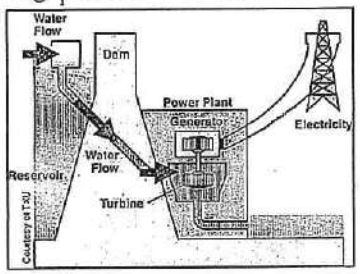
8th Science Energy Study Guide

Name Kelly Date ___ Period ___

1. An engine converts 95% of its energy to mechanical energy. What happens to the other 5% of its energy? (S8P2a)

the other 5% escapes as heat energy

2. The diagram to the right shows a hydroelectric power plant. (S8P2a, c)



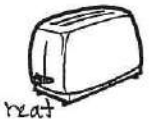
(a) Identify the type of energy of the water behind the dam. gravitational potential energy

(b) When the water flows past the turbine, as shown in the diagram, the energy of the water behind the dam changes to what type of energy?

Kinetic – mechanical

Identify the energy transformations in the following: (S8P2a,c)

3. Toaster



electrical → heat

6. Windmill

mechanical → mechanical

4. Flashlight

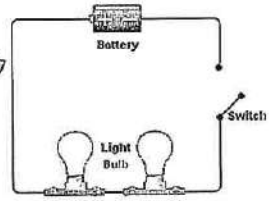
Chemical → light

7. Lightbulb

electrical → light

5. Circuit

Chemical → electrical → light



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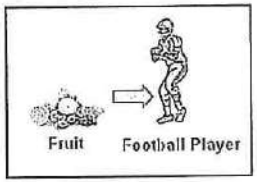
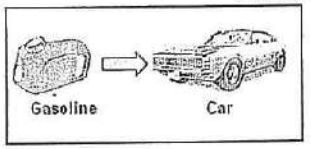
8. When a match is lit, energy transforms from chemical energy to thermal (heat) energy and light energy. Describe the changes in the chemical, thermal, and light energy of the lit match. (S8P2a,c)

The matchhead burns (chemical) transfers to heat & light of the flame.

9. Look at the two diagrams to the right. What type of energy transformation is occurring in both diagrams? (S8P2a,c)





Both are Chemical → mechanical

10. Which form of energy is given off by the vibrating strings on the banjo shown in the diagram? (S8P2c)

Sound energy

11. Enrique's soccer coach told him to eat a good breakfast Saturday morning in order to have plenty of energy for the soccer game. To which transformation of energy is Enrique's coach referring? (S8P2c)

Chemical → mechanical

12. Identify the type of Energy shown in the diagram. (S8P2c)

Nuclear Energy

13. Which of these has kinetic energy? Explain. (S8P2b)

The ball is rolling on the ground & the other examples are NOT moving

14. Identify an example of chemical potential energy. (S8P2b)

An uneaten Salad

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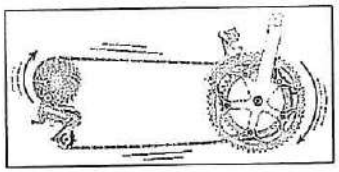
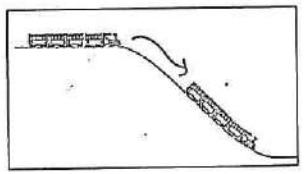
15. The diagram to the right shows the gear of a bicycle. Which form of energy is shown? (S8P2c)

mechanical energy



16. The image to the right shows a train traveling from a starting point at the top of the hill. What type of energy change is occurring in the image to the right? (S8P2b)

gravitational potential → Kinetic energy



17. Identify whether the following is an example of kinetic energy or potential energy: (S8P2b)

a. throwing a ball KE

b. gasoline in a car PE

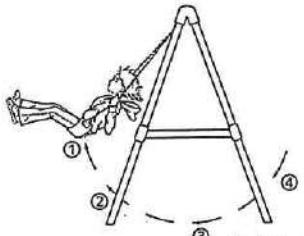
c. hitting a tennis ball KE

d. water behind a dam PE

e. a peanut butter sandwich PE

f. a falling rock PE

A diagram of a student on a playground swing is shown to the right. (S8P2b)



18. At which point is the kinetic energy the greatest?

point 3

19. At which point is the potential energy the greatest?

point 1

20. Explain what happens to the potential and kinetic energy as the student swings.

As the student swings from point 4 the gravitational energy changes to Kinetic energy as she moves to point 3 and the KE changes back to potential from point 3 to 1.

21. Why does heat convection only occur in gases and liquids? (S8P2d)

Gases and liquids can flow and heat convection requires particles in movement between hot & cold fluids.

22. Describe the relationship between radiation, thermal energy, and electromagnetic waves. (S8P2d)

Electromagnetic waves from the sun can be transferred through empty space by radiation and it produces a lots of thermal energy.

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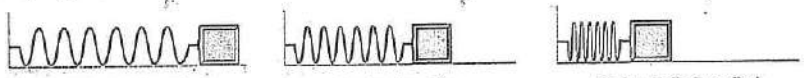
A student is investigating potential and kinetic energy by stretching a spring. When the student lets go, the spring recoils.

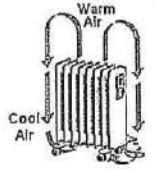


23. Explain at which time the potential energy in the spring is being converted into kinetic energy in this system. (S8P2b)

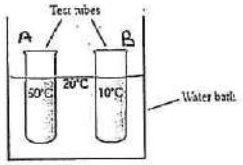
In picture B the potential energy from the stretched spring is bouncing back to its original position.

24. The diagram to the right shows a radiator heating the air surrounding it. Explain what type of heat transfer is occurring. (S8P2d)

Convection is occuring as hot air rises & cold air sinks to take its place creating a current.



A teacher put one test tube of 50°C liquid and one test tube of 10°C liquid into a 20°C water bath, as shown in the diagram to the right.

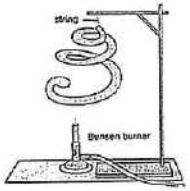


25. Explain what will happen to the liquids in the test tubes. (S8P2d)

The test tube A will lose energy to the water & the water will lose energy to test tube B until all temperatures are equalized.

26. When the Bunsen burner is on, as shown in the diagram to the right, the paper string will spin. Explain what causes the paper to spin. (S8P2d)

As the heat from the flame warms the air it expands & rises causing movement of the paper.



27. Identify the types of Energy transfer shown in the diagram to the right. (S8P2d)