

ACTIVITY GUIDE

How the Oil & Gas Industry Drills for Oil & Natural Gas



The Activity

Students take turns “drilling” with a large, clear straw into a marble cake to take their chance at hitting oil or natural gas pay.

What You Need:

- One marble cake with green or blue icing, per 3-4 students
- Large, clear straws (2-3 per student)
- Blank 8.5” x 11” paper and pencil
- Coins (real or play) or pieces of candy

How It Works:

1. Draw six unequal regions on a landscape 8.5”x11” sheet of paper, labeling each region with a number. This represents each landowner’s piece of property, or a lease.
2. Distribute 5 coins and 2-3 straws to each student and ask them to approach the cake.
3. Ask the first student to choose a region on which to drill, and charge him 2 coins to lease the property from that landowner. This gives him the permission to drill on that land.
 - a. Explain that a majority of the drilling is now horizontal drilling. A well is drilled vertical and is eventually steered horizontal into the reservoir rock. Hydraulic fracturing then allows oil and gas to flow out of the rock up to the surface.
 - b. For purposes of this activity, students may choose to drill horizontal if their lease is on the edge of the cake.
4. The first student takes his turn to drill.
 - a. If the student hits a substantial amount of black cake (symbolizing oil and natural gas), draw a dark circle on the sheet to mark his drilling location. Pay him 4 coins to show students that there’s a return on his investment.
 - b. If he misses, draw an X.
5. Explain that with the successful well, there’s a higher chance that there is oil and natural gas on the surrounding leases, so the landowners will be able to negotiate a lease for a higher price. The value of the leases near successful wells should increase to 3 coins, or 4 coins if there are more than 1 successful well there.
6. Ask the second student to choose a piece of land, and charge him accordingly.
7. Explain that companies use data like that on your sheet to determine the geologic formation underground, the location of the reservoir, and drilling locations to maximize production from each well.
8. All students should take their turns drilling at least once.
9. Explain that this is a very simplistic way of how the exploration process works. Since we can’t see underground, companies use seismic waves, and the waves that come back are recorded to make seismic charts. This data is then interpreted by geoscientists to pin-point drilling locations.
 - a. On a larger scale, companies reduce financial risk by partnering with other companies. For example, two students can pool their money to each take a 50% interest in a well. They would then share the profits if the well hits oil or natural gas.
10. After you have adequately “drilled the field,” ask the students where they believe the reservoir is. Use your lease map to draw out what they think the reservoir, or chocolate, looks like inside the cake.
11. Cut through the cake to test their theory on the shape and size of the reservoir.
12. Enjoy eating your cake!

Notes:

- Marble cakes may be ordered through grocery store bakers, with a bit of explanation.
- Large straws may be ordered by visiting your local Chinese bubble tea shop.