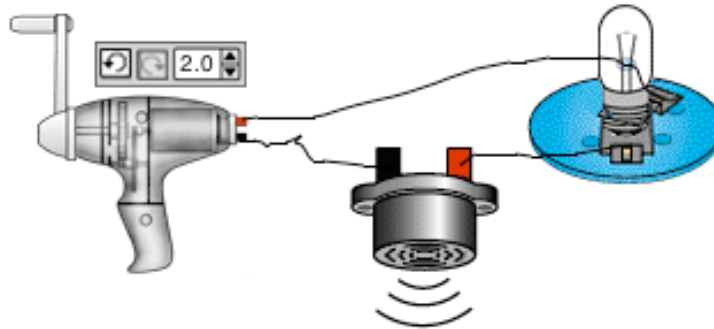


A group of students were using the Electric and Magnetic Devices simulator to investigate their ideas about energy. They set up the circuit shown below and ran it for 30 seconds.



They then copied down the energy-bar graphs for the three devices, as shown below. (The energy amounts shown are in units of joules.) Unfortunately they did not write down all the numbers on the energy bar graphs.

Generator 1	
<b>ENERGY INPUT</b>	
MECHANICAL	
<b>ENERGY OUTPUT</b>	
ELECTRICAL	7.87
HEAT	0.03
<b>ENERGY CHANGES IN SYSTEM</b>	
TEMPERATURE	0.04

Buzzer 1	
<b>ENERGY INPUT</b>	
ELECTRICAL	
<b>ENERGY OUTPUT</b>	
Sound	1.14
HEAT	4.52
<b>ENERGY CHANGES IN SYSTEM</b>	
MOTION	0.04
TEMPERATURE	0.08

Bulb 1	
<b>ENERGY INPUT</b>	
ELECTRICAL	2.1
<b>ENERGY OUTPUT</b>	
LIGHT	0.42
HEAT	
<b>ENERGY CHANGES IN SYSTEM</b>	
TEMPERATURE	0.02

Can you help these students by determining what some of the missing amounts of energy are? In each case explain your reasoning and show any calculations you perform. Give your answers in units of joules.

- Find the mechanical energy input to the generator
- Find the electrical energy input to the buzzer
- Find the heat energy output from the bulb