University of Mary Division of Education

Lesson Plan

**Name:** Courtney Kessler

**Grade Level:** 7

**Subject(s) Area:** Pre-Algebra

**Materials Needed:** Flipchart, Promethean Smart Board and equipment, notes, pen/pencil, online textbooks,

Standards:

* **8.EE.1** Develop, know, and apply the properties of integer exponents to generate equivalent numerical and algebraic expressions.

Objectives:

* Students will be able to develop, know, and apply the properties of integer exponents to generate equivalent numerical and algebraic expressions.

Learning Activities:

(PowerPoint slide/exemplar references) [*Potential student responses*]

**0 min Introduce lesson/review:**

* Start class with a Math Brain Twister:
  + Take 259 \* your age \* 39
  + **Answer:** Your age three times.
  + **Example:** If you are 21, 259\*21\*39 = 212,121
* Have students hand in homework from last class. (4.4 homework)

**5 min Daily Activities:**

* Have students read the “I Can” Statement for the day and write it in their planners.
  + Today’s “I Can” Statement is: I can multiply and divide exponents.
* Discuss how to simplify a4\*a3 (Flipchart slide 3)
  + Express how the powers show how many factors there are.
  + If the base is the same, then you can add the exponents together.
  + Have students write the Product of Powers Property in their notes.
* Then move on to the examples.
  + Example 1 (Flipchart slide 4)
    - 87 \* 85
    - Base is the same, so 87+5=812
  + Example 2 (Flipchart slide 4)
    - (0.5) \* (0.5)4
    - Base is the same, so (0.5)1+4=(0.5)5
  + Example 3 (Flipchart slide 5)
    - 3x \* 5x5
    - Base is the same, so 3\*5\*x1+5=3\*5\*x6=15x6
* Next, discuss how we would divide with exponents.
* Express how, when writing in fraction form, the similar factors cancel out.
* In other words, we subtract the exponents when dividing if the base is the same.
  + Have students write the Quotient of Powers Property in their notes.
* Then move on to examples.
  + Example 1 (Flipchart slide 7)
    - 1011/107
    - Same base, so 1011-7=104
  + Example 2 (Flipchart slide 7)
    - z8/z3
    - Same base, so z8-3=z5
  + Example 3 (Flipchart slide 8)
    - 12n5/8n2
    - Same base, so [(3\*4)/(2\*4)]\*n5-2=3n3/2
* Now, have the students do the final example and put all the steps together.
  + Example (Flipchart slide 9)
    - (x \* 7x5) / 10x4
    - Same base, so (7\*x1+5) / 10x4 = 7x6 / 10x4
    - Same base, so (7/10)\*x6-4 = 7x2/10

**35 min In-Class Work Time:**

* Allow students to work on their homework. (Flipchart slide 10)
* As the students are working on the first problem, walk around and “polka-dot” their page with whatever color marker is handy.
  + This is a quick assessment to see that the students are on track and understanding the lesson.

**50 min Dismiss Class**

* **HAVE A FABULOUS DAY ☺**

Assessment:

The assignment for this lesson is the homework completed by the students from their textbooks.  
Reflection:   
Overall I feel as if the lesson went well. When I teach this lesson again, I will make sure to expand all expressions first so that students will understand the concepts better. Even with some confusion, the students were cruising through the homework assignment so it was nice to see that they were understanding the material.