

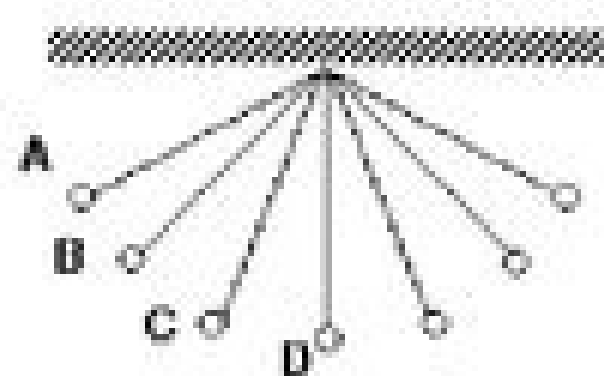
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Name \_\_\_\_\_  
 Per. \_\_\_\_\_

### Roller Coaster/Energy Quiz (20 Pts)

INSTRUCTIONS: Use the below diagram to answer questions 1-5.



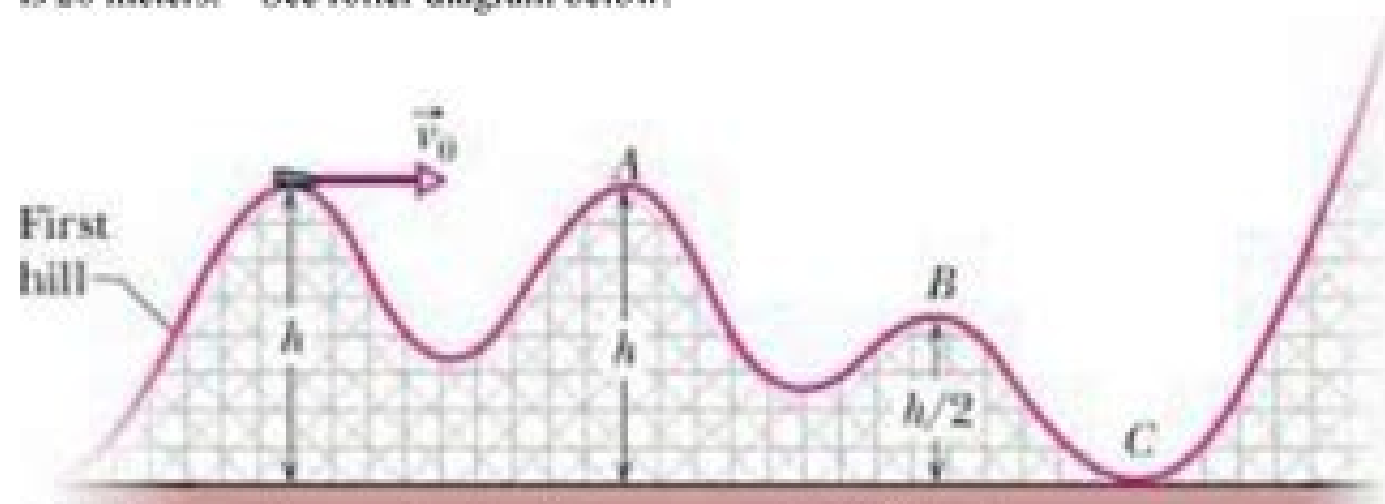
1. Which position does the "bob" of the pendulum have the highest Potential Energy (PE)?
2. Where does the "bob" have the highest Kinetic Energy (KE)?
3. Where do you think the PE=KE? (answer may be between locations)
4. What is the momentum of the "bob" at position B if the mass = 1kg and the velocity = 2 m/s.
5. If momentum of the "bob" at position "B" is equal to the momentum of the "bob" at position "X". What scientific principle does this demonstrate?

### Conservation of Energy Worksheet

Name: \_\_\_\_\_

PE before + KE before = PE after + KE after      PE = mgh      KE =  $\frac{1}{2}mv^2$       g = 9.81 m/s<sup>2</sup>

3. A 100 kg roller coaster comes over the first hill at 2 m/sec (v<sub>0</sub>). The height of the first hill (h) is 20 meters. See roller diagram below.



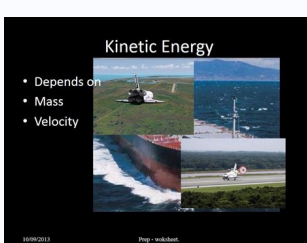
- 1) Find the total energy for the roller coaster at the initial point.
- 2) Find the potential energy at point A using the PE formula.
- 3) Use the conservation of energy to find the kinetic energy (KE) at point B.
- 4) Find the potential energy at point C.
- 5) Use the conservation of energy to find the Kinetic Energy (KE) of the roller coaster at point C.
- 6) Use the Kinetic Energy from C, find velocity of the roller coaster at point C.

Handwritten student work for a physics problem involving a ball on a ramp. The student uses kinematic equations to find velocity and displacement.

1. The ball starts the velocity is zero for a rolling ball.  
 2. The ball starts the velocity is zero for a rolling ball.  
 3. The ball starts the velocity is zero for a rolling ball.  
 4. The ball starts the velocity is zero for a rolling ball.  
 5. The ball starts the velocity is zero for a rolling ball.  
 6. The ball starts the velocity is zero for a rolling ball.  
 7. The ball starts the velocity is zero for a rolling ball.  
 8. The ball starts the velocity is zero for a rolling ball.  
 9. The ball starts the velocity is zero for a rolling ball.  
 10. The ball starts the velocity is zero for a rolling ball.

Match the questions/statements in Column A to the Answers/Statements in Column B.

Column A	Matching Statement number	Column B	
During a chemical reaction what is always transferred?		In a chemical reaction energy cannot be created or destroyed.	1
What is meant by the conservation of energy?		Record initial temperature of reactants and the final temperature to find the temperature difference.	2
How is energy transferred in chemical reactions?		The energy of the products will be less.	3
What name is given to reactions that transfer energy to the surroundings?		During this reaction heat is being removed from the surroundings.	4
Proof that an exothermic reaction has taken place.		Through the breaking of chemical bonds in the reactants and creating new bonds in the products.	5
What is the name given to chemical reactions that transfer energy from the surroundings to the reactants?		Exothermic	6
Examples of an exothermic reaction.		Oxidation, combustion, respiration or neutralisation	7
Examples of an endothermic reaction		The chemical produced as a result of a chemical reaction.	8
What is meant by the term "thermal decomposition"?		Photosynthesis, sodium hydrogen carbonate and citric acid or thermal decomposition	9
If a reaction gives out energy to the surroundings, what happens to the energy of the products?		To break down with heat	10
Not every collision between particles results in a chemical reaction, why?		The chemicals that you start off with, before the reaction takes place.	11
What investigation would you do to find out if a reaction is endothermic or exothermic?		Not all particles collide with enough energy to cause a reaction.	12
When you put some types of candy into your mouth it feels like it's melting. Why?		Through an increase in temperature from the reactants to the products	13



## Supercharged geothermal energy worksheet answers.

In this worksheet, we will practice describing the advantages and disadvantages of geothermal power, and which locations are suitable for geothermal power stations. Q1: Which of the following statements correctly describe the advantages of geothermal power? Geothermal power is a renewable energy source. Geothermal power stations are very cheap to build. Geothermal power stations can be built anywhere. Geothermal power stations produce very few pollutants that are damaging to the environment. Geothermal power stations produce alternating current; therefore, they are easy to connect up to the electricity grid. Aa, c, e Ba, d, e Ca, b, c De, b, d Eb, a, e Q2: In Iceland, a large proportion of the nation's electricity supply is produced through geothermal power. The five major geothermal power stations in Iceland produce approximately 26% of Iceland's electricity supply. Which of the following reasons correctly explains why many locations in Iceland are suitable for geothermal power stations? A Geothermal power stations are very cheap to build. B Iceland is located on a rift between continental plates. As such, there is a high concentration of volcanic activity in Iceland. This makes the rock beneath the surface very hot, and this energy can be used to heat steam to drive turbines. C Geothermal power stations are more efficient if the average temperature of the surrounding environment is lower. Average temperatures in Iceland are lower than many other countries; thus, geothermal power stations are more efficient in Iceland. D Iceland is remote. Thus, transporting coal or natural gas to the island is more expensive than building geothermal power stations. E Iceland is an island. As such, there is easy access to water from the ocean. Geothermal power plants require a lot of water to convert into steam to drive turbines. Q3: Which of the following statements correctly describe the disadvantages of geothermal power? Geothermal power stations can only be built in certain locations. Geothermal power stations produce large quantities of sulfur dioxide, which is damaging to the environment. Geothermal power stations are only efficient enough to be economically viable in cold climates. Geothermal power stations produce large quantities of carbon dioxide, which contributes to climate change. Geothermal power stations are expensive to build relative to the amount of power they produce. Ab, c Bd, e Ca, d Dc, d Ea, e Q4: Hellisheiði Power Station is a geothermal power station in Hengill, Iceland. The power station has an installed capacity of 303 MW. How much energy does the power station produce each year? Give your answer to the nearest gigawatt-hours. Use a value of 365 for the number of days in a year. Q5: The Geysers is the world's largest geothermal power station complex. It is located in the Mayacamas Mountains approximately 70 miles north of San Francisco. The installed capacity of the power station complex is 1,517 MW. What is the total annual energy output of the Geysers power station complex? Give your answer in gigawatt-hours to 2 significant figures. Use a value of 365 for the number of days in a year. In 2016, the total US electricity consumption was 4,137 terawatt-hours. What percent of this demand was supplied by the Geysers? Give your answer to 1 decimal place. A1.3% B3.2% C0.3% D4.9% E3.9% Live worksheets > English Finish!! Please allow access to the microphone Look at the top of your web browser. If you see a message asking for permission to access the microphone, please allow. Close Live worksheets > English Finish!! Please allow access to the microphone Look at the top of your web browser. If you see a message asking for permission to access the microphone, please allow. Close What is geothermal energy? Find out how we use parts of the Earth to provide us with renewable energy! Kids will read about geothermal energy, and then fill in the vocabulary review at the end of the page. View answers Add to collection Assign digitally Common Core State Standards Texas Essential Knowledge and Skills (TEKS) Virginia Standards of Learning (SOL) Next Generation Science Standards (NGSS) BC Performance Standards Alberta Program of Studies The Australian Curriculum (ACARA) The Victorian Curriculum (F-10) In order to continue enjoying our site, we ask that you confirm your identity as a human. Thank you very much for your cooperation.

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