

Energy Conservation Assignment – Student Edition

I. Vocabulary Match Up

Match the terms with their definitions.

Definition	Term
1. The energy given out/released by an appliance or device.	a) Energy transfer
2. In a closed system, energy cannot be created or destroyed, and instead changes from one form to another.	b) Useful energy
3. A sequence of energy changes, usually starting with a form of potential energy.	c) Waste energy
4. The unit for energy.	d) Energy Input
5. The percentage of input energy which is efficiently used by an appliance or device.	e) Energy Output
6. A change from one form of energy to another.	f) Conservation of Energy
7. The energy used by an appliance or device.	g) Energy efficiency
8. When energy is passed from object to object but remains in the same form.	h) Energy Chain
9. Output energy which cannot be used.	i) Joule
10. Output energy which is utilized in some way.	j) Energy transformation

II. True or False?

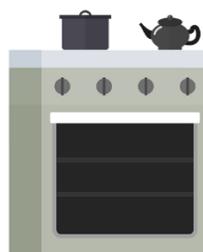
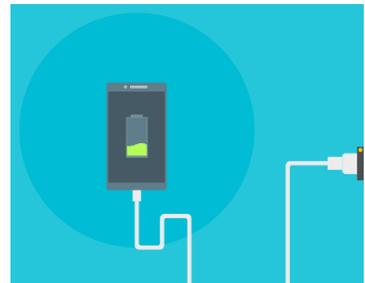
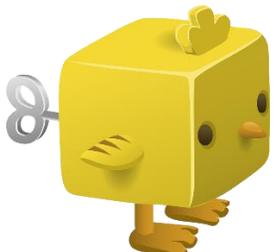
Decide if the following statements are true or false. Correct the false statements to make them true.

- When an energy transformation takes place, all of the energy is converted from the original form into the new useful form.
- In an energy transformation, the energy input will always be greater than the energy output.
- Energy transformations only ever produce one type of energy at a time.
- Energy must come from a source.
- Appliances which have a higher % efficiency will have less waste energy and more useful energy.

Energy Conservation Assignment – Student Edition

III. Identifying Energy Transformations

The images below show objects which can carry out energy transformations. For each image, state the energy transformation which is occurring.

<p>1. Flashlight</p>  <p>_____ energy to _____ energy</p>	<p>2. Cook Top Element</p>  <p>_____ energy to _____ energy</p>	<p>3. Phone charger</p>  <p>_____ energy to _____ energy</p>
<p>4. Blender</p>  <p>_____ energy to _____ energy</p>	<p>5. TV Remote</p>  <p>_____ energy to _____ energy</p>	<p>6. Wind-up toy</p>  <p>_____ energy to _____ energy</p>

IV. Energy Chains

Read the scenarios below and then create an energy chain to summarize each of them.

- In a car the petrol is burned through combustion which powers the engine allowing it to move as well as allowing it to produce heat, light, and sound.

- A bungee jumper leaps off a ledge and free falls until his elastic causes him to bounce back up again.

Energy Conservation Assignment – Student Edition

V. Efficient Appliances

1. Use the formulae to complete the table below:

$$\text{Energy input} = \text{energy output}$$

$$\text{Energy output} = \text{Useful energy} + \text{Waste energy}$$

Appliance	Input Energy (J/s)	Useful Energy (J/s)	Waste Energy (J/s)	Output Energy (J/s)
Toaster			1200	1500
Heater	2400		200	
Kettle	2000		600	
Lamp		10		100
TV	800		150	
Fan	600		120	

2. Use the results from the table above and the formula below to calculate the energy efficiency for each appliance. Some of the table has been completed for you.

$$\text{Energy Efficiency} = \frac{\text{Useful energy} \times 100}{\text{Energy Input}}$$

Appliance	Energy Input (J/s)	Useful Energy (J/s)	Energy Efficiency (%)
Toaster			
Heater	2400		
Kettle	2000		
Lamp		10	
TV	800		
Fan	600		

3. List the appliances from most to least efficient.

4. Name the most common form of waste energy.

5. Why is it useful for a consumer to know about the energy efficiency of an appliance or device?
