

1. Metals bend instead of cracking because \_\_\_\_\_.

- (A) the sea of electrons can bend without splitting
- (B) their larger nuclei resist strain
- (C) metal ions, being positive and negative, hold on to each other
- (D) metal ions are all positive

2. When a metal is bent, metal atoms \_\_\_\_\_.

- (A) repel each other more
- (B) roll over one another
- (C) become more attracted to each other
- (D) become more ionized

3. Adding atoms of a second metal to another metal \_\_\_\_\_.

- (A) rearranges the rows of metal atoms
- (B) loosens the bonds between metal atoms and weakens the metal
- (C) hinders metal atoms from rolling over one another
- (D) softens a metal

4. Increasing a metal's strength can be done by \_\_\_\_\_.

- (A) adding negative ions of another metal
- (B) adding positive metal ions of another metal
- (C) adding electrons
- (D) adding more of the same positive metal ions

5. Which of the following is not a metal alloy?

- (A) porcelain
- (B) bronze
- (C) pewter
- (D) brass

6. An element that releases three electrons into the sea of electrons will produce a metal that is \_\_\_\_\_ than an element that releases only one electron into the sea of electrons.

- (A) shinier
- (B) harder
- (C) softer
- (D) no difference in strength

7. Metals feel colder than cloth because metals \_\_\_\_\_.

- (A) conduct heat poorly
- (B) are generally cooler than their surroundings
- (C) conduct heat extremely well
- (D) do not reflect heat back into the skin

8. Metals are good conductors of heat for the same reason they are good conductors of electricity because \_\_\_\_\_.

- (A) they allow their electrons to run free
- (B) their atoms are in a state to continual motion
- (C) their intramolecular bonds are very weak
- (D) their intermolecular bonds are very strong

9. The reason metals are colder than non-metals is that \_\_\_\_\_.

- (A) metals do not store heat as well as non-metals
- (B) metals cannot conduct heat as well as non-metals
- (C) metals lose heat to the air faster than non-metals
- (D) metals are not colder than non-metals; they only feel colder

10. Alloys are not only stronger, they are also better conductors of heat.

- (A) True
- (B) False

11. The main reason aluminum is harder than magnesium is that \_\_\_\_\_.

- (A) aluminum releases three electrons into the sea of electrons while magnesium only releases two electrons
- (B) aluminum has more interior electrons than magnesium has
- (C) aluminum has more unpaired electrons than magnesium
- (D) aluminum's interior electrons do not shield its nucleus from the sea of electrons as well as magnesium's interior electrons do

12. Which statement is not a reason gold is soft and malleable?

- (A) Gold atoms arrange themselves loosely.
- (B) Gold releases a small percentage of its electrons into the sea of electrons.
- (C) Gold releases only one electron into the sea of electrons.

(D) Being a transition metal, it can handle extra electrons in its Ring 6.

13. Heat conduction and electrical conduction are excellent in metals because \_\_\_\_\_.

- (A) heat and electrical conduction both depend on long rows of positive ions
- (B) heat and electrical conduction both depend on long rows of electrons
- (C) heat and electrical conduction both depend on the flow of electrical charges along adjacent nuclei
- (D) heat and electrical conduction both depend on the unobstructed flow of electrons

14. Arrange the following in order of best conductor of heat.

- (A) pure silver, diamond, alloy of silver
- (B) alloy of silver, diamond, pure silver
- (C) diamond, pure silver, alloy of silver
- (D) diamond, alloy of silver, pure silver

15. Metals are shiny for all of the following reasons, except \_\_\_\_\_.

- (A) their electrons readily absorb electromagnetic radiation
- (B) electrons in a metal are at many different energy levels
- (C) electrons in a metal do not absorb electromagnetic radiation in red and orange range
- (D) white light is made up of all the electromagnetic radiation in the visible spectrum