**IB Physics**

**FA 18.2 - Resistivity and Electron Drift**

Name

Best Snow Day Activity

**Show your work, and bark like a yappy dog to receive full credit.**

1. What is the resistance of an Aluminium wire that is 2.59 mm in diameter (10 gauge) and 12.0 m long? The resistivity of Aluminium is 2.65x10-8 Ωm. (0.0604 Ω)

2. A 25.0 m long copper wire (resistivity = 1.68x10-8 Ωm) has a resistance of 0.127 ohms. What is its diameter? (2.05 mm)

3. A film resistor is made of a thin film of material that is 1.01x10-8 m thick, 3.50 cm wide, and 15.0 cm long. What is its resistivity if it has a resistance of 221 ohms? (The current flows a distance of 15.0 cm through the film) (52.1x10-8 Ωm)

4. With what speed do electrons travel down a 0.240 mm diameter copper wire that is carrying 140. mA of current. (n for Cu is 8.50x1028 electrons m-3) (2.27x10-4 m/s)

5. A 85.0 cm long copper (resistivity = 1.68x10-8 Ωm, n = 8.50x1028 electrons m-3) wire is 2.10 mm in diameter, and has a potential of 0.0150 V across it. What time does it take an electron to travel the length of the wire? (hint - find R, then I, then v, then t) (1.10x104 s or 3.06 hours)