

## Assessment

**Chemical Bonding****Section Quiz: Metallic Bonding**

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- \_\_\_\_\_ 1. Chemical bonding in metals is
- the same as ionic bonding.
  - the same as covalent bonding.
  - a combination of ionic and covalent bonding.
  - different from ionic or covalent bonding.
- \_\_\_\_\_ 2. The valence electrons in a metallic bond
- move freely throughout the network of metal atoms.
  - are held tightly by the most positively charged atom.
  - are shared equally between two metal atoms.
  - continuously move from one energy level to another.
- \_\_\_\_\_ 3. Within a metal, the vacant orbitals in the atoms' outer energy levels
- repel valence electrons.
  - attract other metal atoms.
  - overlap.
  - diffract light.
- \_\_\_\_\_ 4. Which of the following properties is *not* explained by metallic bonding?
- electrical conductivity
  - thermal conductivity
  - brittleness
  - ductility
- \_\_\_\_\_ 5. Which of the following is the result of visible light absorbed by a metal?
- Electrons move to higher energy levels and remain there.
  - Light at a frequency similar to the absorbed frequency is emitted.
  - Electrons fill the vacant orbitals.
  - Light is given off as a line spectrum.

**Section Quiz, *continued***

---

- \_\_\_\_\_ 6. Metals are malleable because when struck, one plane of metal atoms
- can slide past another plane without breaking bonds.
  - cannot easily move out of the way.
  - moves in a way that maximizes the repulsive forces within the metal.
  - bonds to the plane directly beneath it.
- \_\_\_\_\_ 7. Which is a measure of metallic bond strength?
- electron affinity
  - electronegativity
  - specific heat capacity
  - enthalpy of vaporization
- \_\_\_\_\_ 8. In general, as you move from right to left across any row of the periodic table, the strength of a metallic bond
- increases.
  - decreases.
  - stays the same.
  - shows no trend.
- \_\_\_\_\_ 9. Which of these is responsible for the good electrical conductivity of metals?
- the arrangement of metal atoms in separate layers
  - the high density of metals atoms in the crystal lattice
  - the ability of electrons to move freely about the crystal structure
  - the fact that metal atoms contain many orbitals separated by very small energy
- \_\_\_\_\_ 10. The arrangement of valence electrons in a metallic bond is best described as
- fixed positions in a lattice.
  - a sea of free-moving electrons.
  - concentrated electron density around specific atoms.
  - electron pairs existing in multiple bonds.