

Name: _____

Laminar and Turbulent Flow Lab

SPH4C

Part 1: Viscosity

Materials: two beakers, two graduated cylinders, vegetable oil, corn syrup, stopwatch

Procedure:

Measure 20 mL of vegetable oil in one of the graduated cylinders.

Gently pour the vegetable oil into one of the beakers. Use the stopwatch to measure the time it takes to do so.

Time = _____

Measure 20 mL of corn syrup into the other graduated cylinder.

Gently pour the corn syrup into the other of the beakers. Use the stopwatch to measure the time it takes to do so.

Time = _____

Which liquid had the higher viscosity? Explain. _____

How does the viscosity of both fluids compare to the viscosity of water?

Pour the corn syrup from the beaker back into the graduated cylinder and look closely at the shape of the corn syrup as it flows.

Is there a bulge in the liquid? Where? _____

In the space below, sketch a profile of the syrup as it flows:

Part 2: Laminar and Turbulent Flow

Materials: beaker, corn syrup, food dye, stirring rod

Pour the corn syrup back into the beaker again.

Gently place a drop of food dye in the corn syrup. What happens?

What would happen if you placed the drop of food dye in water? Explain why.

Take the stirring rod and *very slowly* stir the corn syrup. What happens?

Is this laminar or turbulent flow? Explain how you can tell. _____

Take the stirring rod and stir the corn syrup more rapidly. What happens?

Is this laminar or turbulent flow? Explain how you can tell. _____

Conclusion: When the speed of the fluid is increased, the flow becomes _____.

Extend your thinking:

Fill a plastic tray with an inch or two of water. Blow very gently across the top of the water. What happens?

Blow more strongly across the top of the water. What happens?

Explain why: _____
