

Names: _____

Soil Permeability Lab

Question: Which substrate has the highest permeability and which has the highest porosity?

Circle your prediction for highest porosity: Sand, Gravel, Garden Soil

Circle your prediction for highest permeability: Sand, Gravel, Garden Soil

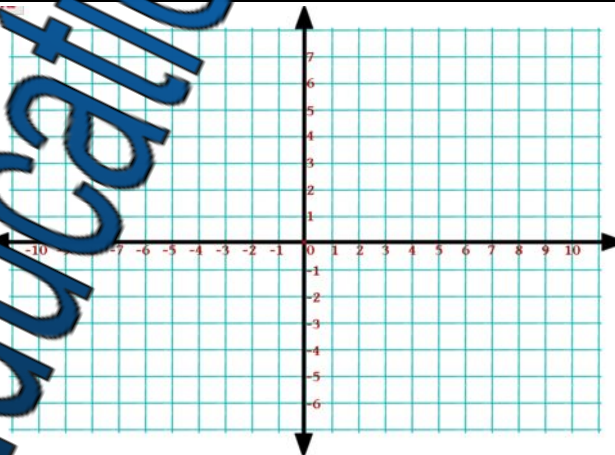
Below, design an experiment to test permeability and porosity of certain substrate that can answer the question above. Be sure to include a step by step procedure, observations and data you collect (**Hint:** use the table and/or coordinate plane), and create a statement of conclusion. If you need more space, use the back.

Procedure:

Observations:

Data:

Soil		
Gravel		
Sand		



Conclusion:

Teacher Reflection and Procedure

- In this lab I have already given them the definitions of permeability, porosity, and substrate. What I haven't discussed with them is which type of sediment is the most porous or the most permeable.
- Some students might already know the answer to the question. The challenging part is to design an experiment to prove it.
- Materials: I don't tell the students what to use for their experiment. The following list is the materials that I have on hand. They can decide what to use.
 - Styrofoam cups, plastic cups, beakers, stop watches, water, flasks, graduated cylinders, sand, gravel, soil from my garden, science trays to keep the water, sand and gravel off my tables, scissors.
- Procedure:
 - Define the three words: permeability, porosity, substrate
 - I let them work in groups of 3 or 4
 - Before they touch anything, I show them the available materials and give them 5 minutes to plan
 - Next, they begin on their experiment. I give them about 35 minutes to experiment.
 - Last minutes of class are reserved for clean up and discussion.
- Many experiments will not be scientifically sound. Things that I am assessing is my students use of wise time, participation, use of variables, ability to collect data.
- You can see that I have a graph and a table. The table is partially filled out, but I do not tell them how to collect their data.
- When we are finished I will ask groups to share their experiment and then we critique the scientific soundness of it.
- When students are done they should have discovered which sediment is the most porous and the most permeable.

