IDENTIFYING VARIABLES (B)

Experiment A: Scientific Serves!

Jim, Jody, and Julian, all 8th Graders, all love to play tennis and are interested in forming a school tennis team. To do so, they decide to hold tennis practice sessions during the last period every day. The PE teachers agree to hold tryouts at the end of October. Seeing how this was their idea, Jim, Jody, and Julian want to make sure that they make the team. To ensure their placement, they test to see which brand of tennis ball helps produce the fastest serve.

Before completing the experiment, they all think that Brand X tennis balls will bounce the highest because they are the hardest to squeeze. Using brand X, Y, and Z tennis balls, they decide to drop each ball from 15 meters above the ground on to a tennis court. They measure the height that each ball bounces and record this value in a data table. Jim, Jody, and Julian complete five trials for each tennis ball and record the average height in the data table.

Independent Variable	Dependent Variable

Constants

Experiment B: Perfect Pumpkins!

Albert, Megan, and Tom are trying to grow the largest pumpkin for Halloween. They decide to use the greenhouse behind the science labs. They want to test which type of soil is best suited for growing pumpkins.

They all think that potting soil will work the best because it contains plenty of organic material, which helps the soil hold water. They plant pumpkin seeds in regular dirt dug up from behind the school, sandy soil found behind Megan's house, and store-bought potting soil. They fill three clay pots with regular dirt and label them Pot A, Pot B, and Pot C. They also fill three clay pots with the sandy soil and label them the same way. Finally, they fill three clay pots with the potting soil and label them again. In each pot, they placed the same species of pumpkin seed, water them with the same amount of water, and place them in the greenhouse so they all get the same amount of sunlight. After the pumpkins grow, they measure the mass of each pumpkin, determine the average, and record their results.

Independent Variable	Dependent Variable

Constants

Experiment C: Soil Absorption

Timmy, Tommy, and Tammy want to plant a garden at their school. Before picking a spot, the students walk around the site to look for the perfect location. Timmy likes the spot behind the basketball courts. Tommy likes the spot behind the cafeteria. Tammy likes the front of the school. All three areas are flat and receive the same amount of sunlight. Tammy remembers her grandfather saying, "To have a good garden you need good soil that holds lots of water." They agree to take soil samples at each spot and perform a water absorbency test. From their soil samples, they find that the front of the school has sandy soil, the basketball court area has clay-based soil, and the area behind the cafeteria contains lots of organic matter like leaves and twigs.

All the students think that the clay soil will hold the most water. To test for absorbency, they place 50g of each soil into a funnel with filter paper. Underneath the funnel is a beaker to catch any water that seeps through the soil   Next, they pour exactly 100 mL of water into the soil and record the amount of water absorbed. They test each soil five times to be sure that their results are accurate.

Independent Variable	Dependent Variable

Constants

Experiment D: River Erosion

Jim and Sally were having a discussion about which type of sediment (small particles) that made up the bed of a river would erode the least. "I feel that sand will erode the least because they stick together", stated Jim. "I think that tiny rocks will erode the least because they are heavier than the sand," said Sally. Jim and Sally decided to investigate.

They took 100g samples of different sediments: sand particles and tiny rocks. Next, the two took a large plastic box and raised one side with a block of wood to create a ramp. In the middle of the plastic box, Sally drew a square where they would place the sediment. First, they placed 100g of sand in the square and poured the 1,000 mL of water from the top of the ramp, allowing it to run over the sand as it flowed downhill. Afterwards, Sally and Jim measured the amount of sediment that remained in the square. The two tested each sediment three times and then calculated the average to discover which sediment eroded the least.

Independent Variable	Dependent Variable

Constants