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### Home Value Estimate Using Scatter Plots

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*The College at Brockport*

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# Generic Lesson Plan Template

You should submit this form in addition to any computer generated files/documents/models to your group folder on Angel. Please create a .zip file and upload the group of files as a single archive.

Name: Sandy McGreevy
Grade level(s)/Subject taught: Algebra and Trig Grade 11
Objectives: By the end of the lesson the student should be able to: <ol style="list-style-type: none"><li>1. Retrieve data from the Monroe county data base on home value and square footage.</li><li>2. Group class data together into a scatter plot.</li><li>3. Perform various regressions on TI calculator to find "best-fit" model</li><li>4. Repeat process but having students each pick a different town, study 25 homes and then see what might change and why.</li></ol>

Please provide a rich **one-page, single-spaced**, description or a *vision* of your best thinking on a way or ways you might teach the planned lesson. (approximately ½ page for the teacher role, ½ page for the student role). Also, construct a tentative rubric that you might use with your students (see example)

Items to include in your lesson plan: (Choose your discipline/concepts from your own area).

1. *Write the Mathematical Concept* or "key idea" that modeling will be used to teach: (e.g. Students use mathematical modeling/ multiple representation to provide a means of presenting, interpreting, communicating, and connecting mathematical information and relationships)

Statistics and Probability Strand

*Students will make predictions that are based upon data analysis.*

*Predictions from Data*

A2.S.6 Determine from a scatter plot whether a linear, logarithmic, exponential, or power regression model is most appropriate

A2.S.7 Determine the function for the regression model, using appropriate technology, and use the regression function to

interpolate and extrapolate from the data

and/or...

1b. *Write the Science Concept or "key idea" that modeling will be used to teach: (e.g. Organisms maintain a dynamic equilibrium that sustains life).*

Materials:

"...a rich **one-page, single-spaced**, description or a *vision* of your best thinking..."

Prompts:

1. How will you assess the prior knowledge of the student?
2. How will you begin the lesson?
3. What are the teacher and students doing every 5-10 minutes? (Teacher Actions and Student Actions)
4. How will you assess the learning for the lesson?

**Using Monroe county GIS data and TI calculator regression modeling, I plan on having my students meet the objectives stated above.**

The required prior knowledge of the student will be the use of the statistics applications in the graphing calculator. They must be able to

1. Enter statistical data into the lists.
2. Make a properly labeled scatter plot on both calculator and paper.
3. Perform various regressions and be able to pick the best fir regression and understand why it is the best fit.

This extension of the regression unit will follow it so my preassessment will be the quizzes and test they just completed.

I will begin the lesson by entering an address onto Google earth (which will be an address of an unsuspecting student.) We will zoom in on the house as they (hopefully) will be realizing it. We will get into a conversation of how technology has changed so much over the years and how quick it is to get information about anything today. I will ask then if they can tell the size of the house by looking at the aerial photo or how many bedrooms it might have. We will realize that Google Earth can't give us the information. I will then go to the Monroe County GIS system at [http://www.mappingmonroe.org/Property\\_Portal/Property.asp](http://www.mappingmonroe.org/Property_Portal/Property.asp).

The screenshot shows a web browser window titled "Geographic Information Systems (GIS) Services Division - Mozilla Firefox". The address bar displays "http://www.mappingmonroe.org/Property\_Portal/Property.asp". The website header features the Monroe County logo, the name "Maggie Brooks County Executive", and the text "ENVIRONMENTAL SERVICES GIS Services Division Mapping Monroe". Below the header, there is a "Property Search" section with a search form and a list of search methods: "BY STREET NUMBER AND NAME" (selected), "BY TAX MAP NUMBER (SBL)", "BY ACCOUNT NUMBER", and "BY BILL NUMBER". A "-Search-" button is located at the bottom of the search form. The browser's taskbar at the bottom shows the Windows start button, several open applications, and the system clock displaying "8:26 PM".

At the site they will choose to search by street number and name. After they type in an address, they will see this screen. From this page they can record the total value for the house and the property. After that is recorded they can click on the "Property & Structure Information" link.



On the Property & Structure page there is a great deal of information to show the students. The information that I am concerned about is the total square feet of living area. SFLA. I want the students to record this value.

http://www.mappingmonroe.org - Property Information - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Area in Sq. Ft.						
Site No.	1st Story:	Fin Bsmnt:	2nd Story:	Unfin 1/2:	Addl Story:	Unfin 3/4:
1	1070	0	558	0	0	0
1/2 Story:	Unfin Rm:	3/4 Story:	SFLA:	Over Garage:	Fin Rec Rm:	Fin Attic:
0	0	0	1628	0	0	0

Residential Information								
Site No.	Building Style:	Central Air:	Eff Yr Blt:	No. Stories:	No. Half:	Yr Remodel:	Bsmnt Gar Cap:	Act Yr Blt:
1	03 Split level	0	0	2	1	0	0	1990
Kitchen Qual:	No. Bath:	Bath Qual:	Ext Cond:	No. Fireplcs:	No. Bdrms:	No. Kitchen:	Heat Type:	Bsmnt Type:
	1			0	3	1	2 Hot air	4 Full
Constr Grade:	Fuel Type:	Overall Cond:	Int Cond:	Grade Adjust:	Pct Good:	Func Obs:	Ext Wall Mtrl:	
C Average	2 Hot air	3 Normal		0	0	0	03 Alum/vinyl	

Site Characteristics								
Site No.	Site Type	Prop Class	Nbhd Cd:	Sewer Type:	Water Supply	Utilities	Site Desire	
1	Residential	210 1 Family Res	26136	3 Comm/public	3 Comm/public	4 Gas & elec	2 Typical	
1	Residential	210 1 Family Res	26136	3 Comm/public	3 Comm/public	4 Gas & elec	2 Typical	

Land Breakdowns							
Land Type	Front	Depth	Acres	Sq Ft	Soil Rating	Wtrfrt Type	Depth Factor
01	0	0		0			0

Done

start Lesson due 8-1 - Mic... Geographic Informati... http://www.mapping... 100% 8:22 PM

Using this site, I will pick house of someone not in the class and find out all the information that the county has on record. I will lead the discussion into how this information can be used. For example for real estate brokers to value homes, for developers if they want to invest in the area, for the government to calculate assessments, for insurance companies for the underwriters etc. I will then have the students calculate the cost per square foot of house. I will talk about if this is a constant for all houses and why or why not.

The students will then be given a task to perform. The steps will be properly posted on the board. They must.

1. Go to the Monroe County GIS system and pick a house in our school district and extract the values for the assessed total property value and for the square feet of living area. I will limit the house type to permanent two story houses, no ranches or mobile homes. This is done to eliminate some of the variables for the data.
2. Post their data on the board and on a scatter plot on the board.
3. They must calculate to best fit regression equation for the data.
4. They must calculate a prediction for a house of a square footage of their choosing.

After the task is finished we will go back to the discussion and see if the data made any sense.

For the assessment the students will be asked to choose one town in the county and pick twenty houses and find an equation for each town. We will then compare equations the next day in school. I hope that will produce some interesting data. The rubric is attached for the assessment.