THE STANDARD

Chemical Reactions

Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

ANCHORING PHENOMENON

Burning Steel Wool on a Balance

A piece of steel wool on a digital scale. Touch a flame to it. It glows red, sparks fly, the metal turns dark and crumbly. The number on the scale *goes up*. Fifteen seconds of demo, but the result breaks every intuition students have about what happens when something burns. They'll be circling back to it all week.

DRIVING QUESTION

"Where did the new mass come from when the steel wool burned?"

INVESTIGATIVE 1

Baking Soda + Vinegar: Temperature Goes Down

Vinegar in a beaker, room temperature. Sprinkle in baking soda. It fizzes violently. Temperature drops several degrees. The smell changed, the solid disappeared, a gas escaped. Use this to sharpen the "is it really a reaction, or just mixing?" lens.

DRIVING QUESTION

"Is this a real chemical reaction, or just three things getting mixed together?"

INVESTIGATIVE 2

Iron Nail Rusting in Saltwater

A shiny iron nail in a cup of saltwater on the windowsill. Photograph and weigh on day one, then weekly. By week two, it's covered in orange rust and the mass has shifted. Same change as the anchor, running in slow motion.

DRIVING QUESTION

"What is the orange flaky stuff on the nail, and where did it come from?"