Accuracy/Precision Project

Objective – Students will investigate the scientific process by determining the difference between accuracy and precision.

Key Vocabulary – Accuracy, precision, data table, graph

Materials needed – large butcher paper or cloth background, marker, plastic cup, several pennies, paper, pencil.

Procedure:

Students will toss pennies into a plastic cup from varying distances to measure accuracy and precision of tosses. Accuracy is defined as hitting the target (putting a coin in the cup). Precision is close grouping of tosses – many coins lying close together.

A butcher paper or cloth background on the classroom floor will prevent the coins from landing and rolling - coins should land and stay in place close to where they hit. Students will begin by making a small circle with a marker near the center of the background. Students will use string and a marker to trace a circle with 1 meter radius around the center mark. Depending on time allotted for this exercise, students will make further circles around the center mark at 1.5 meters, 2 meters, 2.5 meters, etc.

Students will gather data from tosses at each varying distance, than create tables and graphs of the results. Students will present their findings to the class, and discuss the difference between accuracy and precision.

Time Estimate: 45 – 60 minutes.

Accuracy/Precision Project Worksheet

Students will determine accuracy (how many coins in the cup), precision (how many coins land close together in one spot), and accuracy and precision (how many coins land in and very close to the cup). Students will determine the difference between these three categories.

Students will create data tables showing the number of coins which were accurate, precise or both accurate and precise for each distance from the cup. Students will create graphs from the data tables and turn in both the tables and the graphs for classroom points.

Challenge: Students will calculate the percentage of coin tosses that were accurate, precise or accurate and precise and report their results.

Scaffold: Students will create data tables showing the number of coins that were accurate and the number of coins that were precise.