Name: _____ Date: _____ Period: _____

Water Infiltration Rate

Question: How do soil composition and compaction affect water infiltration into soil?

Materials:

- Washcloth
- 100 ml graduated cylinder
- Water bottle
- Metal cylinder
- Ruler
- Stopwatch
- Colored pencils

My Hypotheses: (three locations with different infiltration rates):

1) _____ Fastest infiltration rate

2) _____ Medium infiltration rate

3) _____ Slowest infiltration rate

Procedures:

1) Make a hypothesis about three locations in your schoolyard where there may be a difference in water infiltration rates.

2) Your teacher will assign your group to one of the locations to do your experiment.Two groups will work at each location. The setups must be at least 1 m apart at each location.

3) Place the washcloth on the spot to be measured. Slowly pour 750 ml of water onto the cloth and make sure water does not run out from the sides. This may take several minutes. This step pre-wets the soil and makes it easier to push the coffee can into the ground.

4) Mark a line at 3cm from one end of the metal cylinder. After the water has all soaked in (i.e., it is not glistening anymore), remove the washcloth and carefully push the metal cylinder into the soil 3 cm. Push directly down on the cylinder, not at an angle, as this can cause cracks in the soil that the water can flow through. Sometimes a slight twisting motion helps while doing this.

5) Fill a graduated cylinder with 100 ml of water.

6) The timer will tell the observers when to empty the 100 ml of water into the can as they start the stopwatch. The water should be poured in slowly to keep from eroding a hole under the side of the can. The observers watch the water as it infiltrates into the soil. When the soil's surface is no longer glistening, the observers tell the timer to stop the stopwatch.

7) Record the number of seconds needed for all of the water to infiltrate into the soil on the "My Observations of Water Infiltration Data Sheet."

8) Work with your classmates to fill in the "Class Average Table" with the infiltration times from all groups. Calculate the average infiltration time for each of the three locations.

9) Divide 100 ml of water by the average number of seconds needed for the infiltration. This is the infiltration speed (in milliliters per second).

10) Graph the infiltration speed at each site on the "Water Infiltration Graph."

Results: See your graph.

Conclusion Questions:

- How does the infiltration rate vary in different areas of the schoolyard?
- Does the soil type affect infiltration rates?
- How might the water infiltration rate affect the kinds of plants that can grow in each area?
- Are there other explanations for your data? What other factors might affect infiltration rates?

My Observations of Water Infiltration Data Sheet

Date: _____ Time: _____

Location: _____

Infiltration Time: _____ seconds

Class Average Table

Location	1st group's infiltration time (seconds)	2nd group's infiltration time (seconds)	Average infiltration time (seconds)	Infiltration speed (100 ml / average infiltration time)

Water Infiltration

