CMST SCOLLARCITY "**First tool**" Lesson Plan using your first choice of modeling software, (Due Tuesday, August 3rd).

*** Submit as hard copy AND electronically through ANGEL***

Name: Brian DiNitto
Grade level(s)/Subject taught: 9th,10th Grade Math
Objectives: (Remember…*How will the modeling tool help the student better learn the objective?)* To have students explore the relationship of compound interest, steady contribution, and time on savings. Also to compare this to the risks of investing in a variable stock market or lottery and the costs of risk for long term investment.

Items to include in your **first tool** lesson plan:

For the math teacher:
1. *Write* the Mathematical Concept or "key idea" that your first modeling tool 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)

NYS Key Ideas: Operations Measurement Uncertainty Patterns and Functions

For you **first tool** lesson, please describe how you plan on using the desired modeling software package with your students (Stella, AS, GSP, or IP). You might describe what a visitor might see walking into your classroom during this lesson. You might also describe the role of the student during the entire lesson and your role as the teacher. Please try to be specific as possible. Also, construct a tentative rubric that you might use with your students. ** see example page 5

"...a rich **one-page, typed, 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 <u>doing</u> every 5-10 minutes? (Teacher Actions and Student Actions
4. How will you assess the learning for the lesson?
5. How will IP, Stella, Agent Sheets, GSP, etc as per rubrics in this packet be integrated into my teaching? (i.e. you may want to discuss a problem or describe how you might use the chosen modeling package in your plan. How does the model/tool help the concept(s) to be taught)?

Using ____Stella_____, I plan on having my students…
                    (software / modeling package(s))

explore the power of compound interest. This will have them experience a non-linear growth rate and teach them some valulable lessons for their economic well being.

I would start with explaining the concepts of saving for retirement. We will look at a fixed amount and how much it would grow with certain interest rates and compounding periods. Next we will look at the concept of saving a fixed amount each month and how that would grow with and without interest. Other ways that people save for retirement is through investing in the stock market. Risk, brokerage fees, and losing principal will be discussed. Lastly the probabilities of winning the lottery will be discussed and explored.

Once the basics are covered, we will have students work in groups to choose a retirement savings plan to implement. The time line will be 40 years and the students will be given a spin of a spinner to determine their pay rates every 10 years. Working in groups they will choose between contributing a certain percentage of their pay (up to 20%) to savings contributions, stocks (with a risk from a spinner), buying lottery tickets (with a large payoff but very small odds). They will make decisions every 10 years to change or keep their plan of investment.

After the end of the simulation, the group will produce a poster showing their rate of savings and what strategy affected that rate. The groups will present their results before the class and draw conclusions if they would have done any different strategies.

Stella would be used to do the number crunching. The attached compound interest program will keep track of a fixed contribution and could keep track of stock investment, brokerage fees, percent of return and lottery investments.

I see this activity taking three class days:

Day 1: Intro. of concepts, teacher demonstration of how software works.
Day 2: Running the simulation, gathering data, producing posters.
Day 3: Group presentations/final analysis

Target	Acceptable	Unacceptable
Students can present two reasons why retirement savings is important to people	Students will state two reasons and will be able to elaborate with examples with minimal prompting for the benefit of retirement savings.	A student cannot name a reason or names incorrect reasons for the benefit of retirement savings.
Students correctly follow the rules of the simulation	Students ask questions when they are unsure of the rules. They successfully complete the simulation with minimal prompts.	Students do not understand the rules and enter incorrect information into the simulation. They do not detect mistakes due to their erroneous data.
Students produce a poster that accurately shows the activity of their simulation.	Two or less suggestions have to be given to the group before they complete their final poster.	More than two suggestions have to be given to the group before they complete their final poster.
All members of the group aid in the presentation. Also the group can give accurate and detailed answers to all the class or teacher questions.	Two or less suggestions or corrections have to be given to the group during their presentation. All group members contribute.	More than two suggestions have to be given to the group during their presentation. Not all group members contribute.