

## THE STANDARD

# Formation of New Substances

*Conduct an investigation to determine whether the mixing of two or more substances results in new substances.*

 ANCHORING PHENOMENON

## The Cup That Bubbled, Got Cold, and Made Something New

Pour one clear liquid into another clear liquid and nothing happens. Pour a white powder into a different liquid and it foams up, overflows, and the cup turns cold to the touch. Both times you mixed two things, but one mixing made a brand new substance and the other didn't. 5th graders will want to know what's different about the second one.

## DRIVING QUESTION

*“Why does mixing some substances make something totally new, while mixing others just gives you a blend?”*

 INVESTIGATIVE 1

### Baking Soda Meets Vinegar

Drop a spoon of baking soda into a cup of vinegar and it erupts with fizzing bubbles. Run it again with the same amounts and it fizzes the same way every time. This sharpens the anchor's big question: the bubbles are a gas that wasn't there before, so a new substance formed. The fizzing is the evidence.

## DRIVING QUESTION

*“Where do the bubbles come from, and does that mean a new substance was made?”*

 INVESTIGATIVE 2

### Salt in Water: New Substance or Just a Blend?

Stir salt into a cup of warm water until it disappears. It looks like the salt is gone, but let the water dry out and white salt crystals come right back, so nothing new formed. Comparing this to the fizzing cup helps 5th graders see that dissolving is not the same as making a new substance.

## DRIVING QUESTION

*“When the salt seems to disappear in the water, did it turn into something new or is it still salt?”*