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Introduction to Logarithms

1. This Power Point is designed to introduce real world applications of logarithms using information about Yellow Stone National Park to generate interest.
2. The lesson demonstrates multiple applications of logarithms but spends the majority of the time on measuring earthquakes and Ph levels. This lesson does not include student work but is just to be used to answer the age old question “Why do we need to learn this stuff?” There is a link imbedded in the lesson that shows a short video clip of a documentary about a possible eruption of the super volcano that is located in Yellow Stone National Park. This lesson should take approximately 30 to 40 minutes to complete allowing for student to ask questions at the end.
3. Concepts covered: Both mathematical and scientific concepts are covered.
4. Content Standards**:**

 **MM3A2: Students will explore logarithmic functions as inverses of exponential functions:**

**g.**  Explore real phenomena related to exponential and logarithmic functions including half-life and doubling time.

**SC7. Students will characterize the properties that describe solutions and the nature of acids and bases.**

a. Explain the process of dissolving in terms of solute/solvent interactions:

• Observe factors that affect the rate at which a solute dissolves in a specific solvent,

• Express concentrations as molarities,

• Prepare and properly label solutions of specified molar concentration,

• Relate molality to colligative properties.

b. Compare, contrast, and evaluate the nature of acids and bases:

• Arrhenius, Bronsted-Lowry Acid/Bases

• Strong vs. weak acids/bases in terms of percent dissociation

• Hydronium ion concentration

• pH  -  Acid-Base neutralization

1. Objectives: Students will be able to connect real world application to the use of logarithms.
2. Time Required: Approximately 30 to 40 minutes for the power point with 15 minutes of class discussion.
3. Materials: Access to overhead projector and internet connection. The book “Death in Yellowstone: Accidents and Foolhardiness in the First National Park” by Lee H. Whittlesey
4. Procedures: The power point is timed to move from slide to slide with enough time to read each slide. Only the slide involving the Youtube link and the slide where excerpts from the book are read will the teacher need to click to advance.
5. Activities: Group discussions after the presentation
6. Assessment: No formal assessment is necessary for this lesson.