BEFORE YOU DO THIS PROBLEM, RESET YOUR CALCULATOR.

1. The table shows the height of a hang glider $y$ (in feet) based on how long the person has been descending, $x$ (in seconds).

<table>
<thead>
<tr>
<th>Time (seconds), $x$</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (feet), $y$</td>
<td>500</td>
<td>455</td>
<td>349</td>
<td>299</td>
<td>235</td>
</tr>
</tbody>
</table>

a. Using the calculator, create a scatter plot of the data using the time that the person has been descending as the independent variable and height of the glider as the dependent variable. Sketch what you see in your calculator's window.

b. The data show what type of correlation?

c. Use your calculator to find the line of best fit for the data. ROUND ANSWER TO TENTH'S PLACE.

d. What is the correlation coefficient for this set of data? ROUND ANSWER TO THOUSANDTH'S PLACE.

e. What is the most important thing that the answer to the previous question tells you about your linear equation?

f. Using ONLY a feature of your graphing calculator, predict the height of a glider 18 seconds after take off. (Interpolation) ROUND ANSWER TO TENTH'S PLACE.

g. What feature of your calculator did you use to answer the previous problem?

h. Predict the height of the glider 45 seconds after take off. (Extrapolation) ROUND ANSWER TO TENTH'S PLACE.

i. Does your answer seem realistic? Why or why not?

j. What is the difference between interpolation and extrapolation?
1. The following problems were given as homework. Your friend John says that the resulting functions $g(x)$ and $h(x)$ are the same.

A) Is John correct?  
B) Justify your answer.

<table>
<thead>
<tr>
<th>#1</th>
<th>The parent function $f(x) = \sqrt{x}$ is first reflected across the x-axis and then translated 6 units up in order to create $h(x)$.</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2</td>
<td>The parent function $f(x) = \sqrt{x}$ is first translated 6 units up then followed by a reflection across the x-axis in order to create $g(x)$.</td>
</tr>
</tbody>
</table>

Write the system of equations for the following real-life situation. Remember to first create a verbal model for each statement. Then solve.

USE THE FOLLOWING VARIABLES: $b$ for burritos, $c$ for tacos, and $Q$ for quesadillas.

- You go to Del Taco and buy 40 items for you and your friends.
- You buy 4 more burritos than tacos.
- The tacos cost $.75 each, burritos cost $.85 each, and quesadillas cost $1 each; you end up spending $33 before tax.

How many of each food type did you buy?

VERBAL MODELS

DEFINE THE VARIABLES

ALGEBRAIC MODELS
SOLVE

CHECK.

ANSWER USING A FULL SENTENCE.

HOW MANY FRIENDS WILL IT TAKE TO EAT THIS FOOD?