**Student Handout 2**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Lesson 3—Oil and Natural Gas Exploration and Production**

**Lab 2—Understanding Viscosity**

**Introduction**

In this simple experiment you will explore the meaning of viscosity and its importance as a physical property of fluids.

**Materials**

* Ruler
* Paper towel
* Wax paper
* Timer
* Permanent marker
* 3—3 oz. paper cups (1 for each liquid)
* Plastic spoon
* Vegetable oil
* Syrup
* Honey

**Procedure**

1. Cut a sheet of wax paper about 30 centimeters long
2. Use the maker to draw a line across the wax paper about 3 cm from one edge. See diagram below.

Line

Wax Paper

1. Place the paper towel on your desk. This is to catch the liquids.
2. Place the wax paper on the paper towel.
3. Pour about a spoonful of the oil on the line you drew on the wax paper.
4. Quickly raise the edge of the wax paper until vertical and time how long it takes for the oil to reach the opposite edge of the wax paper.
5. Record the time in the data table.
6. Repeat steps 4 through 7 for the other two liquids.

**Results**

|  |  |
| --- | --- |
| **Liquid** | **Time** |
| Oil |  |
| Honey |  |
| Syrup |  |

**Analysis and Conclusions**

1. Plot a graph of the data collected in your experiment

.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

Title \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Since all three materials are liquids, why do they not all flow at the same speed?

|  |
| --- |
|  |

1. Rank the liquids in order of decreasing speed.

|  |
| --- |
|  |

1. Which liquid has the lowest viscosity? The highest viscosity?

|  |
| --- |
|  |

1. If you were to include water in your ranking of liquids, where would it be?

|  |
| --- |
|  |

1. Explain how the viscosity of oil might affect how easily it can be pumped from the ground.

|  |
| --- |
|  |
|  |
|  |

1. Oil deposits are often associated with salt water and natural gas. What would be the correct sequence of these materials from top to bottom?

|  |
| --- |
|  |