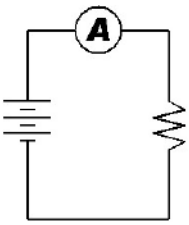
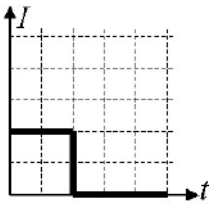
NAME _____ DATE _____

Scenario

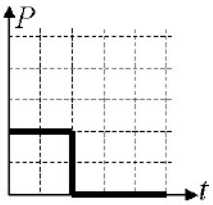
Circuit 1 is connected at time $t = 0$ and the chemical reaction taking place within the battery reaches completion after 2 hours. The two graphs show the current passing through the battery and resistor as a function of time and the power delivered by the battery and to the resistor as a function of time.



Circuit 1



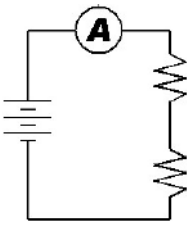
Circuit 1's I vs. t



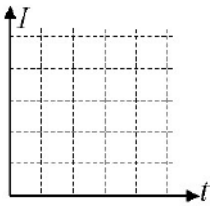
Circuit 1's P vs. t

Using Representations

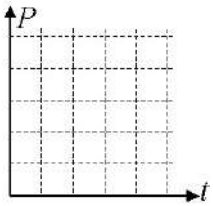
PART A: Circuit 2 is shown below and has a fresh identical battery and identical resistors as Circuit 1. The I vs. t graphs and P vs. t graphs have the same scale as the corresponding graphs above. Sketch graphs of I and P for the battery as a function of time and graphs of I and P for one of the resistors as a function of time.



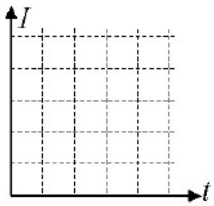
Circuit 2



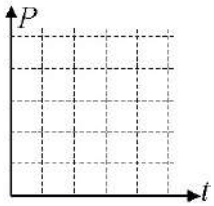
I vs. t for battery



P vs. t for battery



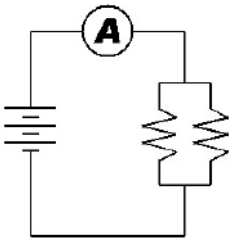
I vs. t for a resistor



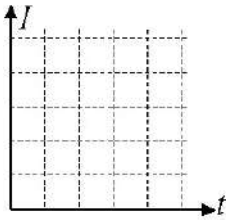
P vs. t for a resistor

Explain your reasoning for the graphs you constructed.

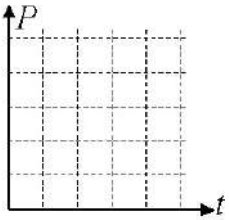
PART B: Circuit 3 is shown below. It has a fresh identical battery and identical resistors as Circuit 1. The I vs. t graphs and P vs. t graphs have the same scale as the corresponding graphs above. Sketch graphs of I and P for the battery as a function of time and graphs of I and P for one of the resistors as a function of time.



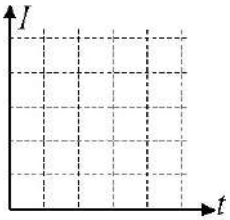
Circuit 3



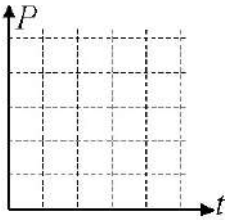
I vs. t for battery



P vs. t for battery



I vs. t for a resistor



P vs. t for a resistor

Explain your reasoning for the graphs you constructed.