Instructor: Gary Borysewicz (2003 Science Teacher Workshop participant)
School: Holy Family Academy, Bound Brook
Lesson Title: Radon & Assumed Risk
Grades: 6
Overview: Discuss radiation and describe why it can be harmful. Listen to students' perspectives on sources of radiation exposure. Point out that majority of radiation exposure comes directly from the earth naturally through radon. Discuss how they might have some control in their own future radiation exposure by modifying radon levels when buying their first home.
Objective: To have students understand the concept of assumed risk while integrating previously learned math concepts.
Materials & Resources: Data on costs of buying a home and the cost of radon testing and remediation. Data on the occurrence of radon in homes and lung cancer rates attributed to radon exposure. Calculators and some coins.
Procedure: Provide data to students on the costs of buying a new home (fixed cost) and also the costs of radon testing and remediation (variable cost). Students determine the percent cost increase incurred if radon testing is opted for, and also the percent cost increase if radon remediation is needed and opted for. Data on radon occurrence at actionable levels in homes (12.5%) and possible cancer rates for people with long-term exposure (.04%) is provided. Students determine the probability of actionable levels of radon being present in their homes (converting percentage to fraction) and if the radon is high, the long term probability of someone in their family getting sick. Using the above data, the probability of the student's new home having actionable levels of radon is 1/8 (1.00 divided by 0.125), and the probability of someone in their four-member family getting sick is 1/500 (1.00 divided by 0.125 * .004 * 4). We then use coin flipping to demonstrate these probabilities. For example, flipping and getting 3 heads in a row represents a 1/8 chance, flipping and getting 9 heads in a row represents 1/500 chance.
Assessment: The students are to write what they would do regarding radon testing and remediation in their homes. Students will be graded on how to back up their decisions with the data determined above.

A local home inspection company provided data on percent of homes with actionable levels of radon.
Data on cancer rates came from "A Citizen's Guide to Radon" published by the United States Environmental Protection Agency.