Gaming in the Classroom - Lesson Plan

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Wii - Winter Sports: The Ultimate Challenge (Ski Jumping)

Grades: _____6_____   Subject Area: ___Math_____

Overview
In this lesson, students will be able to convert variables within both the metric and standard system, use the distance formula (Distance equals rate times time; D=RT), and divide decimals.

A. Topics: Conversions/Manipulation of formula/Decimal division/Decimal multiplication

B. Objectives:	
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
6.RP.2	Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, and use rate language in the context of a ratio relationship.
6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems.
6.NS.3	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
6.EE.5	Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
6.EE.6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
6.EE.7	Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q and x are all nonnegative rational numbers.

C. Instructional Resources:	
Wii Gaming System	Wii Winter Sports: The Ultimate Challenge
Wii remote	Wii Nunchuck Controller
Projector/White board	Pencil and paper for each student
Pre/Post test if desired	Calculators if desired

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D. Procedures:

1. Each student heads their paper to use as their participation in working out the problems.
2. One student at a time comes up to control the skier in the downhill decent and jump.
3. One student watches the speed (rate) the skier reaches right before the jump. The student calls this number out for the class. This is measured in kph. It becomes the first variable used to calculate the formula, D=RT. The students write this number on their paper. The teacher writes it on the board.
4. Once the student lands, the distance is displayed on the screen. This is measured in meters. This becomes the second variable used to calculate the formula, D=RT. The students write this number on their paper. The teacher writes it on the board.
5. In order to use the formula, students must convert the distance from meters to kilometers by dividing the value by 1,000.
6. Using these 2 values, students create the equation to solve for total time in the air (T). The formula now becomes T = D ÷ R.
7. Have the students now solve the equation for T.
8. Once the equation is solved, the resulting number needs to be converted from hundredths of an hour to a more meaningful time scale, seconds. Have students multiply the decimal value by 3,600.
9. This gives the students the variable they were solving for and completes their equation.

2. Teach:

*Suggestion: Teacher stands at the board and works first problems and then as students become comfortable, invite students to come up to the board to do problems as models for the class.

*Students who are not up actively participating in the game should be at their seats doing problems. Collect papers at the end of class and review for engagement and understanding.

*Suggestion: Have an order in place so students know who goes next- this will free up time during the lesson.

*If Pre/Post tests are going to be given, plan for these assessments during a different class time, this lesson will last for the full 45-50 minute period (in order for all students fully participate).

*Sample game play:
Skier travels 81.1 meters at a top speed of 83.07 kph.
Convert 81.1 m to 0.0811 km.
Divide 0.0811 km by 83.07 kph.
The answer 0.0009762 is rounded to 0.001.
Multiply 0.001 by 3600 to get 3.6 seconds.

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3. Closure:
1. Review conversion skills.
2. Review formula manipulation.
3. Post test plans if desired.

4. Assessment:
1. Teacher observation
2. Collect student seat work and evaluate for participation and/or for correct computation
3. Conduct Pre/Post tests covering conversions in both systems and use of formula

5. Differentiation:
*Conversion skills can be made more challenging by changing the formula into all English standard units (feet and feet per second).
*Conversions can be made easier if distances are rounded.
*Conversions can be made easier if calculators can be used.
*The formula can be simplified by giving students the formula in the correct format.

6. Connections:
*Conversions can be reviewed using Science concepts.
*The formula can be reviewed using Science concepts.
*The connection can be made between multiplying by a fraction or dividing by its reciprocal.