FRICTION OR DRAG LAB OPTIONS

#1: Coefficient of Friction of Your Shoe.

Purpose: to determine the coefficient of friction of your shoe.

Rough idea: measure the friction force of your shoe on a surface, adding weight and keeping track of the total Normal Force.

Data table: Shoe normal force (N) vs Shoe friction (N).

Analysis: Graph of data with line of best fit and slope calculation.

DU option: use the digital scale to measure both static and kinetic friction. Separate data tables and graphs for each.

#2: Effect of Weight on Coffee Filter Drop Time.

Purpose: determine the relationship between weight and time of drop for coffee filters.

Rough idea: Time the drop of one coffee filter (several trials). Then nest two coffee filters and repeat. Then three, then four…

Data table: Total Weight of Coffee Filters (N) vs Time of Drop (s)

Analysis: Graph of data. Note whether it's straight (direct proportion) or curved (one changes more slowly than the other.) and explain what that means.

DU option: Curve fit a best fit and determine the equation of the relationship.

#3: Effect of Surface Area on Parachute Drop Time

Purpose: determine the relationship between surface area of parachute and time of drip for a set weight.

Rough idea: Time the drop of a parachute and weight (several trials). Then repeat for different sized paracutes.

Data table: Total Area of Parachute (cm^2) vs Time of Drop (s)

Analysis: Graph of data. Note whether it's straight (direct proportion) or curved (one changes more slowly than the other) and explain what that means.

DU option: Curve fit a best fit and determine the equation of the relationship.

FRICTION OR DRAG LAB OPTIONS (cont.)

#4: Effect of Surface Area on Drag.

Purpose: determine the relationship between surface area and drag.

Rough idea: set up a fan blowing on a pasco cart with and put different size pieces of cardboard on it, keeping track of force with a spring scale.

Data table: Surface area (cm^2) vs Drag Force (N)

Analysis: Graph of data. Note whether it's straight (direct proportion) or curved (one changes more slowly than the other) and explain what that means.

DU option: Curve fit a best fit and determine the equation of the relationship.

#5: Effect of Curvature on Drag.

Purpose: to determine the effect of curvature on the force of Drag.

Rough idea: set up a fan blowing on a pasco cart with and put same cross-sectional area pieces of file folder on it but with different curvatures, keeping track of force with a spring scale.

Data table: Degree of curve (cm) vs Drag Force (N)

Analysis: Graph of data. Note whether it's straight (direct proportion) or curved (one changes more slowly than the other) and explain what that means.

DU option: Curve fit a best fit and determine the equation of the relationship.

TITLE NAME

PURPOSE: To determine… [choose one of the options]

MATERIALS:
[make sure to list all of them]

Pic/Diagram
of Setup

Procedure:
1)
2)
.
.
.

DATA:
[Data Table. MUST HAVE column headers with units.]

ABCD ANALYSIS:
[Include graph of data with proper labels. Based on the graph, make an assertion about the shape of the relationship and what it means. The more data points, the stronger your assertion will be.]

4 or fewer data points = Much too weak for any assertion.
5 data points = OK for a U assertion; too weak for a DU assertion.
6 data points = Strong for a U assertion; OK for a DU assertion.
7 or more = Very strong; excellent for a DU assertion.

[DU for option #1 will have two charts and two graphs. All other DU options will have a curve-fit and equation for the graph. The equation should be written properly in terms of the actual variables, not just the generic x and y.]