

## Photo Description



This image shows a cooking scene with dry ingredients in a white bowl (cinnamon and flour mixed together) and a stand mixer containing a red liquid, representing a mixture being created. Both examples show how different materials can be combined together while still keeping their own properties—you can still see the brown powder and the red liquid even when they're being mixed.

## Scientific Phenomena

**Anchoring Phenomenon:** When you combine different materials together, you create a mixture.

**Why This Happens:** A mixture forms when two or more materials are stirred, blended, or combined together. The individual materials do not change into something completely new—they are just being combined. In this kitchen example, when flour and cinnamon are mixed in a bowl, they blend together, but you can still see both the light and brown colors. Similarly, when ingredients are added to a stand mixer, they combine to create batter or dough. Each material keeps its own characteristics; they're just sharing the same space now.

## Core Science Concepts

1. **What is a Mixture?** A mixture happens when two or more different materials are put together. The materials mix but stay the same—they don't change into something brand new.
2. **Observable Properties in Mixtures:** Even after mixing, you can often still identify the individual materials by their color, texture, or appearance. For example, you can still see brown cinnamon powder within the lighter flour.
3. **Reversible vs. Non-Reversible Changes:** Some mixtures can be separated back into their original parts (reversible), while others cannot be easily separated once mixed (non-reversible). This connects to later understanding of physical vs. chemical changes.
4. **Everyday Mixtures:** Mixtures are all around us—in the kitchen (cookie dough, cereal and milk, salad), in nature (sand and shells on a beach), and in homes (paint colors, salt water).

### Pedagogical Tip:

When teaching mixtures to third graders, use the predictive, hands-on approach: Before students mix materials, have them predict what the mixture will look and feel like. Then let them observe and describe the actual results. This builds scientific thinking skills and helps students understand that observations are more reliable than assumptions.

### UDL Suggestions:

**Representation:** Provide picture cards showing examples of mixtures alongside non-mixtures (like a peanut butter sandwich vs. mixed trail mix) so visual learners can categorize and compare. **Action & Expression:** Allow students to choose between drawing, building with manipulatives, or verbal description when explaining what a mixture is. **Engagement:** Let students select which materials they want to mix during investigations to increase autonomy and motivation.

## Discussion Questions

1. What do you notice about the flour and cinnamon in the bowl? Can you still see both materials, or did they disappear? (Bloom's: Remember/Understand | DOK: 1)
2. If we mixed the flour and cinnamon together, then tried to separate them again, do you think we could easily pull them apart? Why or why not? (Bloom's: Analyze | DOK: 2)
3. What other mixtures have you seen adults make in your kitchen at home? What materials did they combine? (Bloom's: Apply | DOK: 2)
4. Compare mixing flour and cinnamon to mixing red food coloring into water. How are these mixtures alike and different? (Bloom's: Analyze/Evaluate | DOK: 3)

## Extension Activities

1. Mystery Mixture Investigation: Place three unlabeled materials in separate containers (examples: salt, sugar, sand, cinnamon, flour). Have students predict which ones are the same and which are different based on visual and tactile observations. Then, have them mix pairs together in clear cups to observe how the mixtures look different. Students sketch and label their observations in a science journal.
2. Create-Your-Own Trail Mix: Students select 3–4 ingredients (cereal, raisins, nuts, pretzels, chocolate chips, coconut flakes) and combine them in a cup to create their own mixture. They predict what the mixture will look like, observe the results, and describe the properties using words like "crunchy," "colorful," "bumpy," etc. Note: Always check for nut allergies.\*
3. Separation Challenge: Create a simple mixture (sand + small pebbles, or pasta shapes + rice) and challenge students to separate the mixture using tools like strainers, sieves, or spoons. Discuss which tools work best and why, connecting to the idea that some mixtures are easier to separate than others.

## NGSS Connections

Performance Expectation:

3-PS1-1: Plan and conduct an investigation to provide evidence that matter can be broken down into smaller pieces and/or combined into larger objects.

Disciplinary Core Ideas:

- 3-PS1.A (Structure and Properties of Matter)

Crosscutting Concepts:

- Patterns (Students observe that mixing is a pattern of combining materials)  
- Cause and Effect (When materials are combined, a mixture results)

## Science Vocabulary

\* Mixture: When two or more different materials are put together in the same place.

\* Combine: To put things together; to mix materials so they share the same space.

\* Ingredient: A material or item that is mixed with other materials to make something new (like flour in a cake recipe).

\* Property: A characteristic of a material you can observe, like color, texture, size, or smell.

\* Separate: To divide things that have been mixed; to pull materials apart.

\* Reversible: Something that can be changed back to the way it was before.

### External Resources

Children's Books:

- Separating Mixtures by Sian Smith (DK Findout; explores how mixtures can be separated)
- What is Matter? by Jennifer Boothroyd (Lerner Publishing; includes sections on mixtures)
- Mixing It Up by Scholastic (teacher-friendly resource with kitchen-based experiments)

YouTube Videos:

- "Mixtures for Kids" - Homeschool Pop (2:45)

A bright, animated explanation of what mixtures are with everyday examples like lemonade and cereal.

<https://www.youtube.com/watch?v=hP9g1U9vDHg>

- "Making Mixtures" - National Geographic Kids (3:10)

Shows real-world examples of mixtures being created in a kitchen, including stirring and combining.

<https://www.youtube.com/watch?v=qF0W6W7O8jw>

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Teacher Note: This lesson uses the kitchen/baking context as an authentic, relatable anchor point. Third graders have experience with food preparation, making this phenomenon highly engaging and concrete. Be sure to follow your school's food allergy protocols before conducting any taste-related activities.