Laura Mullen October 5, 2015

Computer Science in Secondary Education Lesson Plan

**How Many Breaths?**



I chose to review the all-important topic of ratios and proportions, which is a 7th grade standard: Ratios and Proportional Relationships 7.RP in which students “analyze proportional relationships and use them to solve real-world and mathematical problems.” As an 8th grade teacher, students come to me and it is assumed that they know how to set up proportions and solve them.

**Day 1**

**Content Objective: SWBAT** calculate unit rates by converting units of time.

**Language Objective: SW** work with partners to write proportions and solve rate problems.

**Vocabulary:** unit rate; constant of proportionality; variables; x-axis; y-axis

**Resources/Materials:** stopwatches, Chromebooks, iSense, calculators, Day 1 worksheet

**Do Now:** How many minutes are in a day?

**Guided Instruction:**

-Review solving Do Now with a proportion by looking at students’ answers

-Show proportion boxes to ensure labels are maintained

**Partner Practice:**

-Allow students to choose their own partners; group of 3 if needed

-Students practice timing different things like 20 jumping jacks, saying the alphabet, etc.

-Introduce the sheet “How Many Breaths”

-Answer the questions in the beginning:

-Do you play a sport? Yes/No

-Male/Female?

-Allow each partner to have their breaths timed; Record number of breaths in one minute in the table

-Complete calculations to determine the number of breaths in one hour, one day, and one year

-Circulate to make sure that students are using proportions correctly

-Predict whether variables such as gender and playing a sport will affect the number of breaths

**Assessment:**

“How Many Breaths?” sheet (Day 1)

**Day 2**

**Content Objective: SWBAT** analyze proportional relationships using iSense graphs.

**Language Objective: SW** use scatter plots, bar graphs, and histograms to compare proportional relationships between the number of breaths taken and variables, such as gender and playing a sport.

**Vocabulary:** unit rate; constant of proportionality; variables; x-axis; y-axis

**Resources/Materials:** stopwatches, Chromebooks, iSense, calculators, Day 2 worksheet

**Guided Instruction**

-Students will each get a Chromebook

-Demonstrate how to get to the iSense website and search the project name “How Many Breaths?”

-Each student will enter their own data from the day before using their contributor key from Mrs. Mullen

-Give some exploratory time with iSense graphing features and then some guided time

**Independent Practice**

-Each student will work independently to answer the follow up questions about comparing number of breaths to gender and playing sports

**Assessment**

“How Many Breaths” sheet (Day 2)