Name_____ Period: _____ Cycle 3 January 18 – March 11

Integrated Science – 8th
SYSTEMS (Weeks 1 & 2)

Everything is energy and that's all there is to it. Match the frequency of the reality you want and you cannot help but get that reality. It can be no other way. This is not philosophy. This is physics.
— Albert Einstein

Overview

Movement involves one form of energy being transformed into another form systematic ways. Energy has the potential to exert a force over a distance. Waves transfer energy such as sound, heat, light, and earthquakes through different mediums. Sound and light waves allow organisms to "hear" and "see" the world around them. Energy is classified as either kinetic or potential energy.

Every object exerts a gravitational force on every other object. The distance between objects and mass of the objects determine the force of gravity between them. This force is difficult to measure unless one of the objects has a very large mass. Unbalanced forces cause change in the motion of objects, while balanced forces do not.

Essential Question 1: ***How are waves related to energy?***
Essential Question 2: ***What is friction and in what ways is it useful and problematic?***
Essential Question 3: ***How have simple machines change the way people view work?***

_____ _____ Participate in the MMA **Science Fair** (February 18th and 19th)
- _____ Topic chosen/Question to be asked
- _____ Background research and design complete and Hypothesis
- _____ Experiment or test complete/Data complied and Interpreted
- _____ Presentation board complete
- _____ Presentation to judges practiced/Ready for interview

_____ _____ **Culminating Individual/Group Project**: Create a Rube Goldberg machine! (50 pts) (***March 7-11th: Intersession Week***)

Individually or in a group of 2-3 individuals create a Rube Goldberg machine and present it to the class. This is a complex but fun activity that requires time, so plan accordingly. Please follow the instructions on the handout and be sure to answer the 3 questions and 10-step design in Pt 1.

Week 1: Due Friday, January 22

_____ _____1. Read the overview and quote with the class and mark them up.

Name_____ Period: _____ Cycle 3 January 18 – March 11

_____ _____2. Make vocabulary cards or fill out Marzano vocabulary sheets for the following words (are your definitions about the cycle's topic?): **potential energy, kinetic energy, force, gravity, complex machine, simple machine, wave, fetch, friction, amplitude, frequency, mass, weight**.

_____ _____3. Review: Science Fair expectations, guidelines, procedure.

_____ _____4. Participate in the lesson and quiz: Identifying variables.

_____ _____5. Receive instructions for and begin work on: Rube Goldberg machine.

Week 2: Due Friday, January 29

_____ _____6. Participate in and take notes on the lesson: Waves: Electromagnetic and Mechanical.

_____ _____7. Complete the worksheet: Parts of a Wave

_____ _____8. Read and take notes on pp. 510-514 of the Prentice Hall Physical Science textbook.

_____ _____9. Complete the Assessment questions (1-2) AND Writing in Science on p. 514 of the Prentice Hall Physical Science textbook.(20 pts) [please be sure you use complete sentences and correct grammar and punctuation in your Writing in Science essay for full points.]

_____ _____10. Visit the following website and watch the video on Ocean Waves: http://oceanexplorer.noaa.gov/edu/learning/player/lesson09.html

_____ _____11. In the above website, after viewing the video, click on the Activities link on the right titled "Breaking Waves". Complete "Measure a Wave" activity and questions A-D; self correct. (12 pts)

_____ _____12. Complete the Lab Activity and accompanying Worksheet: Wind and Waves (30 pts)

_____ _____13. Participate in and take notes on the lesson: The Relationship Between Speed, Wavelength, and Frequency.

_____ _____14. Complete the worksheet: Waves Worksheet

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Integrated Science – 8th
SYSTEMS (Weeks 3 & 4)

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- _____ Topic chosen/Question to be asked
- _____ Background research and design complete and Hypothesis
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Week 3: Due Friday, February 5

_____ _____15. Participate in the lesson on Heat Transfer: Radiation, Conduction, and Convection (ppt)

_____ _____16. Complete the Heat Transfer foldable (20 pts)

_____ _____17. Participate in the Lab Activity: Mabel the Marble

Name_____ Period: _____ Cycle 3 January 18 – March 11

Week 4: Due Friday, February 11

_____ _____18. Participate in and take notes on the lesson: Friction and Mabel the Marble

_____ _____19. Complete the handout: Friction (useful or not useful)

_____ _____20. Complete the worksheet: Methods of Heat Transfer (25 pts)

_____ _____21. Participate in the review lesson: Weight and Mass and gravity's effect

_____ _____22. Visit the following website: http://goo.gl/Y1oPZV and read about Weight and Mass, take notes, and answer the 3 Analysis questions at the bottom of the page. (9 pts)

... metallische Objekte im Wasser ortet ...

_____ _____23. Visit the following website: http://goo.gl/uPVm6a and read The Gravity Way! Complete the activity then answer the 3 Analysis questions. Please also answer the following questions on the same sheet of paper: 4.) Do you have gravity? Explain why or why not. 5.) If you were an astronaut, and you go farther into space, why do you become weightless? (15 pts)

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Integrated Science – 8th
SYSTEMS (Weeks 5 [Science Fair], 6, 7, & 8 [Intersession])

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... Töne und Bilder drahtlos überträgt ...

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Week 5: Due Friday, February 19

_____ _____24. Participate in and take notes on the lesson: Simple Machines

_____ _____25. Complete the Graphic Organizer/Sorting Activity on Simple Machines

_____ _____26. Science Fair Project!

Week 6: Due Friday, February 26

_____ _____27. Participate in the lesson: Classes of Levers and Calculating Mechanical Advantage of Levers.


... jeder Zeit und an jedem Ort telefoniert ...

Name_____ Period: _____ Cycle 3 January 18 – March 11

_____ _____28. Complete the Graphic Organizer: Classes of Levers.

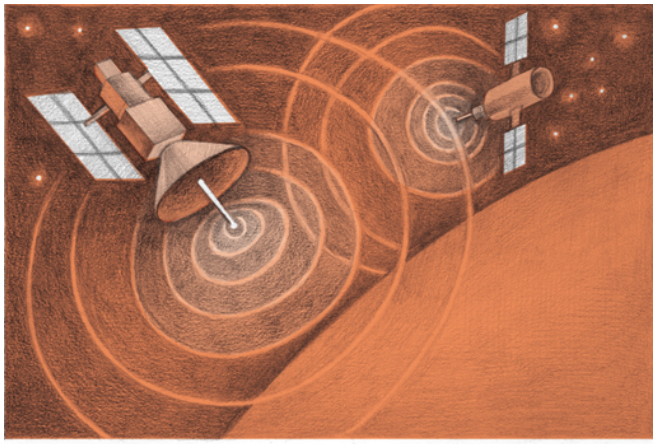
_____ _____29. Complete the handout: Mechanical Advantage of Levers

_____ _____30. Participate in the lesson: Potential and Kinetic Energies

_____ _____31. Visit the following website and read the content and answer the 2 Analysis questions on Kinetic vs. Potential energy: http://goo.gl/FfZRUZ (6 pts)

_____ _____32. Complete the following worksheet: Potential vs. Kinetic Energy. [Note: please refer to the Prentice Hall Physical Science textbook pp. 442-446 if you need more knowledge]

Week 7: Due Friday, March 4



_____ _____19. Read and take notes on pp. 454-459 of the Prentice Hall Physical Science textbook: Energy Transformations and Conservation.

_____ _____20. Bonus Work: Complete the Assessment questions (1-3) on p. 514 of the Prentice Hall Physical Science textbook.

_____ _____21. Participate in the lesson on Sensing Energy: The Sights and Sounds Around Us.

_____ _____22. Complete the Rube Goldberg Worksheets.

_____ _____23. Review for the test and update all graphic organizers.

_____ _____24. Take the Theme Test for cycle 3.

Week 8: Intersession

_____ _____ Present your Rube Goldberg Machine to your peers at the invention convention!