Title : Judging The Quality of An Aquifer

Scientific Investigation **Name (s)** _____

Question
What do you want to find out?
How does rock particle size affect porosity?

Background Information
Define porosity and the three factors that affect porosity.

Hypothesis
What do you think will happen?
"If rock particle size increases, then porosity will increase."
Independent variable is "rock particle size".
Dependent variable is "porosity".
Controls are amount of water and amount of rock particle material.

Procedure
Design a test for your hypothesis. Write and number the steps for your test in the space below.

1. Gather 3 samples of rock particles of varying size.
2. Label each sample to identify. i.e. A, B, C,
3. Measure 70 ml of a sample of rock particles (Sample A) This approximately one scoop from the sample bucket.
4. Measure size of rock particle. Average of 10 measures
5. Place sample in the plastic cup.
6. Pour 100 ml of water to saturate the sample pore space. Caution: Water level should not be above the top level of the sample
7. Calculate porosity using this formula:

$$\frac{\text{100ml of water (–) number of ml of water in left in the graduated cylinder}}{\text{Number of ml of dry rock particle sample}} = \_\_\_\_\_ \text{ X } 100 = \_\_\_\%$$

8. Repeat steps 3-7 for Samples B, and C,

Materials and Equipment Needed

- 70 ml of rock particles of varying size (at least three different sizes)
- 500 ml of water
- 3 Filters
- Plastic cup
- Graduate cylinder

Safety Rules
What safety rules do you need to follow during your investigation?

Data

Create a table, and graph to record your data. Use graph paper for the graph.

Analysis

What did you find out? Explain how the independent and dependent variable relate. What are the controls of this test? Cite specific data that supports how independent and dependent variable relate.

Conclusion

Did your results of testing support your hypothesis? Are your results reliable? Explain