P	HYSI	CS
	INMOTIO	CNC
gpb	org/physics	-motion

Unit 5F Ohm's Law Practice Problems

Date:

Work each of the followin	na problems.	SHOW ALL	WORK.

1.	Before leaving the house in the morning, you plop some stew in your slow cooker and turn it on Low.
	The slow cooker has a 160 0hm resistor and is plugged into a 120 V outlet. When you come home 8 hours
	later, how much charge has passed through the slow cooker circuit in that time?

2. A medical imaging device shoots 8 million electrons per second through an Ohmic gas. The electrons are motivated by a 3000 V potential difference. What is the effective resistance of the gas?

3. Out in the woods filming a documentary about timber rattlesnakes, your video camera runs out of batteries. The camera draws 0.25 Amps of current, and has an overall resistance of 72 Ohms. What voltage supply does this camera need - will your last 6 pack of 9V batteries do the job?



Unit 5F Ohm's Law Practice Problems

Name

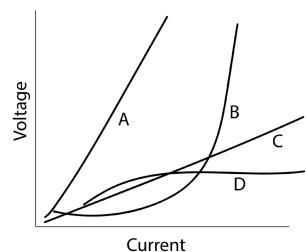
Date:

Work each of the following problems. SHOW ALL WORK.

4. To keep cool in the summer months, you decide to design and build your own hand-held fan. The fan's electrical circuit will run off of 4 AA batteries (each with a voltage of 1.5 V) and must not exceed 50 mA of current. You visit your local Radio Shack and find that resistors are sold in five varieties: 5 0hm, 10 0hm, 12 0hm, 20 0hm, 50 0hm. Each resistor costs 8 cents. What set of resistors should you buy to minimize cost?

5. As part of an engineering team at Space-X designing microcircuitry to control rocket launch angle, you must assess the power budget needed to operate 4 fin-control systems. Each system requires 0.16 micro Amperes for circuits with 3.4 milli0hms of resistance. How much total voltage is needed to supply these circuits?

- 6. Which of the following materials A, B, C, D are Ohmic? Circle all that apply.
 - a. A
 - **b**. B
 - c. C
 - d. D





Unit 5F
Ohm's Law
Practice Problems

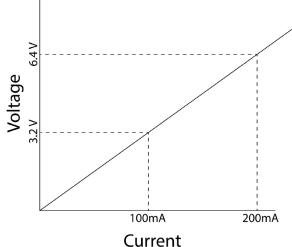
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Work each of the following problems. SHOW ALL WORK.

7. In an electrical circuit, what happens to the current flowing through the wire if the initial voltage of 18 V is doubled, and the initial resistance of 35 Ohms is reduced by a factor of 4?

8. This graph shows the relationship between current and voltage for an unknown metal. What is the resistance of the metal?



9. If a current of 1.1 A flows through a resistor of 7 Ohms and length 3 m, what is the electric field strength inside the resistor?