Energy Stores, Sankey Diagrams and Efficiency

Name: _____ Date: _____

Match the remaining energy stores

Match each energy store to its correct description.

gravitational potential	the energy stored in the nuclei of atoms
elastic potential	the energy stored by an object because of its height in a gravitational field
nuclear	the energy stored when electrically charged objects attract or repel each other
thermal	the energy stored in a hot object because the particles are moving randomly
magnetic	the energy stored when an object is stretched or compressed

electrostatic	the energy stored when magnets attract or repel each other

Complete the energy transfer sentences

Use the word bank to complete each sentence. Each word is used once.

1. In a moving car, energy can be transferred from the fuel's _____ store to the car's movement.
2. The movement of the car is described as its _____ store.
3. Some of the car's energy is transferred to the surroundings by _____.
4. In a torch, energy from the battery is transferred to the lamp by _____.
5. Light from the torch is energy transferred by _____.
6. When energy spreads out to the surroundings and becomes less useful, it is _____.

Word Bank

dissipated	electrical work	radiation	heating
kinetic	chemical		

Efficiency in real energy transfers

Read each worded problem, then calculate the efficiency. Show your working and give each answer as a percentage.

1 A loudspeaker takes 250 J of input energy and transfers 175 J as useful sound energy.

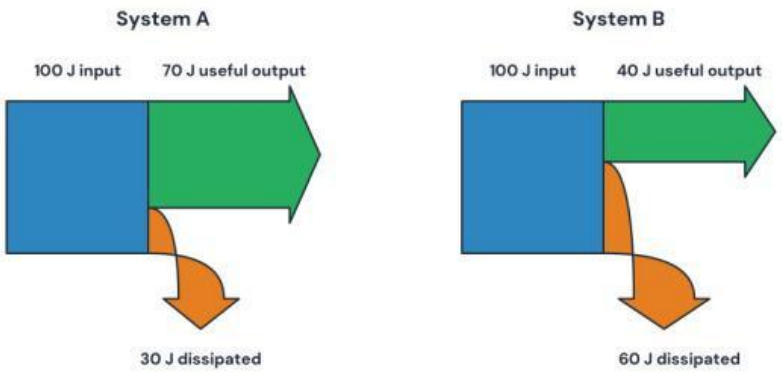
2 An electric kettle receives 1200 J of energy. 1020 J is transferred usefully to the thermal store of the water.

3 A lamp takes in 80 J of energy and transfers 12 J usefully as light.

4 A cyclist's dynamo transfers 54 J of energy usefully to the bicycle light from 90 J input.

Read the Sankey diagrams

Look carefully at the Sankey diagrams and answer the questions in full sentences. Use the values and the arrow widths in your explanations.



1. Which system is more efficient? Explain your choice using the useful and dissipated energy transfers.

2. In System B, is more energy transferred usefully or dissipated? Give the values.

3 Both systems have the same input energy. Compare their useful outputs.