these).

**What is the control variable? (Worth 1 point)**

**What is the independent variable? (Worth 1 point)**

**What are the dependent variables? (Worth 2 points)**

#### Directions:

1. Preheat oven to 325 degrees Fahrenheit.
2. Combine dry ingredients together; 1 cup + 2 Tablespoon flour,  $\frac{1}{2}$  teaspoon baking soda, and  $\frac{1}{2}$  teaspoon salt.
3. Beat together your fat (1/2 cup butter or  $\frac{1}{2}$  cup shortening) with 6 Tablespoons brown sugar and 6 tablespoons sugar.
4. Add egg and  $\frac{1}{2}$  teaspoon vanilla and continue to beat for 3-4 minutes or until nice and fluffy.
5. Gradually add flour mixture and beat until the wet and dry ingredients are completely incorporated together.
6. Add 1 cup of chocolate chips and mix in.
7. Drop by rounded tablespoon onto baking sheets that are lined with parchment paper.
8. Bake for 9-11 minutes or until golden brown.
9. Let cool and record your observations in the data sheet below.

**Data: Worth 3 points.**

	Appearance	Aroma	Taste	Texture
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Sample #1 what fat were you testing? _____	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	Appearance	Aroma	Taste	Texture
Sample #2 What fat were you testing? _____	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	Appearance	Aroma	Taste	Texture
Sample #3 Pre-prepared cookie dough	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

**Conclusion:**

Answer the following questions in paragraph form. **Total 7 Points possible.**

- How did the two cookie recipes compare in terms of appearance (color), aroma, and texture? (Worth 1 Point)
- What texture differences did you detect between the three cookie recipes? (Worth 1 point)
- In what way did the butter effect the appearance, aroma, taste, and texture of the cookies? Base your answer using the data from above. (Worth 2 Points)
- In what way did the shortening effect the appearance, aroma, taste, and texture of the cookies? Base your answer using the data from above. (Worth 2 Points)
- What cookie recipe did you prefer the most and why? (Worth 1 Point)