Shady Dealings

Problem: How does the quantity of a reactant influence the amount of product formed?

Materials: 0.1 M Potassium Iodide (KI)
0.1 M Lead II Nitrate ($Pb(NO_3)_2$)
18 test tubes and test tube rack

Hazard Warning: Wear your safety goggles and aprons throughout this experiment.

Procedure: 1. Add 4.5 ml of $Pb(NO_3)_2$ to each of nine test tubes.
2. Place 0.5 ml of KI in the first test tube containing $Pb(NO_3)_2$ solution. Place 1.0 ml in the second test tube, 1.5 ml in the third, and continue until 4.5 ml is in the ninth test tube.
3. Draw a diagram showing the amount of precipitate formed in each of the nine test tubes. Save these test tubes for reference during the remainder of the lab.
4. Reverse and repeat the process in a second set of nine test tubes.

Data:

Summing Up: 1. Write a balanced equation for this reaction. Identify the precipitate.

2. Explain the difference in the amount of precipitate formed in each of the first two sets of test tubes. Be specific

3. The limiting reactant is the reactant that is used up completely during the reaction. Identify the limiting reactant in each of the 18 test tubes.

4. Explain how the balanced equation can be used to identify the limiting reactant: