

Activity Sheet

(Updated Spring 2020)

Discovery

Scientists need to investigate environments they cannot always directly touch and see. They develop tools to help them understand the characteristics of spaces they cannot observe with their basic senses. For example, an MRI machine uses the magnetic field and radio waves to see what is happening inside the body. Geologists (scientists who study the earth) must understand the earth many miles below its surface: what materials are there, how the materials are stacked onto each other, and whether or not the materials are stable.

What could a geologist do in order to see miles below the surface of earth?

Describe the process below and draw a picture of the tools used to conduct the investigation.

Production

Once oil and gas are found, the big question becomes how to get to it and pull it up from the ground! Imagine you are walking in a desert and you are thirsty. You come to the edge of a cliff and, below, you see a sparkling pool of cool, refreshing, delicious water. Unfortunately, you CANNOT get to the water. What equipment could you make? **List the materials you would need to make your tool. Show how you would use those materials to get your refreshing drink.**

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Transportation

Crude oil sells for \$60 per barrel (bbl). It costs \$10 per barrel for you to extract it. As the operations manager, you must decide whether you want to continue shipping by railroad or if you want to construct a pipeline to transport your product to the refinery. It costs \$5 per barrel to ship on the railroad. If you build a pipeline, your transportation cost will go up to \$30bbl for the first year. After the first year, the transportation cost will only be \$1bbl. You expect to sell 1,000 barrels per year. Will you choose to continue to ship by railroad or will you build the pipeline? Explain your choice below.

Computation Space:

Railroad transportation cost for five years:

Pipeline transportation cost for five years:

My transportation choice is...

Because...

Use

Oil and natural gas are used in a wide variety of products. Look through the exhibit and think about all the different products that are made from petroleum products. Petroleum is a nonrenewable resource. What are your thoughts about how we use nonrenewable resources? Were there any products made from petroleum that surprised you? Explain your opinion.

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Impact

Oil and gas production provide many benefits for people. There are also some challenges that exist for people and the environment when they use fossil fuels. Imagine you are a reporter who is interviewing people involved with the oil and gas industry. Think about how the industry affects oil workers, consumers, animals, and the natural environment. What three questions will you ask about how the oil and gas industry affects people and the environment?