Name: _____   Date: _____

Student Handout Part 2:
Follow the Bouncing Ball

1. Work in your groups. Using your model from the Take Home handout, make predictions for the next 5 rebound heights if the teacher drops the ball from 1 meter high. Fill in the predictions on the table below.
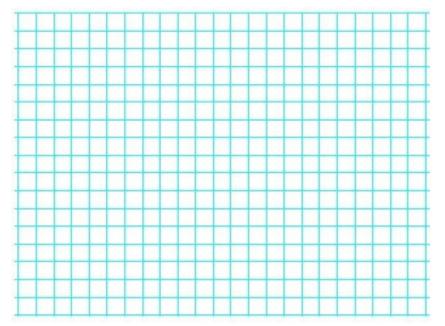
Ball Bounce from 1 Meter

	Initial: 1 meter	Rebound #1	Rebound #2	Rebound #3	Rebound #4	Rebound #5
Predictions	1 m					
Actual	1 m					

2. Test your prediction by dropping the ball and recording the actual rebound heights. (Let the ball continue to bounce, don't stop it this time.)

   Perform the experiment a couple times to gain consistent results. (You may want to find the average of your 2-3 trials.)

   Record these "Actual" data in table above.

3. Create a scatterplot below with your predicted values and the rebound number. Think carefully about which variable is the independent and dependent variable.

4. On the same scatterplot as Step 3, add your actual values as data points.

5. Looking at the scatterplot with all the information from your table, what do you notice? What do you wonder? How do they compare? Write your thoughts below.

6. Now you will use a graphing calculator to find regression equations using your actual rebound height data.

   Use the linear regression function to determine a model. Record the equation here:

   _____

   Choose a different regression to fit your data. Record the equation here:

   _____

   Which seems to model the data better - linear, or your choice? Explain why.

   Why did you choose the nonlinear regression that you chose? Explain.

7. Use your algebraic models (linear and your choice) to predict what happens on the 8th rebound height. Which model fits the experiment better? Explain.

8. Develop a NEXT-NOW equation for your situation. (This is a type of "recursive" equation.)

   Example:
   If you say out loud, "My NEXT value is half of the value I have NOW", then the equation would be:

   $$NEXT = NOW \times 0.5$$

9. Reflecting on the model that worked better for your experiment, make predictions for an initial drop height of 1.5 meters.

Ball Bounce from 1.5 Meters

	Initial: 1.5 m	Rebound #1	Rebound #2	Rebound #3	Rebound #4	Rebound #5
Predictions	1.5 m					