Science Scope and Sequence

Objective: Students will design, build, and evaluate their own solar-powered car.

Week 1:
8.3(D) Evaluate the impact of research on scientific thought, society, and the environment.
8.3(E) Connect Grade 8 science concepts with the history of science and contributions of scientists.

Link to NASA Distance Learning Network for engineering design challenge involving solar-powered cars. Students will research solar-powered cars and sketch initial designs.

http://dln.nasa.gov/dln/
http://www.nasa.gov/centers/dryden/news/FactSheets/FS-054-DFRC.html
http://www.reachoutmichigan.org/funexperiments/agesubject/lessons/newton/solarcar.html

Week 2:
8.3(C) Represent the natural world using models and identify their limitations.
8.5(A) Identify a design problem and propose a solution.
8.5(B) Design and test a model to solve the problem.

Continue with challenge by creating a working model from the initial sketch.

Week 3:
8.5(C) Evaluate the model and make recommendations for improving the model.

Test and evaluate model.

Math Scope and Sequence

Objective: Students will be able to calculate the cost for manufacturing (unit rate), sale price (percent of change), profit, and develop a promotional advertisement for the product that they developed

Week 1:

8.2(A) Select and use appropriate operations to solve problems and justify the selections.
8.2(B) Add, subtract, multiply, and divide rational numbers in problem situations.
8.2(C) Evaluate a solution for reasonableness.
8.2(D) Use multiplication by a constant factor (unit rate) to represent proportional relationships.
8.3(B) Estimate and find solutions to application problems involving percents and proportional relationships such as similarity and rates.

Discuss unit rate by having students create a list and cost for each item that was used in the development of their product. Students will decide on a sale price, and then calculate the percent of change from the cost to manufacture the item to the sale price. Once the price is determined, students will be able to calculate the profit on any quantity that is sold.

Week 2:

8.14(A) Identify and apply mathematics to everyday experiences, to activities in and outside of school, with other disciplines, and with other mathematical topics.
8.15(A) Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.

Develop a promotional advertisement for the product that was developed.

Week 3:

8.15(A) Communicate mathematical ideas using language, efficient tools, appropriate units, and graphical, numerical, physical, or algebraic mathematical models.

Students will present their products, being sure to discuss unit rate, markup and profit that will be made after sales.