

# Teacher

## Energy Practice Problems Grade 10 ST

1. Which of the following is a transformation from chemical energy to thermal energy?
- a. Coal is burned to boil water - Thermal
  - b. Food is digested and used to regulate body temperature → Thermal
  - c. Charcoal is burned in a BBQ pit
  - d. All of the above
  - e. None of the above
- Thermal ↑ all have stored chemical energy to start

2. What device converts chemical energy to mechanical energy?

- food → running a. human  
gas → movement b. car  
gas → movement c. jet ski

→ movement

3. The law of Conservation of energy states that energy cannot be created or destroyed

- a. transformation
- b. absorption
- c. conservation

4. Associate the following statements with the appropriate energy source

Fossil Fuels                  Uranium                  Geothermics

Statement	Energy source
Use of this energy source for transportation is a cause of acid rain	Fossil Fuels
This is a renewable energy source	Geothermics
This energy source produces dangerous radioactive waste	Uranium
This energy source may soon be depleted	Fossil Fuels
Even in small quantities, this <u>element</u> produces a very large amount of energy	Uranium
This energy source is the main cause of global warming	Fossil Fuels
In volcanic regions, it is often easy to access this energy source	Geothermics

5. How do fossil fuels emit thermal energy?

By burning

6. Name 2 advantages and 2 disadvantages of hydroelectric production.

Adv: ① renewable

② No Greenhouse Gases

disad: ① Huge Infrastructure to build

② can disrupt water ecosystem

7. Could wind energy one day be the only source of energy in Quebec? Explain your answer.

No, Wind is unreliable.

8. A machine has an energy efficiency of 35%. What amount of energy must this machine consume to provide 680 J of useful energy?

$$35\% = \frac{680\text{J}}{x} \times 100 \quad \frac{35}{100} = \frac{680\text{J}}{x}$$
$$= 1942.8\text{J}$$

9. The amount of energy contained in a litre of gas is  $3.6 \times 10^7$  J. If only 12 % of this energy is used to make the car move, what is the amount of useful energy per litre of gas?

$$12\% = \frac{x}{3.6 \times 10^7\text{J}} \times 100$$

$$\frac{12}{100} = \frac{x}{3.6 \times 10^7\text{J}}$$

$$x = 4\,320\,000\text{J}$$