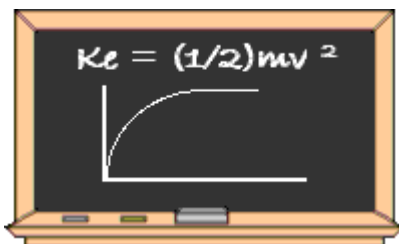


Kinetic and Potential Energy Webquest

Adapted from: http://www.stmary.k12.la.us/fhs/kinetic_and_potential_energy_web.htm



Potential energy is the same as stored energy. The "stored" energy is held within the gravitational field. The word "kinetic" is derived from the Greek word meaning to move, and the word "energy" is the ability to move. Thus, "kinetic energy" is the energy of motion --it's ability to do work.

Objective(s):

- ❖ Distinguish between kinetic and potential energy. (IN State Standard 6.1.4)
- ❖ Describe how energy is conserved when changing from one form to another. (IN State Standard 6.1.5, 6.1.6)
- ❖ Apply the law of conservation of energy to familiar situations. (IN State Standards 6.1.4-6.1.7)

Introduction:

You are an energy engineer employed by Energy Quest Incorporated. Your job is to research the different energies that exist that are related to kinetic and potential energy. You will encounter several links that are provided for research, quizzes, real-life experiments, and online activities. These links will help development an understanding of what Potential and Kinetic energy are and how they can be found in the world around you.

Task:

You will navigate through several links and answer questions. You will place your answers on the "Task Information" sheet provided. Each website is designed to demonstrate information about both kinetic and potential energy. Through interactive activities, your knowledge of potential vs. kinetic energy will be reinforced.

Process 1: Watch This!



- a. Watch the video Heather has for you. After you watch the video...
- b. Sketch the 2 demonstrations given in the video on your Student Sheet.
- c. Summarize why in scenario #1 the bowling ball does not smash his teeth and in scenario #2 he had to move his head. Do this on your Student Sheet on the space provided.

Process 2: Try it!

- Go to <http://www.cstephenmurray.com/onlinequizes/physics/workandenergy/kineticvspotentialenergy.htm>
- Answer each question without checking to see if you are correct.
- Put your percentage on your Student Sheet.

Process 3: Venn Diagram

- Use the information you learned above to make a Venn Diagram on your Student Sheet. Label the intersecting area "Both".
- Fill in the Venn Diagram

Process 4: QUIZ TIME!

- Go to <http://www.quia.com/cz/8072.html> . Take the Potential vs. Kinetic Quiz
- Click on " Play this Game"
- Answer the questions
- Click " check answers". Correct any incorrect answers
- Click " Next exercise" and answer the following questions
- Click " check answers". Correct any incorrect answers
- Click " next exercise" and answer the following questions
- Once you have collected 3 coins, you may exit and go on to the next task.

Process 5: Now I think that you are ready for the "Big League"!!!

- Go to : <http://www.quia.com/rr/35748.html> .
- Play " *Who Wants to be a Millionaire*: Energy Edition. GOOD LUCK!!!!

- You only get **TWO** chances to try and win \$1,000,000
 - Click on " Play this Game"
 - Answer the questions (You may receive hints from the computer)
 - Write the amount of money won from the 1st and the 2nd attempt on the "Task Information" sheet.
 - Once you have attempted twice to win the \$1,000,000 move on to the next task.



Process 6: Roller Coaster...Weeeee!!!



Roller coasters, like other amusement park rides, are designed using physics laws. View the following clip about roller coasters and the laws of physics.

- Watch the video <http://www.youtube.com/watch?v=To3jujFzwHg&index=10&list=PL4A974F53C3E5FDBF> . Your instructor will show you this video.

- b. Answer the question: “What does a roller coaster have to do with energy?” on your “Task Information” sheet.
- c. Read the following article from HowStuffWorks.com. You can find it in your W:drive under Science>Class>Where should I sit to get...After you have finished this article answer “Which seat gives you the best ride on a roller coaster? Explain.” On your “Task Information” sheet.

Process 7: Your Turn to Build a Coaster

Now try your hand at designing your own roller coaster. Build your coaster using the concepts of physics and what you have learned about kinetic and potential energy.

- Go to: <http://www.learner.org/exhibits/parkphysics/coaster/> and create your own roller coaster.

- a. Click “Begin”
- b. Select the “Height of the First Hill”
- c. Then click “next piece”
- d. Select the “Shape of the First Hill”
- e. Then click “next piece: exit path”
- f. Select the “Exit Path”
- g. Then click “next piece”
- h. Select the “Height of the Second Hill”
- i. Then click “next piece”
- j. Select the “Loop”
- k. Click “See Your Roller Coaster”
- l. Draw your roller coaster on the “Task Information” sheet
- m. Label the points where GPE and KE occur
- n. What were your safety ratings?
- o. What was your fun rating?
- p. Click on “your safety inspections” and tell whether or not your roller coaster passes safety inspections.
- q. Summarize each step’s explanation of your ratings



Process 8: Potential vs. Kinetic Quiz

Before your energy quest assignment is complete, you are to read through the following website and take the Unit Review Quiz.

- a. Go to: <https://www.texasgateway.org/resource/potential-and-kinetic-energy-1>
- b. Do the exercises (some of the interactive exercises may need you to allow them to run or may not show up). There are 3 sections: Introduction to KE and PE, KE, and PE
- c. Write your score on your “Task Information Sheet”

Conclusion

Reflections...



Your final task is to write a summary of what you have learned through this webquest. Include ways that this webquest has helped you gain a better understanding of kinetic and potential energy. Complete the reflections on the "Task Information" sheet.