

Lesson 4-4: Scientific Notation (p. 174-178)

1. Pace:
 - a. Day 1
 - i. Class Period: 59 minutes
2. Style:
 - a. Lecture/Introduction of concept
3. Benchmarks/Standards:
 - a. CCSS.MATH.CONTENT.8.EE.A.3
Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as 3 times 10^8 and the population of the world as 7 times 10^9 , and determine that the world population is more than 20 times larger.*
4. Learning Target(s):
 - a. I can translate between standard notation and scientific notation large and compare two numbers written in scientific notation.
5. Anticipatory Set:
 - a. Text Message Activity- **Hook** to drive the Scientific Notation lesson.
 - i. The students will shorten the following messages in shorthand and send their response by using Socrative. (<http://b.socrative.com/teacher/#select-quiz>)
 1. They will join our class and use their electronic devices to send their responses for the warm-up.
 - a. Classroom code: 0f3b988a
 - i. Students login into classroom through socrative app/website through their phones/ipod touches/tablets.
 1. Student page:
<http://b.socrative.com/login/student/>
 2. Make sure have the students download the application ahead the lesson.
 - ii. The students will shorthand the following messages and send their individual responses using socrative to text their answers.
 1. "Rolling on the floor laughing."
 - a. ROFL
 2. "I will see you later."
 - a. "I will c u l8r."
 3. "Hey, are you going to the Jenison football game this Friday?"
 4. Time: 3 Mins
 - iii. The teacher will look at the class responses, which are sent to the teacher in a document.

- iv. The teacher will ask volunteers to share their responses and why they think we are short handing text in a math class.
 1. Discussion: 2 minutes
6. Behavior Objective/Essential Question:
 - a. Why is Scientific Notation Important?
7. Input:
 - a. Task Analysis:
 - i. Weekly Planner check
 1. Check to see if students are responsible writing down the learning targets and assignments for the previous week and having their parents check their planner.
 2. Points are rewarded if they have both completions.
 - ii. Students are getting out their this past weekend's worksheet on the their desk as well writing down the weekly agenda for their Math 8A course
 1. The students are also working on their warm-up journal activity as the teacher check their planner and homework from Friday.
 2. Time: 8 minutes
 - iii. Go over warm-up- The socratic texting activity
 1. Have students share their responses and discuss them with each other.
 - a. Give students 3 minutes to work on their warm-up activity as the teacher check their planner and previous homework assignment.
 - iv. Go over homework- Ch. 4 At Home Practice
 1. The teacher will have ask for a student to use their paper and use the hover camera to go over the answers of the pervious homework.
 2. Go over each answer and ask the students which ones they would they to go over as a class.
 - a. Students score their sheets and put them back into their math binder.
 3. Time: 5 Mins
 - v. Bridge- Start to connect the warm-up activity to the lesson.
 1. Teacher: Why do you think we are short handing text in a math?
 - a. "Remember the activity we just need, we are going to connect shorthand text messages to a method how we shorthand really large and smaller number, which is called scientific notation."
 - vi. Introduce the concept of Scientific Notation
 1. Brian Pop- Intro to Scientific Notation
(<http://www.brainpop.com/math/numbersandoperations/standardandscientificnotation/preview.weml>)
 - a. Time: 4 minutes

2. Have discuss in small groups for 1 minute to discuss the video and ask for volunteers to discuss what was the main idea of the video and their explanation of scientific notation.
 - a. Video is about 4 minutes long.
 - b. Discussion should take about 3 minutes.
- vii. Transition to Notebooks- Taking notes in their notebook.
- viii. Notebooks Activity- The teacher will be present the definitions of the concept and provide examples of how to find both scientific notation and standard notation when given one or the other.
 1. The students will take notes from the slides on how to translate scientific notation to standard notation as well as translating standard notation to scientific notation.
 - a. The students will learn how to apply this concept to real world applications in science concepts and/or measuring conversions.
 2. Time: The notes will be prewritten on the slides to control the pace and have examples for students to study from while they complete their homework.
- ix. Homework: This is already written on the backboard and in their planner for reference.
 1. Lesson 4-4, Pg. 176-177, Problems 1-34, 36-44e, 52-55.
- b. Bloom's Taxonomy
 - i. Knowledge: What is the definition of scientific notation? How would you describe standard form?
 - ii. Comprehension: How could we use this concept with measurement?
 - iii. Application: Apply the process of scientific notation and standard notation in the real world (Science content and Measurement).
 - iv. Analysis- Compare/Contrast the difference between the process to find standard notation from scientific notation and vice versa?
- c. Learning Styles:
 - i. Auditory- Listening to the math rap, direct instruction, class discussion about Scientific notation and lecture
 - ii. Musical- Brian Pop Video- Into. To Scientific Notation
 - iii. Logical/Mathematical- Making connection between shorthand text with scientific notation, direct instruction.
 - iv. Visual- The students will be watching the math rap video on Scientific
- d. Methods and Materials:
 - i. Ways of Presenting:
 1. Brain Pop-Intro. to Scientific Notation
 2. Notes on Scientific Notation and Standard Notation
 3. Socratic Texting Activity
 - ii. Materials needed:
 1. Video, notes, Text Message Activity, Textbook- Holt McDougal Mathematics Course 3

8. Modeling:
 - a. Pick out a problem from the previous homework to reiterate a main conception and/or misconception from the previous class.
 - b. Notes with examples of how to use the process to find both standard and scientific notation.
9. Check for Understanding:
 - a. Formative Assessment
 - i. Socrative- quick question and receive diagnostic feedback from students understanding- <http://b.socrative.com/teacher/#live-results>
 1. The Teacher will have the student's text their response before the leave for the bell.
 - a. Bring the class together to recap before the bell.
 - b. Various Questioning Techniques
 - i. Deeper Level of Knowledge- Explain, How, Why?
 1. Encourage the students to share how they would solve the problems.
 2. Is this the only way to find the scientific notation and vice versa.
10. Independent Practice:
 - a. The students will complete the following in order to begin to master the skills for this lessons content.
 - i. Homework:
 1. Lesson 4-4 Pg. 176-177 Problems 1-34, 36-44, 52-55.
11. Closure:
 - a. Recap the lesson and use a formative assessment piece through a class discussion to check the students understanding before the end of class.
 - i. Exit Slip: (What is the connection between texting lingo and scientific notation)
 1. The students will connect the warmup activity (text activity) with the lesson.