



Cookie Science

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Cookie Business - Cookie Creations



More than JUST Cookies!

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Google Slides Link

<https://docs.google.com/presentation/d/18-Co1vXGTAamwkRx9vIwMClqMgvluMcs4zrD4bc92G4/edit?usp=sharing>

Control Chocolate Chip Cookie Recipe

Ingredient	Amount (grams)	Amount (volume)	Baker's %
All-purpose flour	317	2 ½ cups	100
Baking soda		1 tsp.	
Baking powder		1 tsp.	
Salt		1 tsp.	
Unsalted butter, cool room temperature	226	1 cup	71.3
Granulated sugar	150	¾ cup	47.3
Brown sugar	150	¾ cup	47.3
Eggs, cool room temperature		2	
Vanilla extract		1 tsp.	
Semi-sweet chocolate chips	255	1 ½ cups	80.4

Cookie Base Recipe

Ingredient	Amount (grams)	Amount (volume)	Baker's %
All-purpose flour	191	1 ½ cups	100
Baking soda		½ tsp.	
Baking powder		½ tsp.	
Salt		½ tsp.	
Unsalted butter, cool room temperature	113	½ cup	59.2%
Granulated sugar	150	¾ cup	78.5%
Egg, cool room temperature		1	
Extract		½ tsp.	
Mix-in		1 cup	

Chewy Cookie

- Use more brown sugar – very hygroscopic (takes in and retains moisture)
 - Keep total amount of sugar the same
 - Dark brown sugar instead of light brown sugar (even more moisture and flavor)
- Add an egg yolk along with the other egg(s) – protein, fat, moisture
 - Can add 1 Tbsp. of flour if you still want a thick cookie
- Substitute some or all of the all-purpose flour with bread flour – depending on how much chew you want
 - Bread = higher protein, so more gluten formation; also absorbs more moisture
- Chill the dough 24-72 hours – allows for absorption
 - Also adds flavor!

Chewy Cookie

- Use melted butter
 - Can add 1-2 T. of flour to reduce spreading and greasiness
 - Butter is 20% water, so melting it helps butter hydrate the flour and form gluten
- Add 1 T. corn syrup
 - After creaming butter and sugars
 - Prevents sugar from crystallizing

Soft Cookies

- Use more brown sugar – hygroscopic
 - Keep total amount of sugar the same
- Add cornstarch – thickening agent, aids in lift and height, dilutes protein
 - Add 1-2 tsp. with the dry ingredients
- Use pastry or cake flour – less gluten provides softness, finer texture
 - Substitute for up to half of the all-purpose flour
 - Cookies will also spread relatively thin so can add slightly more flour or chill the dough balls before baking to prevent too much spreading

Soft Cookies

- Add cream cheese – adds richness and flavor, tenderizes
 - 2-4 oz of room temperature (full fat) cream cheese with butter and sugar, depending on yield of the recipe
 - May need to add 1-4 T. flour to compensate for the added moisture
- Bake at 325°F – less caramelized texture and flavor

Cakey Cookies

- Add cornstarch – thickening agent so adds lift and height, dilutes protein
 - Add 1-2 tsp. with dry ingredients
- Add liquid sweetener – hygroscopic so complete with protein for moisture in dough, slowing gluten development
 - Replace 15-50% of sugar in recipe with liquid sweetener; don't want too much because don't have a crystalline structure to hold air when beaten with butter
 - Will need to add more flour (2 T. to ½ cup) to compensate extra moisture

Cakey Cookies

- Add an egg white to the other eggs in the recipe
 - Adds more water content to dough that then evaporates, creating a taller, lighter
- Use pastry or cake flour – less protein so less gluten development
 - substitute up to half of the all-purpose flour
 - Cookies will spread more so can add more flour or chill your dough

Thick and Tall Cookies

- Chill the dough – no more than 72 hours
 - Ensure hydration of dry ingredients to make a firmer dough
 - Will also marinate the flavors
 - Could also refrigerate the balls of dough until chilled, about 30min to an hour before baking
- Scoop tall mounds of dough – take longer to spread in the oven
- Add extra flour – removes moisture in dough
 - 1-4T. Of extra flour
- Use shortening – higher melting point than butter and no water content (takes longer to melt and moistens less)
 - Replace half of the butter with shortening
- Add cornstarch – thickening agent
 - Add 1-2 tsp.

Thin and Crispy Cookie

- Use more granulated sugar – much less hygroscopic than brown sugar and liquid sweeteners so increased spread and crispness
 - Substitute up to $\frac{3}{4}$ of the total sugar in the recipe or just add additional granulated sugar beyond total amount
 - Be careful to substitute all of the sugar because if there's baking soda in the recipe, it will need acid from brown sugar or other ingredients to activate
- Add milk – increases moisture which gives more spread
 - 1-2 T. with the eggs and vanilla
- Use less flour – increases moisture content of dough
 - Remove up to 3 T.

Thin and Crispy Cookie

- Use a hot, greased baking pan – more grease and heat allows for more spread
 - Place baking pan in oven for 5 minutes or until hot, then spray with nonstick spray
- Use melted butter – gives warmer dough and becomes more browned and crispy
 - Melt butter before vigorously stirring in sugar
 - Let mixture cool before continuing with the recipe as it says
- Flatten the dough – more likely to spread and flatten during baking
 - Can use palm of your hand or bottom of a measuring cup

https://food.fnr.sndimg.com/content/dam/images/food/fullset/2015/5/11/0/FNK_chocolate-chip-cookie-guide-full-group-02_s4x3.jpg.rend.hgtvcom.616.462.suffix/1431360888017.jpeg



Cookie Science Lab Teaching Ideas

- Does each group pick an ingredient variation to try and then all students try each one?
- Does each group want to create their perfect cookie? Turn it into a competition!
- Have students create a 30 second commercial to the class to explain/promote their cookie variation and then taste test.
- Have it as a schoolwide taste test or invite judges to come in to see who has the best cookie.



Home Baking Association: Lab Manual



- Cookie Science Substitution
- Lab 7 – Sweet! Baking Sugars
- pg. 69



Recipe Website Sources: Weight



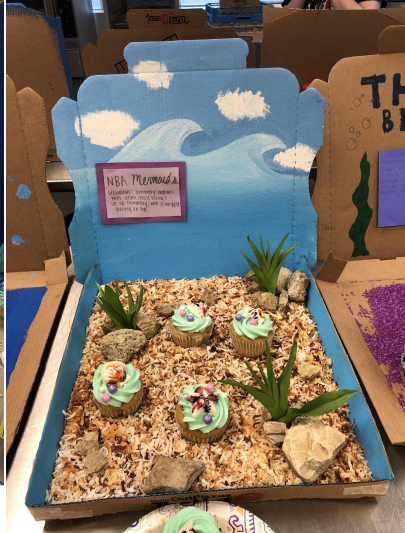
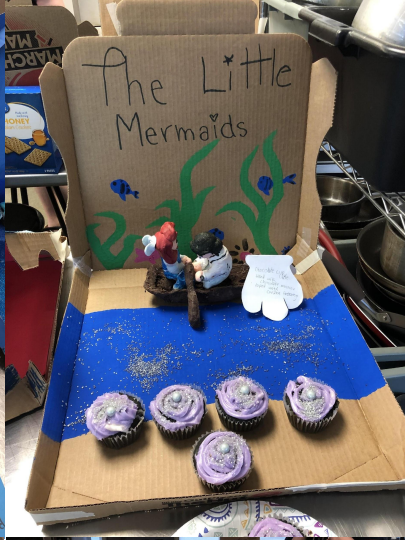
HANDLE THE HEAT



BAKER BY NATURE



SALLY'S BAKING
ADDICTION



Competitions

Cupcake Wars Judging Rubric

Team Name: _____

Please rate the following groups on a scale of 0 – 5.

0 – N/A or was not visible

1 – Inadequate

2 – Needs improvement

3 – Room for improvement, but adequate

4 – Meets expectations, good job

5 – Exceptional job, exceeds expectations

Display Presentation & Creativity:

0 1 2 3 4 5

Cupcake Appearance:

0 1 2 3 4 5

Cupcake Flavor & Texture:

0 1 2 3 4 5

Filling Flavor & Texture:

0 1 2 3 4 5

Frosting Flavor & Texture:

0 1 2 3 4 5

Total Score: _____/25

Comments:

Tic Tac Booyah

1 Orange

2 Yellow

3 Aqua

4 Red

5 Green

6 Purple

[illegible]



Tic Tac Booyah

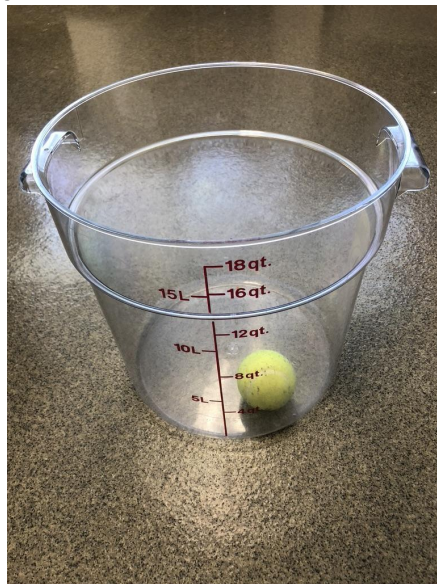
- Have a stack of questions for each group – printed off and cut out
- Each group should have a whiteboard and marker
- Give out the first question to each group
- The group needs to put their answer on the whiteboard and bring it up to the teacher to check
- Correct answer – get a new question and mark a square on the board
- Wrong answer – take their whiteboard back to their group to come up with a new answer to get checked
- Tips: have each group to go through the questions in the same order to keep things “fair”
- Winner – the group with the most three-in-a-rows (can choose if they need a completely new set or can use squares from another three-in-a-row)

Grudge Ball

Instructions

- <http://toengagethemall.blogspot.com/2013/02/grudgeball-review-game-where-kids-attack.html>

I use a bucket with a tennis ball and tape two different lines on the floor for different point values.





Teacher Goals

- Student Shout Outs - at least once a week
 - contact home to give a positive shout out about one of your students
- Have a conversation with each student - could be every lab, each week
 - this is more specific than “build relationships”
- Weekly picture/video to show





Contact Information | Questions?

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