

Conductors, Semi-Conductors, and Insulators Worksheet

Name _____ Date _____ Period _____

1. Given two lengths of metal wire, which one will have the least electrical resistance: one that is short, or one that is long? Assume all other factors are equal (same metal type, same wire diameter, etc.). _____
Explain why _____
2. Given two lengths of solid metal wire with round cross-sections, which one will have the least electrical resistance: one that is small-diameter, or one that is large-diameter? Assume all other factors are equal (same metal type, same wire length, etc.). _____
Explain why? _____
3. What is the difference between materials classified as conductors versus those classified as insulators, in the electrical sense of these words? _____

4. Identify several substances that are good conductors of electricity

5. Identify several substances that are good insulators of electricity

6. Identify three compounds that are semi-conductors of electricity

7. What naturally occurring substance is the best conductor of electricity?
(hint: it is better than gold) _____
8. Electrical wire is rated according to its cross-sectional diameter by a gauge scale. Which is the larger-diameter wire size, 12 gauge or 18 gauge? _____
Explain how the wire gauge scale works: _____

9. What advantages might there be to using braided wire in an automotive electrical wiring system? _____