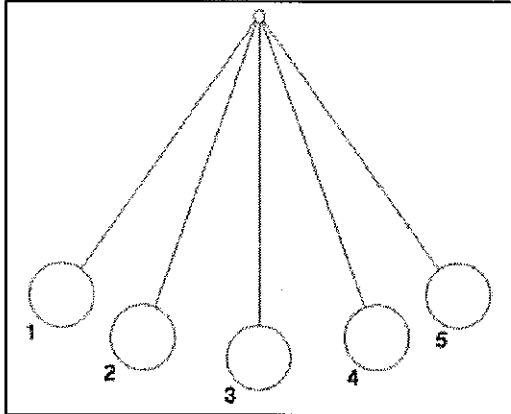
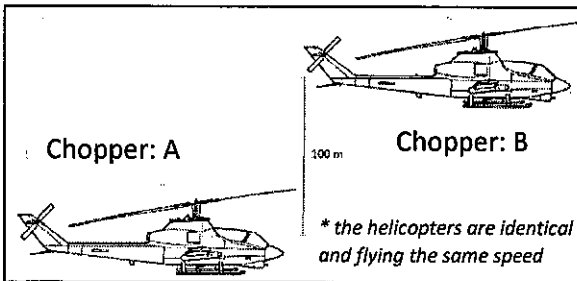


1. Explain the energy transformation between A and B.  
*gravitational potential decreases and kinetic energy increases*
2. What point has the highest kinetic energy? B
3. What point has the highest potential energy? A



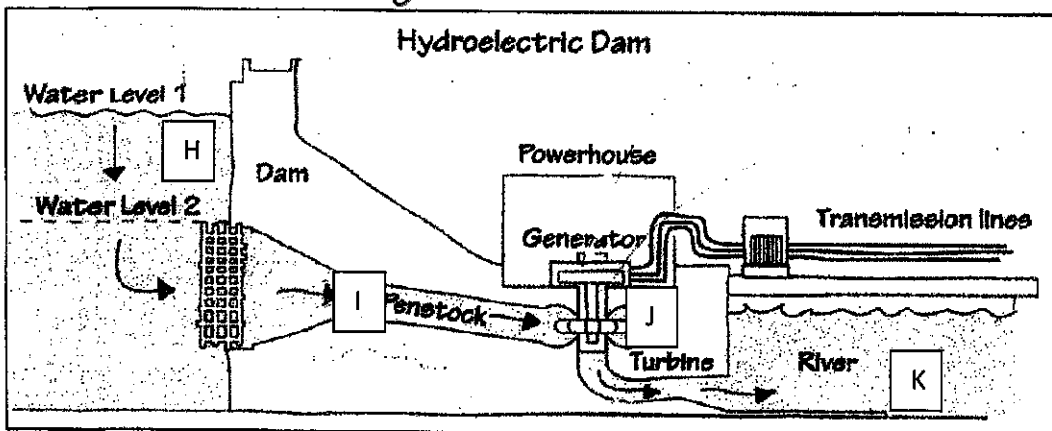
4. At what point(s) does the pendulum have the greatest potential energy? 1 & 5
5. At what point(s) does the pendulum have the greatest kinetic energy? 3
6. At what point is the kinetic energy decreasing? 4
7. At what point is the kinetic energy increasing? 2
8. At what point is the potential energy decreasing? 2
9. At what point is the potential energy increasing? 4



10. Which chopper has more gravitational potential energy? B  
Why? *because it is higher than chopper A*
11. Describe the potential energy between A and B.  
*Chopper B has more potential energy than chopper A*

12. Describe the kinetic energy between A and B.

*Choppers A & B have the same kinetic energy*



13. At what point is the gravitational potential energy the greatest? Explain. H  
*H is the highest point in the dam*

14. Describe the energy transformations that occur after lighting a match. *Think about the match rubbing along a piece of sandpaper and match starts to burn. What happens to the energy during the lighting of the match?*

chemical → thermal & light

15. Imagine you are researching burning coal as a source of energy. Why is it that when coal is burned to produce electricity, the electrical energy produced is less than the potential energy of the coal? Describe your reasoning in detail.

Some of the energy is converted into other forms of energy such as thermal, radiant, etc.

16. What is the energy transformation of rubbing your hands together on a cold day?

chemical → mechanical → thermal

17. What is the energy transformation of a clothes dryer.

electrical → mechanical → thermal

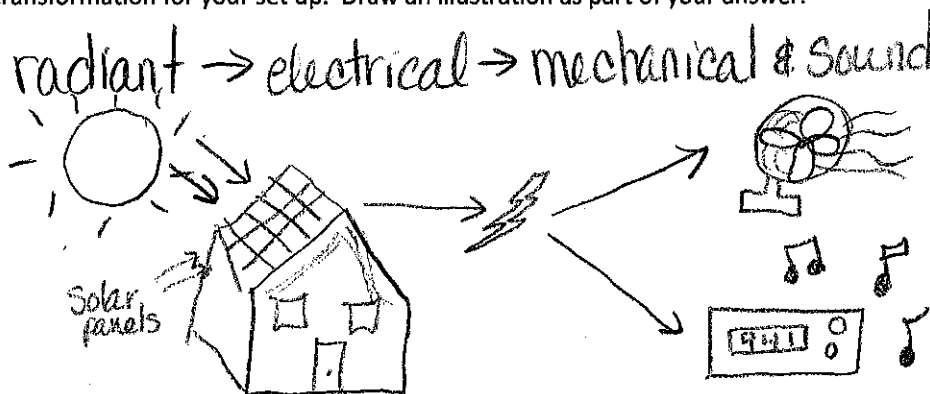
18. What type of energy does a waterwheel and a windmill use to produce electricity? mechanical

19. Describe the Law of Conservation of Energy: energy cannot be created or destroyed but only changed (transformed)

20. Potential or Kinetic energy?

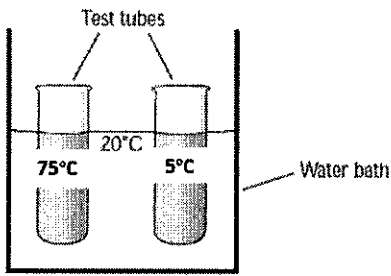
- a. swimming laps in a pool kinetic  
 b. standing on the roof of your house potential  
 c. hitting a beach ball kinetic  
 d. holding a golf ball potential

21. Imagine you live off the grid and you must rely on only solar power for electricity. You are lucky enough to have solar panels on your roof. You just moved in and the only things you have to power is a fan and a radio. Describe the energy transformation for your set up. Draw an illustration as part of your answer.



22. When a bat searches for prey at night, it makes sounds as it flies and it uses the sounds' echoes to find its prey. When the bat flies and listens to echoes to locate prey, what type(s) of energy does the bat use? Explain

mechanical (flying) & sound (noises it makes)



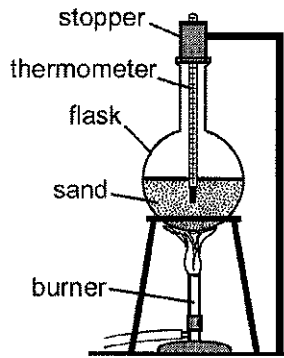
33. Students are carrying out an investigation exploring heat transfers. During the investigation, students put one test tube of 75 °C liquid and one test tube of 5 °C liquid into a 20 °C water bath, as shown in the diagram. The students record their observations and reasoning for the investigation.

Describe what you know to accurately explain what will happen to the liquids in both test tubes? *Think about what the temperatures in each test tube will do.* Provide explanations.

The temperature in test tube A will decrease and the temperature in test tube B will increase. They will eventually become the same temperature.

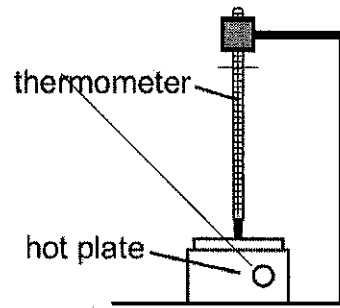
34. For each of the following setups, describe the type of heat transfer to heat the thermometer.

a.



conduction only

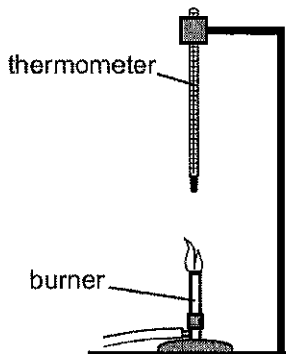
c.



Conduction & maybe convection and maybe radiation...

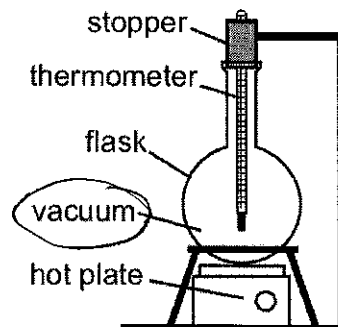
This one is a weird setup. I'm not sure why anyone would do this. ☺

b.



radiation and convection

d.



radiation only because it is in a vacuum (like outer space)

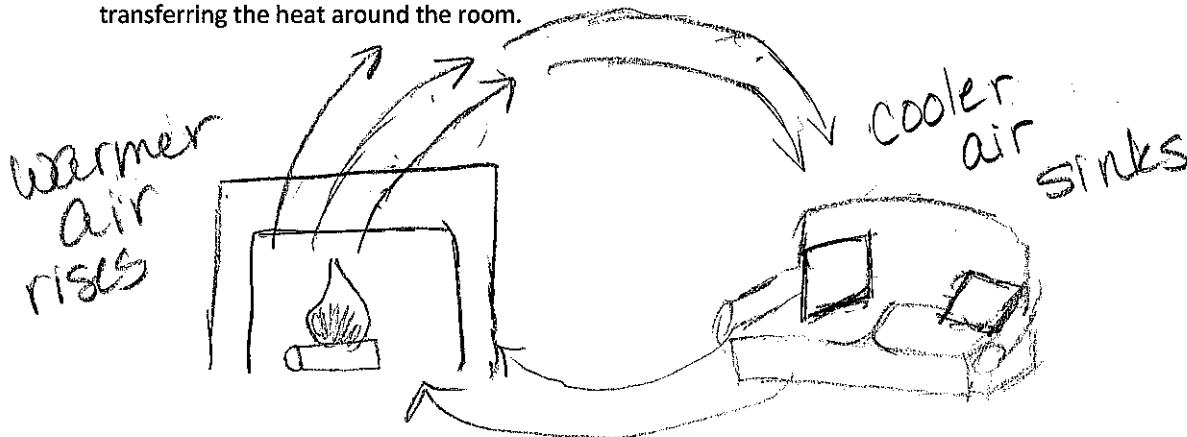
23. You and a friend just get inside from playing all day in the snow!!! Wahhooooo .. Snow Day!!!! You want to make your friend some hot apple cider so you heat some up in a pot on the stove. You are so hospitable that you decide to make you and your friend some hot pockets in the microwave oven. How did you transfer heat to make these snacks?

Hot apple cider: convection  
 Hot Pockets: radiation

**Convection, Conduction or Radiation?**

Scenario	Type of heat transfer
24. Burning your feet on the hot sand at the beach	conduction
25. An ocean breeze due to the hot air rising over the hot sand	convection
26. Hot pavement that was hotter than the dirt along the road	radiation
27. Getting a sun burn	radiation
28. Feeling the heat coming from the pavement when you walk to your car in the middle of the summer after grocery shopping	radiation
29. A bedroom upstairs in the winter feels warmer than the basement.	convection
30. Roasting a marshmallow to make s'mores when you are camping.	radiation

31. Draw a picture of a living room with a fire in the fireplace. Draw how the air molecules are moving as convection occurs transferring the heat around the room.



32. Draw a graph to represent how hot the fire makes each person feel



Graph:

