THE STANDARD

Uneven Distribution of Earth's Resources

Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

ANCHORING PHENOMENON

Texas Used to Be Underwater

Texas sits on top of one of the largest oil reserves in North America. It's also covered in fossilized seashells, ancient coral reefs, and limestone made from billions of dead sea creatures. The whole state used to be ocean floor. Then plate tectonics, climate shifts, and millions of years turned a shallow sea into the place where the modern oil industry was born. The oil under Texas isn't a coincidence. It's the inheritance of that ancient ocean.

> DRIVING QUESTION
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> *"Why do we find oil in Texas and not, say, the middle of the Rocky Mountains?"*

INVESTIGATIVE 1

The Coal Belt and the Old Swamps

Pennsylvania and West Virginia have huge coal deposits. So does Illinois. So does eastern Kentucky. Map them and the pattern is unmistakable: a wide belt running through the Appalachians and into the Midwest. Map the same area 300 million years ago and you'll see something else: a vast network of swampy lowlands during the Carboniferous Period. The coal is the buried, compressed remains of those swamps. Same idea as the anchor, different resource, different process.

> DRIVING QUESTION
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> *"What does the current location of coal tell us about what that land used to look like?"*

INVESTIGATIVE 2

The Ogallala Aquifer Is Draining Fast

The Ogallala Aquifer stretches under eight states in the Great Plains. It holds enough water to cover the entire continental US in a foot and a half. The water in it accumulated over thousands of years from slow seepage through soil and rock, and USGS estimates it would take roughly 6,000 years to refill at natural recharge rates if drained today. Since the 1950s, we've pumped it for crop irrigation. In some parts, water levels have dropped over 150 feet. Replenishment happens on a geologic clock. Extraction happens on a human clock. The two don't match.

> DRIVING QUESTION
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> *"If an aquifer takes thousands of years to fill, what does it mean to call groundwater renewable?"*