Name _____ Date _____

SI Physics Lab #18H (35 pts)

Period _____ Mrs. Nadworny

Partners: Due Date _____

When Pigs Fly

NO Lab Write-Up Required

Purpose

To determine the gravitational field strength of Earth by analyzing the motion of a flying pig.

Materials

- Flying Pig
- Stopwatch
- Meterstick

Free Body Diagram

Draw and label a free body diagram for the flying pig, while it is in motion. (5 pts)

Derivation of Equation (2 pts)

1. Write an expression for the angle the flying pig makes with the horizontal, using the vertical and horizontal components of the diagonal string length. (2 pts)

2. Write an expression for the speed of the flying pig. (2 pts)

3. Write the sum of the force equations for the vertical and horizontal directions. (5 pts)

4. Solve the two sets of equations for gravitational field strength. (5 pts)

Data Collection

Make a list of any measurable values (with uncertainties) that you collected while the pig was in motion. (6 pts)

Data Processing

1. Calculate the gravitational field strength using the equations derived above and the data you collected. (5 pts)

2. Calculate a percent error with the accepted value. (5 pts)