**Connecticut Common Core Algebra 2 Curriculum**

**Professional Development Plan**

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| **Unit 5 Exponential and Logarithm Families** | | |
| **Date:** | **Location:** | |
| **Presenters:** | | |
| **Schedule for the day:**  **Start time:** 9 AM  **End time:** 12 PM   * + **Opening: 9:00 - 9:20 am**   + **Session 1: 9:30 - 10:10 am**   + **Session 2: 10:15 - 10:55 am**   + **Session 3: 11:00 - 11:40 am**   + **Closing: 11:45 - 12:00 pm** | | |
| **Opening Session**:  Opening question:  Teachers who have taught logarithms in the past: What have you noticed students struggle with the most with regards to logarithms?  Teachers who have never taught logarithms: What are you most concerned about when you envision yourself teaching logarithms for the first time?  Overview of the Core Algebra 2 Unit 5 on Exponential and Logarithmic Functions. **See Power Point**  Remind each teacher to write suggestions for improving the curriculum on 3x5 notecards to be handed in at the closing session.  Have each teacher write up to 3 stickie notes: what I really liked, what I am uneasy about, and/or what I am freaking out about. | | |
| **Workshop 1** | | **Presenter:** |
| **Activities**  5.1.1 New Beginnings  Participants begin with a familiar situation and see the need for an inverse for exponential functions. They will review graphing exponentials, domain, range, and reflection properties of inverses to create a graph of a logarithmic function.  5.1.4 The Product Rule and the Quotient Rule for Logarithms  Participants will use tables to help establish the product and quotient rules for logarithms. By the end of the activity, participants will develop a proof for the rules. | | **Equipment and Materials**   1. Hard copies of Activity 5.1.1 and Activity 5.1.4 for each participant. 2. Calculator for basic arithmetic operations 3. 3x5 notecards – 5 per person for suggestions 4. Pads of post-it-notes 5. **Power Point** |
| **Workshop 2** | | **Presenter:** |
| **Activities**  Activity 5.3.1 Can We Eat the Chicken?  Participants will graph data using linear and then logarithmic scales.  Performance Task  The use of logarithmic scales is required for the performance task. | | **Equipment and Materials**   1. Hard copies of Activity 5.3.1 for each participant 2. Graph paper 3. Calculator for basic arithmetic operations 4. 3x5 notecards – 5 per person for suggestions 5. Pads of post-it-notes 6. **Power Point** |
| **Workshop 3** | | **Presenter:** |
| **Activities 5.6.1, 5.6.2, 5.6.3**  **50 minutes**  First have “student” participants review arithmetic finite series and develop the formula for the sum. They may want to share variation’s of Gauss’s story of how he summed the first 100 counting numbers. Some have a mean teacher, others a mentor. You might want to have teachers count off by threes for example so they are not necessarily working with teachers in their district.  5.6.1 Finite Geometric Series  Participants work through guided examples that will lead to the development of a formula for a finite geometric series. Prompt participants to look for a procedure that can then be generalized.  5.6.2 Sam’s Story  Participants return their focus to the situation from Activity 5.1.1 and use their knowledge of geometric series to answer more complicated questions.  Do not have to complete activity 5.6.3 Rumors, Worms and Viruses in the 50 minutes. Teachers just need to read over to see the application of the finite sum formula. If time though it is nice to complete the problems.    30 minutes  Participants may remain in their groups or group by district if they prefer.  Participants brainstorm and plan together on how best to present these activities. Distribute the overview for investigation 6 as teachers begin their planning. | | **Equipment and Materials**   1. Hard copies of Activity 5.6.1, Activity 5.6.2 and activity 5.6.3 for each participant 2. For last segment of workshop need investigation overview of investigation 6 3. Calculator for basic arithmetic operations 4. Plain paper for teachers to write on 5. 3x5 notecards – 5 per person for suggestions 6. Pads of post-it-notes 7. Document camera on which to project the activities and presenter may want to have an answer key handy to project for each activity or a computer to access Moodle. |
| **Closing Session:**  On the back wall of the large group room, teachers will sort their 3 stickie notes about what they really liked, what they are uneasy about, and/or what they are freaking out about. They will also hand in any suggestions on their 3x5 cards.  Two teachers can glance through the stickies and cards while the other presenter discusses exit slips. Point out that students are expected to be able to work and explore concepts fairly independently by Unit 5. **Have some exit slips from units 1 – 6 available to project through the computer or the doc camera.**  Also take the opportunity to emphasize that the teacher makes educational decisions all the time about what it best for their students. Teachers may change the order of activities, add to activities, or remove sections from activities. The curriculum is available as a word document to facilitate modifications.  After this discussion, the other presenters can summarize the results of the stickies and cards and take verbally other teacher comments as a result of the stickie summary. | | |
| **Additional Comments:** Because a performance task was discussed in one of the workshops, you may want to have another PF or two that could be projected on the doc camera, just in case there is time or interest. You will need for the afternoon session anyway. | | |