

Electrical Power!

Physics 432

Name _____

1 2 3 4 5 6 7 8

Determine the ...

- a. ... current in a 60-watt bulb plugged into a 120-volt outlet.

- b. ... current in a 120-watt bulb plugged into a 120-volt outlet.

- c. ... power of a saw that draws 12 amps of current when plugged into a 120-volt outlet.

- d. ... power of a toaster that draws 6 amps of current when plugged into a 120-volt outlet.

- e. ... voltage in a 1000-watt microwave when plugged into a 1.3A current.

3. Your 60-watt light bulb is plugged into a 110-volt household outlet and left on for 3 hours. The utility company charges you \$0.11 per kilowatt•hr. Explain how much the utility company should charge you.

4. Alfredo deDarke often leaves household appliances on for no good reason (at least according to his parents). The deDarke family pays 10¢/kilowatt-hour (i.e., \$.10/kW•hr) for their electrical energy. Express your understanding of the relationship between power, electrical energy, time, and costs by filling in the table below.

| Power Rating (Watt) | Time (hrs) | Energy Used (kilowatt-hour) | Costs (cents) | Costs (\$) |
|---------------------|------------|-----------------------------|---------------|------------|
| 60 Watt Bulb | 1 | 0.060 kW•hr | 0.6 ¢ | \$0.006 |
| 60 Watt Bulb | 4 | | | |
| 120 Watt Bulb | 2 | | | |
| 100 Watt Bulb | | 10 kW-hr | | |
| 60 Watt Bulb | | | 1000 ¢ | \$10 |
| | 100 | 60 kW-hr | | |