Storing solar energy for the night

Worksheet for Activity 1

A. Electric power

1. Write the formula for Ohm's law and explain the symbols in the formula.

2. Design an electrical circuit containing: electrical source (battery), resistor (lamp, switch, ammeter and voltmeter. The ammeter should measure the current flowing through the circuit when the switch is off and the voltmeter the difference). (voltage) at the ends of the lamp Ask your teacher for feedback on the diagram.

3. Assemble the circuit you designed.

4. Turn on the switch and record the ammeter and voltmeter readings in the table below. Repeat the process with three different bulbs.

Lamp	Potential difference (V)	Current intensity (A)
1		
2		
3		

5. The power consumed by a resistor is given by the relationship

$$P = I \cdot U$$

Power is measured in watts (watt, W).

Calculate the power consumed by each lamp.

Lamp 1:

Lamp 2:

Lamp 3:

B. Gravitational Dynamic Energy

1. Write the formula for gravitational energy and explain the symbols in the relationship.

2. The power of a machine is given by the relation

$$P = \frac{W}{t}$$

where W is the work produced by the machine and t is the time at which this work was performed.

3. A pump raises water to fill the tank of an apartment building. The tank is located at a height of 25 meters and has a capacity of two tons. The pump fills the tank in eighty minutes.

Calculate:

α. The dynamic energy of water in the tank in relation to the ground.

β. The power provided by the pump.