Lesson Activity Plan 5

1. Content: Describe ***what*** it is you will teach. What is the content?

In this lesson, I will teach students how to compare numbers written in scientific notation. They will learn to determine which number is larger and which number is smaller, and by how much.

1. Learning Goal(s): Describe what specifically students will ***know*** and ***be able to do*** after the experience of this class.

Students will know that when numbers written in scientific notation have the same exponent, they can just compare coefficients to determine which number is larger. When the exponents are not the same, students will be able to use the exponent subtraction rule to determine the factor of 10 by which the number is either smaller or larger. Students will also know that the number with the greater exponent is larger.

1. Rationale: Explain how the content and learning goal(s) relate to your Curriculum Unit Plan learning goals.

This lesson teaches students not only how exponent rules apply to scientific notation operations, but also how to use those rules to compare quantities. Those are two of the learning goals for my unit.

1. Assessment: Describe ***how*** you and your students will know they have reached your learning goals.

On the first day of the lesson, I will be assessing student understanding based on their participation in the class discussion and individual work in groups. This assessment becomes a bit more formal in the second day of the lesson when I have students complete two mini-worksheets that I will collect and look through that night. Based on their work on those worksheets, I will know if they have reached my learning goals or not.

1. Personalization and equity: Describe how you will provide for individual student strengths and needs. How will you and your lesson consider the needs of each student and scaffold learning? How specifically will ELL students and students with learning disabilities gain access and be supported?

Students will be working closely in groups for the first day of the lesson. To help all students gain access to the lesson, the grouping will be heterogeneous so that students who need more support will be paired with students who will be able to help them. In addition, the starter on the first day begins with comparing numbers that have the same exponents, then slowly progresses to numbers with different positive exponents, and then eventually to numbers with different negative exponents. This progression is supposed to scaffold learning so that students get comfortable working with easier numbers and then feel readier to confront slightly more complicated numbers.

On the “Comparing with Fun Facts” worksheet that students complete at the end of the second day of the lesson, students are able to choose which pairs of numbers they compare. For students who are struggling, they can pick easier numbers, while students who need more a challenge can pick more complicated numbers.

1. Activity description and agenda
   1. Describe the activities that will help your students understand the content of your class lesson by creating an agenda with time frames for your class. Be prepared to explain why you think each activity will help students on the path toward understanding.

See attached timed agendas.

* 1. What particular challenges, in terms of student learning or implementing planned activity, do you anticipate and how will you address them?

The activities involve a lot of back and forth between group work and full-class discussion. My numeracy students generally handle that kind of structure well and it keeps them on-task, but if they feel confused then the structure falls apart. When planning this lesson, I thought that students might get confused by the idea of writing numbers in scientific notation as a division problem and dividing the coefficients and then the bases. Because of that, I am prepared to spend more time explaining the comparison process to the class than I allotted in the timed agenda. As long as our discussion is fruitful, I will be happy to extend it.

1. List the Massachusetts Learning Standards this lesson addresses.

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*.

CCSS.MATH.CONTENT.8.EE.A.4

Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.