EXPERIMENTAL DESIGN PRACTICE

A. THE HEATED SOIL SCENARIO:

Walter placed 1 cup of sand (S), potting soil, (P), and a mixture of sand and soil (M) into separate containers. In each of the containers he placed a thermometer so that the bulb was 2.5 cm below the surface. He place the 3 containers under identical heat lamps for an hour. The original temperature of each container was 15^{o}C. After heating the jars in three separate trials, the temperatures of the containers were:

S = 28^{o}C, 27^{o}C, 26^{o}C; P = 33^{o}C, 29^{o}C, 31^{o}C; M = 29^{o}C, 29^{o}C, 22.5^{o}C.

B. THE PEAT MOSS SCENARIO:

Norm wanted to know if adding peat moss to sand would affect its ability to hold water. He put 200 mL of pure sand into container A. He put a mixture of 80% sand and 20% peat moss into container B. He put a mixture of 60% sand and 40% peat moss into container C. He put a mixture of 40% sand and 60% peat moss into container D. He added water to each container and measured the amount of water the contents would absorb. He dried the sand and peat moss and repeated the experiment 5 times. He collected the following data.

	Water Holding Capacity (mL)				
Composition of Mixture					
100% sand	74	80	70	71	74
60% sand, 40% peat moss	86	88	90	92	94
40% sand, 60% peat moss	110	116	104	108	112
80% sand, 20% peat moss	84	82	86	82	84

For each of the above scenarios, answer the following questions:

1. What is the I.V. and D.V. for each scenario?
2. Draw an experimental design for each. Include I.V., D.V., Levels, Trials, Constants, and Control.
3. Write a hypothesis for each scenario.
4. Construct a data table for each collection of data. Include mean and range.
5. Graph the mean of each set of data.
6. Write a conclusion for each scenario.