Lab Framework

Text: CORD APPLIED MATHMATICS

Unit number and title: Unit 12 Using Scientific Notation

Short Description: Calculating the power out put of a computer power supply.

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Lab Title

CALCULATING POWER SUPPLY OUTPUT

LAB PLAN

TEACHER: Teacher Prep/ Lesson Plan

- **Lab Objective**

  Calculate the power output of a computer power supply in Watts.

  Remove power supply from computer

  Read off of a power supply the voltage and current values of each power supply output.

  Use Watt's Law and calculate the power output of each power output connector.

  Add the power output of each connector together.

  If the power output (calculated) equal the power output marked on the power supply? If not why?
- **Statement of pre-requisite skills needed** (i.e., vocabulary, measurement techniques, formulas, etc.)

  Basic math, Watt's Law, basic electronics knowledge, number prefixes
- **Vocabulary**

  Watt's Law, ampere, voltage, wattage, a.c., d.c., milli, micro, voltage, current
- **Materials List**

  A computer with a computer power supply or specification sheet, pencil/pen, calculator
- **GLEs (State Standards) addressed**

  Math: **1.1.6 Complete multi-step computations of real numbers in all forms, including rational exponents and scientific notation, using order of operations and properties of operations. (aligns with CRS 4.2)**

  Reading: (Reading)

  Writing: (Writing)
- **Leadership Skills**

  Co-operation and organization
- **SCAN Skills/Workplace Skills**

  Team work
- **Set-up information**
  1. Review safety procedures
  2. Static safeguards, computer off and unplugged before disassembly
  3. Remove case.
  4. Find power supply label containing voltage and current values for each power supply output.
  5. Record voltage and current values

6. Convert mA values to scientific notation
7. Using Watt's Law calculate the power out put of each power output cable.
8. Add all power outputs.
9. Look for the rated power output of the power supply
10. Compare results of step 9 with results from step 8. Do they agree.
11. If steps 8 and 9 do not agree explain why the results are not the same.

- **Lab organization**(-Grouping/leadership opportunities/cooperative learning expectations; -**Timeline required)**
  Groups of two or three. One student procures and records the data, the other student performs calculation, and third student verifies accuracy.
- **Teacher Assessment of student learning** (scoring guide, rubric)
  Data – 5 pts
  Results – 10 pts
- **Summary of learning** (to be finished after student completes lab)
  -discuss real world application of learning from lab
  -opportunity for students to share/present learning
  Replacing a power supply in a compute repair shop
  Students will discuss problems in solving the problem.

- **Optional activities**

- **Career Applications**
  Computer repair and service

LAB TITLE: **CALCULATING POWER SUPPLY OUTPUT**

STUDENT INSTRUCTIONS:

- **Statement of problem addressed by lab**

  Students will use the voltage and current specifications to calculate the wattage used by their computer.

- **Grouping instructions and roles**

  Students will form groups of two or three to do this problem. One student will acquire the power supply or data sheet to use for calculation. Student two will do the calculations. The third student will perform the calculations. The third student (or the first if a two student team) will verify the accuracy of the calculations.

- **Procedures** – steps to follow/instructions
  1. Acquire a computer power supply.
  2. Record the voltage and amperage data
  3. Calculate the wattage using Watt's Law for each out put
  4. Calculate the total wattage the power supply can produce

- **Outcome instructions**

  Once the lab is complete discuss the results with the group – what was most surprising, what problems were encountered. Be prepared to present the results to the class as a whole.

- **Assessment instructions** (peer-teacher)

  Each group will present their results to the class.

Lab Data Collection

Student: _____ Date: _____

Unit: _____

Lab Title:

Criteria: Write the problem/objective in statement form

Data Collection: Record the collected/given data

Calculations: Complete the given calculations to solve for an answer(s)

Summary Statement:

Other Assessment(s)