THE STANDARD

Particles of Matter

Develop a model to describe that matter is made of particles too small to be seen.

ANCHORING PHENOMENON

The Flat Basketball That Comes Back to Life

A basketball is sitting flat and squishy on the floor. You push a pump needle in and start pumping. Nothing new goes in that you can see, but the ball gets firmer and rounder with every push. Then it bounces like new. 5th graders know you added air, but air looks like nothing. So what is actually filling that ball and making it hard?

> **DRIVING QUESTION**
> *"If you can't see anything going into the ball, what is making it firm enough to bounce?"*

INVESTIGATIVE 1

The Syringe You Can Barely Push

Seal the tip of a plastic syringe, pull the plunger back to fill it with air, then try to push it in. It moves a little, gets harder and harder, then stops. Nothing leaked out, yet the air took up less room. This sharpens the anchor: the air is made of pieces that can be squeezed closer together, which is exactly what's happening inside the basketball.

> **DRIVING QUESTION**
> *"If no air escaped, how did the same air fit into a smaller space when we pushed?"*

INVESTIGATIVE 2

The Sugar That Disappears but Stays

Stir a spoonful of food-grade sugar into a clear cup of warm water. Keep stirring and the sugar vanishes. The water looks plain again, but the sugar is still in there. Let the water dry up and the sugar is left behind. This sharpens the anchor a different way: matter can break into pieces too small to see and still be completely real, just like the air we couldn't see.

> **DRIVING QUESTION**
> *"If the sugar disappeared from sight, where did it actually go?"*