



Joce the Nerdy Baker

5 hacks to instantly become a master baker



Joce the Nerdy Baker

What on earth is this document?

This lil PDF holds the keys to the only science lesson that ends with a sweet treat!

If you want to be a better baker, this PDF has five hacks that will get you there. Plus, you may even understand how and why your baked good acts the way it does. How neat! Here's what we have included:

1. Perfectly round cookies
2. Flat cake layers
3. Perfectly mixed batters
4. Melt-in-your-mouth goodies
5. Light and fluffy baked goods
6. Bonus hacks!

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Joce the Nerdy Baker

1. If you want perfectly round cookies, use a cookie scoop or make a sphere and cut it in half.

Topic: Perfectly round cookies using geometry!

How? Use a cookie scoop to scoop up dough. Cookie scoops look like ice cream scoops but they are in the exact shape of a full “half sphere”. Scrape the scoop against the side of the bowl to flatten the bottom of the dough so it makes the shape of half of a sphere. You can also level the dough so it is flush with the rim of the scoop. Alternatively, roll cookie dough into a sphere and cut it in half, which gives you the half of a sphere shape. Bake with the dome side of the half sphere up. You will get perfectly round cookies every time.

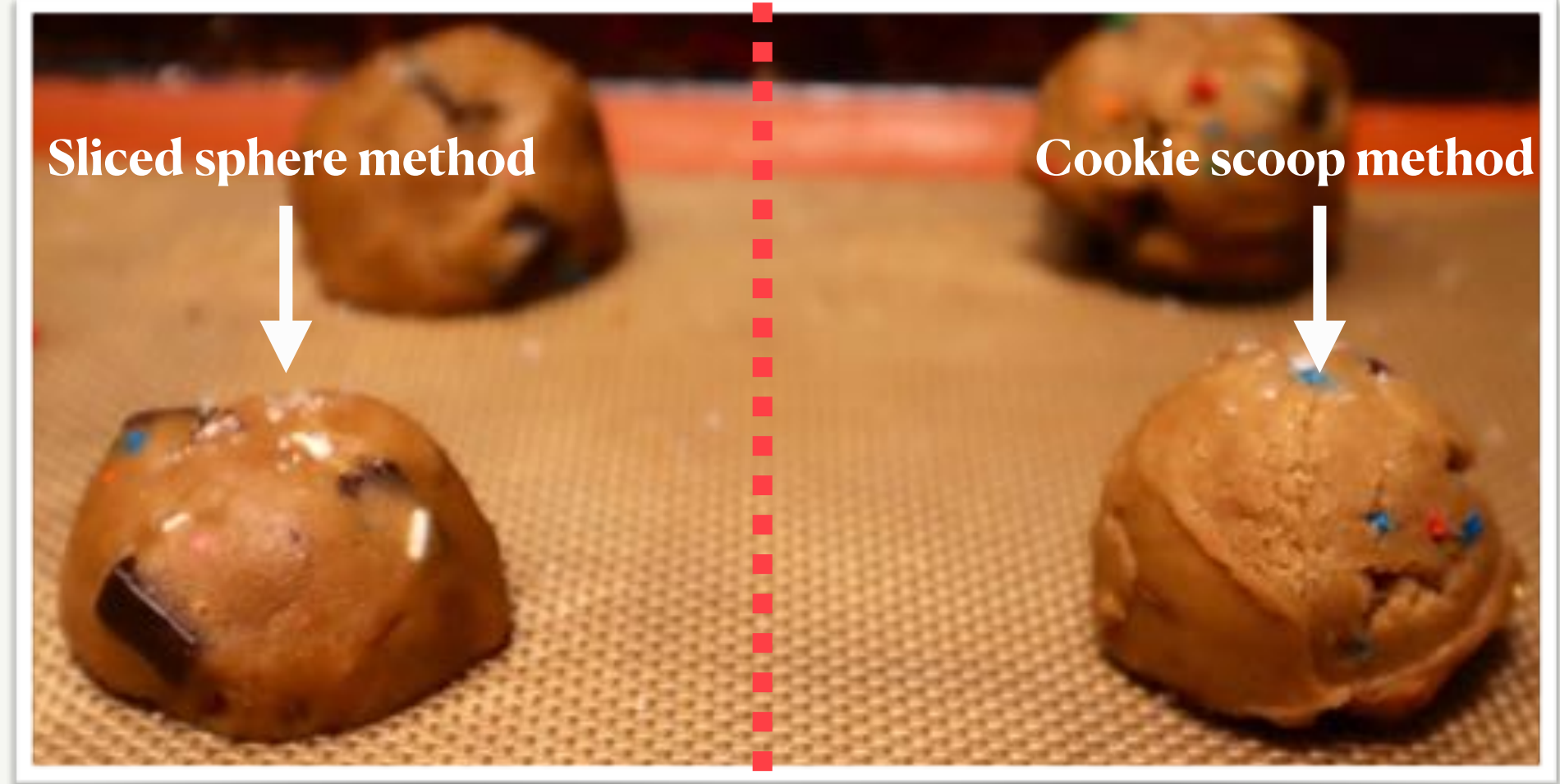
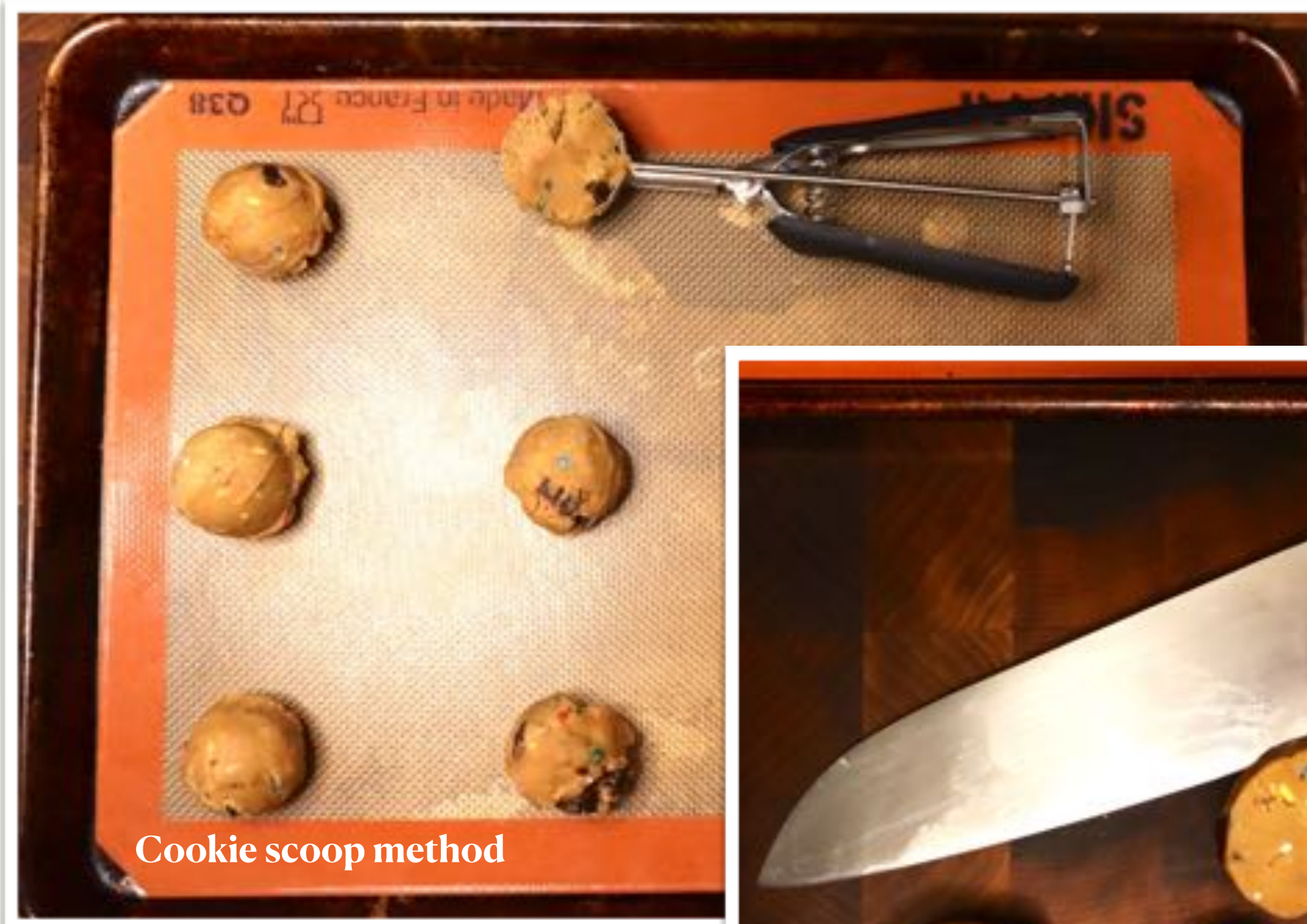
Why? Geometry is king here. When dough is in the oven, it will begin to spread as the fat melts before the protein in eggs transform and stabilize the dough to give it a stable shape. While this fat is melting, it will do so uniformly around the edges of the cookie. This means to produce a circular cookie, we need to start with the shape of a circle touching the baking sheet and mound the dough in such a way that when it melts, it will do it in a uniform pattern. Hence, half a sphere! Gosh, geometry is so cool.

Elevation to this hack: cut out wedges overlapping to make stars or crescent shapes to make moons!

Joce the Nerdy Baker

1. If you want perfectly round cookies, use a cookie scoop or make a sphere and cut it in half.

The Visuals:





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2. If you want a cake to bake perfectly flat, use cake strips to cool down the outer edge of your cake.

Topic: Flat cake layers using heat transfer!

How? When cake batter is in the oven, the outer edges that touch the pan finish baking first. This makes the cake edges firm up and stabilize earlier than the middle of the cake, which makes the edges much shorter than the middle. This is why some cakes end up with a dome or spherical shape. **To prevent the outer edges from baking first, use a cake strip around the outer edge of your pan.** Cake strips can be made from wet paper towels wrapped in aluminum foil or purchased to be reusable (see visuals on next page).

Why? Well, fellow Nerdy Bakers, we're manipulating thermal heat transfer. Uneven baking in a cake pan happens because the metal, glass, or ceramic pans are the hottest parts of the cake system. The cake batter touching the pan will finish baking first due to thermal transfer. This thermal transfer of heat from the pan happens before the cake batter touching the pan can fully react at a high enough temperature with most leavening agents (such as a base like baking soda and an acid like brown sugar or honey). This means the cake at the pan's edges will be shorter than the middle of the cake where the leavening agents had enough time to full react at a high temperature, making it fluffier and lighter. No worries though! We can prevent the edges of our cakes from baking too quickly by slowing down the thermal transfer at the edge of the pan. By using a cake strip, water is the primary slowing agent. Water has a high specific heat, which is much higher than most metals, glass, or ceramics like your cake pan. High specific heat means that it takes a lot of energy to heat water up. In your oven, your wet cake strip cools the edges of your cake pan just enough to allow the entire cake to bake evenly, which will give you perfectly flat cake layers that you do not need to shape or trim.



Joce the Nerdy Baker

2. If you want a cake to bake perfectly flat, use cake strips to cool down the outer edge of your cake.

The Visuals:



1. Place very wet paper towels on a long sheet of aluminum.



2. Wrap paper towels in aluminum foil, creating a width the size of your cake pan.



3. Wrap fully until you cannot see any more wet paper Towel.



4. Twist the ends of your cake strip. You will use this to secure it to your cake.



5. Wrap your cake strip around your cake pan. This is easiest to do once it already has batter.



6. Twist the ends together to tighten your cake strip to your pan. Happy baking!

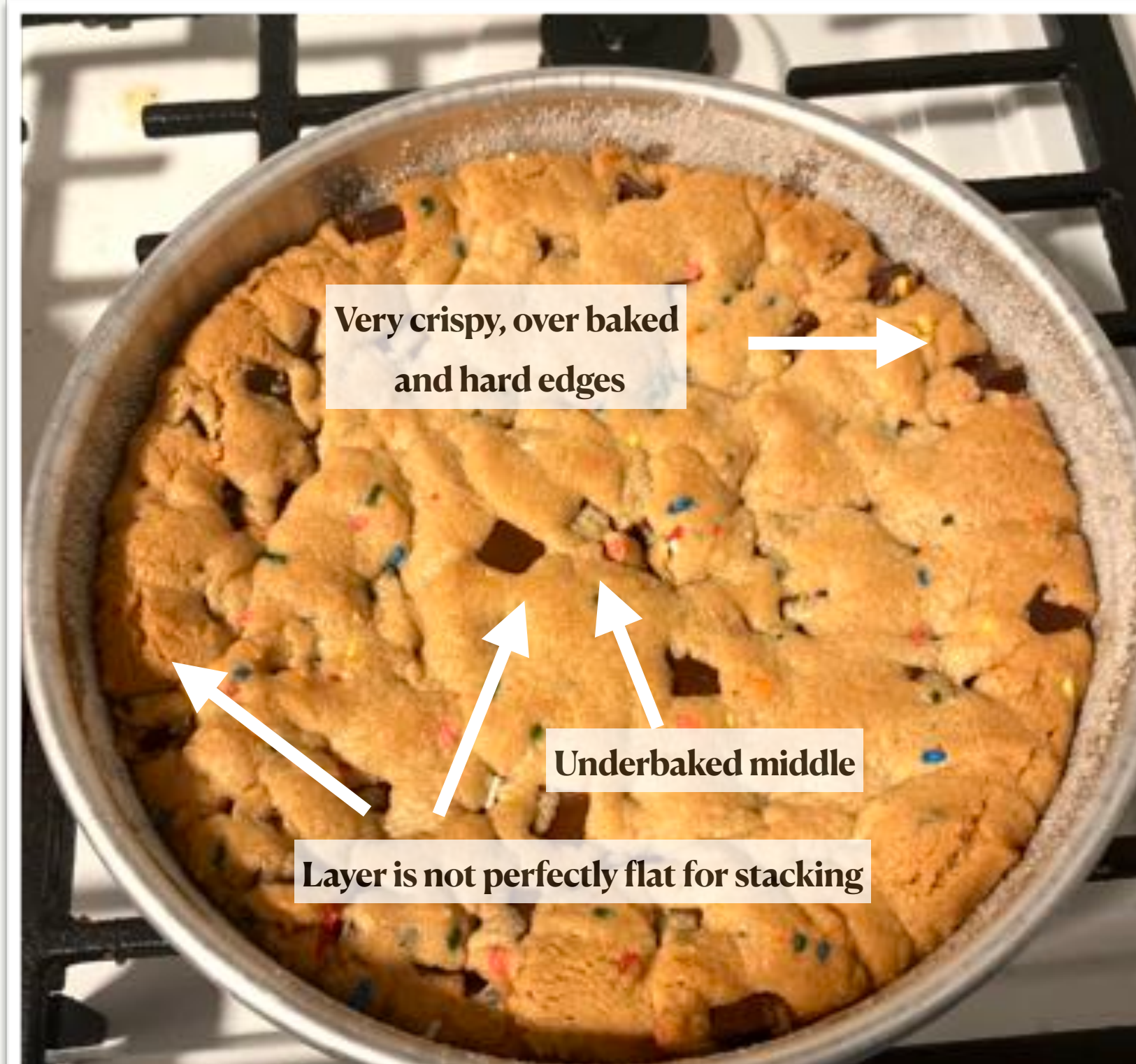


Joce the Nerdy Baker

2. If you want a cake to bake perfectly flat, use cake strips to cool down the outer edge of your cake.

The Proof:

Baked without a cake strip



Has a significant color gradient from light brown to deep golden

Baked with a cake strip



Color is an even light golden throughout the entire cake layer.



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3. Make sure all of your ingredients are at the same temperature before you start mixing.

Topic: Perfectly mixed batters using homogeneous mixtures!

How? Generally about an hour before you start baking, take all of your cold ingredients out of the fridge including eggs, milk, cream, butter, etc. Your ingredients will not go bad if they are left out for 1-2 hours to warm up to room temperature. If you forget to warm your ingredients up, the best hack to warm up butter works for the rest of your cold ingredients too: heat up an empty microwave safe bowl in the microwave. Warm it until it is hot (perhaps 30 seconds-1 minute). Place the hot bowl over your cold ingredients to fully cover them (eggs, butter, etc.) for a few minutes to warm them up. You can directly pour your cold milk or cream into the hot bowl to warm it to room temperature a bit quicker as well. A second way to quickly warm butter or cold cheese (cream cheese or harder cheeses) is to finely grate it with a microplane. This increases the surface area of the butter or harder cheeses to warm to room temperature in just a few minutes.

Why? Like likes like! Consider your cookie dough, cake batter, brownie batter as a delicious, edible system. In order for this system to be homogenous (all ingredients evenly distributed), all parts of the system need to be the same warm temperature so they stick to other ingredients. When ingredients are cold, they are difficult to mix because they do not have the thermal energy (temperature) to stop sticking to themselves and stick to something new (like how to cream butter into sugar). When ingredients are warm, they have enough energy to mix together and form a perfect dough or batter.

Note: this does not apply for all doughs. Croissant and pie doughs do require cold butter to bake up into a flaky texture (we will explore this flaky, delicious magic soon!).



Joce the Nerdy Baker

4. When mixing butter (fat) and sugar together, keep mixing until the mixture is lighter and paler in color.

Topic: Melt-in-your-mouth goodies using density!

How? Use a stand mixer or hand mixer to cream together butter and sugar. Initially, it will be the same color as the original butter, but keep beating it to lighten it to a pale yellow color. Butter is about 80% fat. The rest is water, cream or milk, and vitamins/minerals. Think of each molecule of fat as a really long rope. If you leave a bunch of ropes in a pile, they inevitably get tangled together, right? A bunch of tangled ropes together is basically your butter at room temperature (these ropes are formally called hydrocarbons). That's why it's solid and holds together well. What if you twisted, cut, and reshaped those ropes together to make a basket? You could hold something with your rope basket. This is the exact same process you are doing with the fat in butter. The long "ropes" of fat in butter can be reshaped, twisted, and cut by sharp sugar molecules to trap air. **When we trap air in our butter by mixing for extended periods of time, we make it lighter and fluffier because air is lighter (less dense) than butter and sugar.**

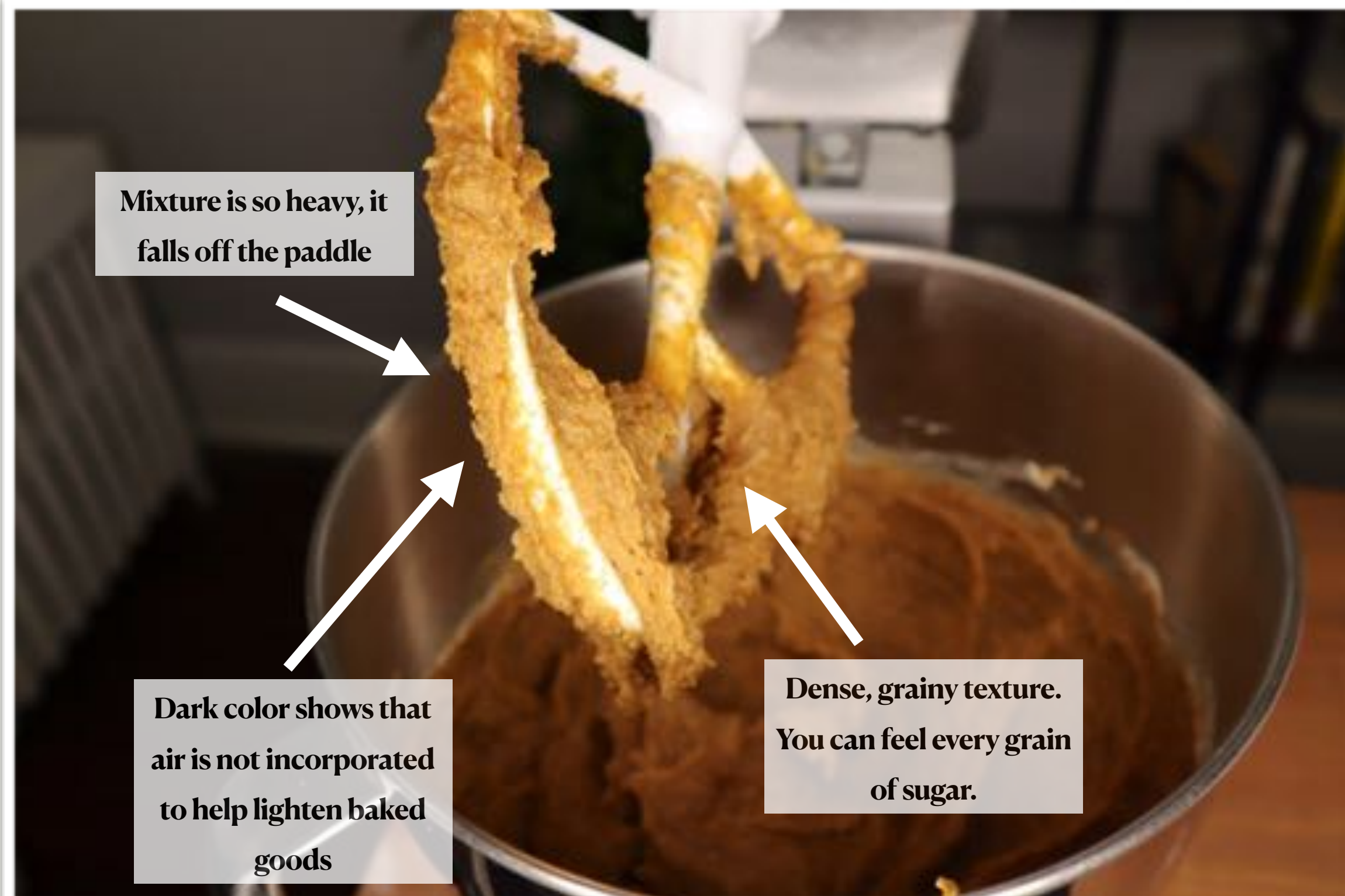
Why? Density of your butter might seem very unimportant, but it is the one ingredient that will make people go from saying "this is really good" to "HOLY f***, can I have another one?" Have you ever eaten a piece of cold butter? It can leave your mouth with a greasy feeling because the butter takes a long time to warm up and melt in your mouth when you have so many molecules close to each other. It is unpleasant (to put it nicely). When your butter is not lightened with air, it leaves large pieces of butter with very little surface area that take a long time to melt. When you lighten your butter with air, it separates the fat molecules from one another and traps molecules of air, which makes very small pieces of butter in your baked good. This helps the fat melt quickly in your mouth. It also makes your baked good less dense with a better crumb. This magic technique is what gives you a *melt in your mouth* cake that people go crazy for.



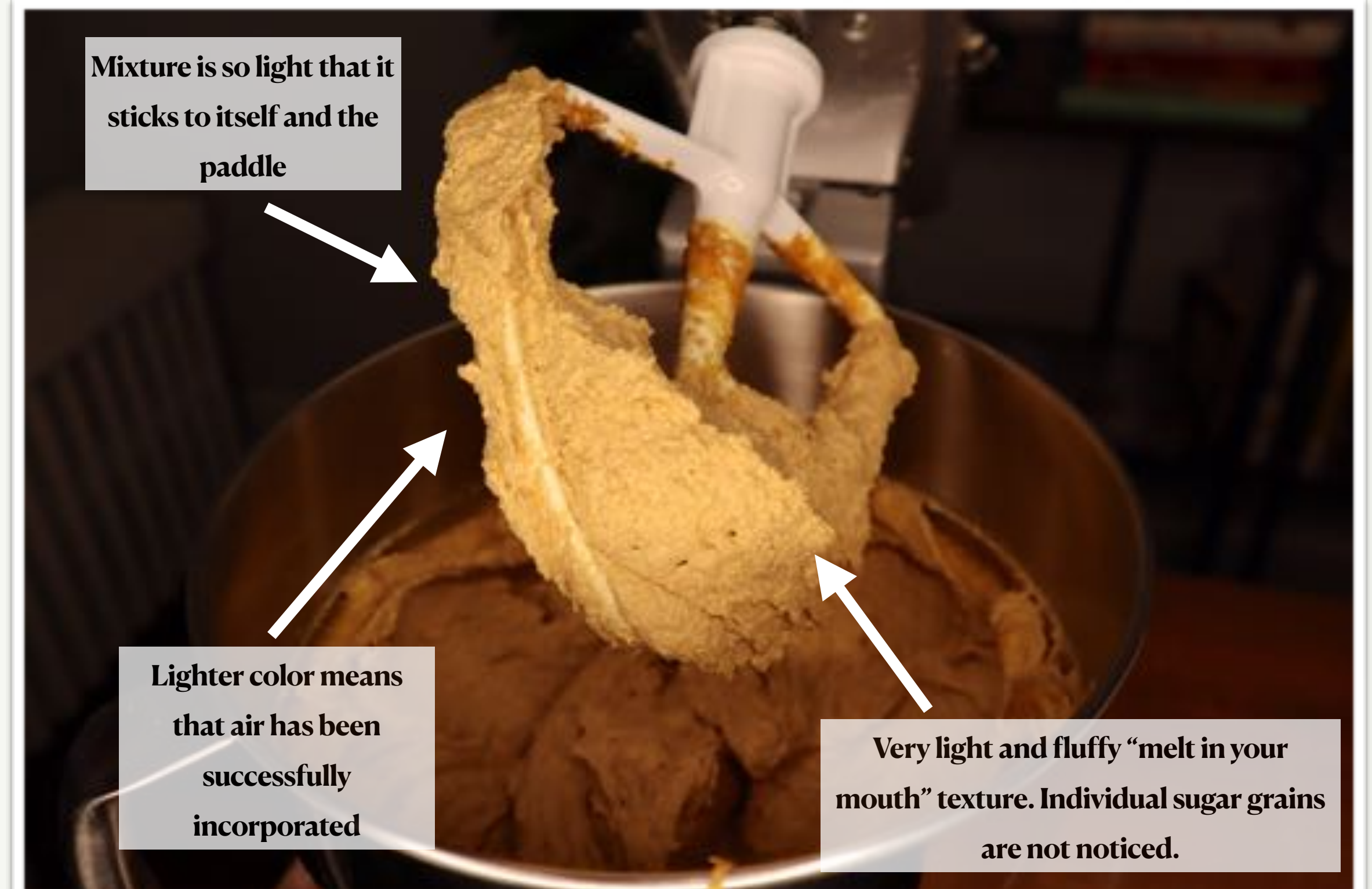
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4. When mixing butter (fat) and sugar together, keep mixing until the mixture is lighter and paler in color.

The Visuals:



Mixed butter and sugar (about 30 seconds of mixing)



Creamed butter and sugar (about 3 minutes of mixing)



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5. Think of baking like an acid base reaction. In order to get a light and airy baked good, you need an acid and a base to succeed.

Topic: Light and fluffy baked goods using acids and bases (chemical reactions)!

How? Acids and bases are phenomenal in baking because they balance each other. **Remember the vinegar and baking soda volcano from elementary school? That exact same process applies to most baked goods.** When baking, make sure your recipes include an acid such as brown sugar, cream of tartar, cocoa powder (natural, not dutch processed or black), caramel, egg whites, honey, fruits, juices (like lemon juice), alcohol, vinegar, etc. Also, make sure your recipe includes a base, which is usually baking soda, but could also be black or sometimes dutch cocoa powder. If you want to automatically include an acid and a base, use baking powder! It has both an acid and a base, which is activated with water. Acids and bases are measured on a pH scale, which generally goes from 0-14. An acid has a pH below 7. A base has a pH above 7. Water is considered neutral with a pH of 7. Most recipes already include an acid (or two) and a base, but if you're baking for the love of baking, just double check. When acids and bases react in a baked good, they make gas bubbles that get trapped in the batter, which leaven it to light and fluffy delicious goodness. YUM!

Why? We're controlling chemical reactions in our food when we use acids and bases. When an acid (think honey) and a base (think baking soda) react in your baked good, they produce water, carbon dioxide, and usually a salt. Here's the magic: that water and salt usually add a bit of flavor and moisture to your baked good. The carbon dioxide is a gas, which is lighter than your batter and helps to lighten and leaven your baked good to make it fluffy. As the carbon dioxide is produced, it becomes trapped in your batter as the proteins and structure of your baked good take shape in the oven. This is why your baked goods go in as batter or dough, but come out light and fluffy!

Bonus info: Natural cocoa powder is naturally a bit acidic! Dutch processed cocoa powder is processed with an alkaline solution, which just means a basic solution with a pH above 7.



Joce the Nerdy Baker

6. BONUS HACK: while baking can feel precise and complex, remember that you are making something creative, unique, and fricking DELICIOUS that only you can make.

How? Listen, I know that everyone thinks their perfect little baked good is special and unique, but here's the hack: yours actually *is*. There are no two sets of ingredients that are *exactly* the same. Wheat and other grains change from season to season, which will impact the rise, texture, protein content, and flavor. Eggs will differ from various chickens or birds, which will impact fat and acid content (egg white is acidic!). Milk will taste different depending on the type of animal and the food they eat, which impacts fat and vitamin content. This also impacts butter! Fruits and veggies will taste better pending on the season. There are also no two ovens, pans, weather seasons, and humidity conditions that are the same. There is an incredible amount of variety and each of these will impact your baked goods. This is AMAZING! It is such a gift in baking because every single thing you make will be unique and delicious in it's own way. No stress if things do not go as you expected. Just blame the weather or the growing season ;)

Why? This feels like millennial optimism ~vibes~, but seriously: no matter what you make, no matter how much it differs from your expectations, it is still a worthwhile, creative endeavor. No one else can make what you make and how you make it. It is uniquely yours; savor that. Plus, you probably learned something along the way and hopefully had some fun! That alone is worth it.

And remember, even if your baked good does not turn out exactly as you expected it to, there are a million ways to repurpose it! The next page has a few creative examples.



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6. BONUS HACK: while baking can feel precise and complex, remember that you are making something creative, unique, and fricking **DELICIOUS** that only you can make.

The Repurposes:



What it started as: delicious, light and fluffy cake in vanilla bean and dark chocolate layers.



What it became: a light cake that absolutely crumbled if you thought about touching it. The flavor was amazing though!



Repurposed by: turning them into lil chocolate-covered cake balls for a bachelorette party. Everyone said they were the best they had ever had!

Other potential repurposes:

Cupcakes did not rise enough? → Take it out of the liner, cut it in half, put icing in-between and make it into a delicious, sweet sandwich!

Cookies look awful, but taste good? → Crumble them up, make up some quick whipped cream, and you have instant cookie fluff! A crowd favorite. OR blend them up into a cheesecake crust!

Baked good is a little too salty? → Make up a quick caramel with sugar, salt, and cream, but leave out the salt. Top your baked good with the caramel. Instant salted caramel baked good. And, they'll think you planned it!

Cake is dry/kinda burnt and fell apart? → Grab some jars, cupcake liners, or bowls. Make your favorite icing. Make a simple syrup with fruit. Moisten the cake with the simple syrup. Alternate layers of crumpled moist cake with fruit (if you have it) and icing. It looks so stunning and no one will be able to tell the cake fell apart!