Name _____

Science Lab Mix-Up

Conversion Key (Use as Needed)

1 calorie (cal) = 4.184 joules (J) | 1 kilocalorie (kcal) = 1000 cal

1 J = 0.239 cal | 1 g/cm³ = 1000 kg/m³ | 1 mL = 1 cm³ | 1 W = 1 J/s

1 L = 1000 mL = 1000 cm³ | 1 kW = 1000 W | 1 hour = 3600 seconds

A. Density Dilemmas

1. A sample of liquid mercury has a density of **13.6 g/cm³.** Convert this to **kg/m³.**

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2. A rock's density is **2.4 g/cm³.** Convert to **kg/m³.** _____

3. A block of metal has a volume of **250 cm³** and a mass of **1.975 kg.** What is its **density in g/cm³?**

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4. A cube of ice has a density of **0.92 g/cm³.** What is this value in **kg/m³?** _____

B. Energy Equations

5. A reaction releases **2500 cal.** Convert to **joules.** _____

6. A heater uses **4.5 kJ.** How many **calories** is that? _____

7. A food label lists **300 kcal.** Convert to **joules.** _____

8. A laser emits **900 J** of energy. How many **calories** is that? _____

C. Power & Rate Problems

9. A small motor outputs **750 W**. How many **kilowatts** is that? _____

10. A heater runs at **2.5 kW** for **3 hours.** How much **energy (in joules)** does it use?

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Bonus Challenge

11. A lightbulb rated at **100 W** runs for **10 hours.**
How many **kilojoules (kJ)** of energy does it consume? _____