

1. How many electrons does calcium donate to sulfur when calcium and sulfur form an ionic bond?

\_\_\_\_\_

2. Which is the correct Lewis structure for the  $K^+$  ion?

A.



B.



C.



D.



3. There are \_\_\_\_\_ total electrons in the  $Pb^{4+}$  ion.

4. Lithium \_\_\_\_\_ electron(s) to become  $Li^+$

5. Sulfur \_\_\_\_\_ electron(s) to become  $S^{2-}$ .

6. How many valence electrons are lost by Sr when forming  $SrI_2$ ?

A. one

C. three

B. two

D. four

7. Characteristic properties of metals, such as malleability and high conductivity, are due to

A. The ability of valence electrons to flow freely.

B. The rigid crystalline structure of metals.

C. The presence of ionic bonding in metals.

D. the high melting points of metals.

8. Which of the following substances contain metallic bonds? Select **all** that apply.

A. cast iron

C. copper

B. sodium chloride

D. zinc sulfide

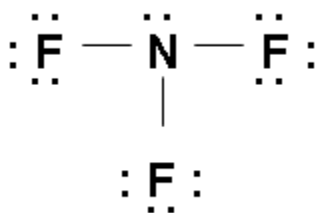
9. In covalent bonds, atoms share electrons so that \_\_\_\_\_. Select **all** that apply.

- A. each atom attains the stable electron configuration of a noble gas.
- B. positive and negative ions are formed.
- C. each atom obeys the octet rule.
- D. The positive and negative charges of the atoms cancel each other out.

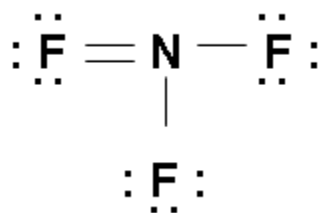
10. In a water molecule, the highly electronegative oxygen atom partially pulls the bonding electrons away from hydrogen, forming \_\_\_\_\_.

11. Select the correct electron dot structure for a molecule of  $\text{NF}_3$ .

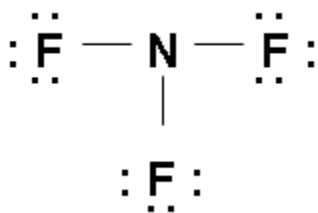
A.



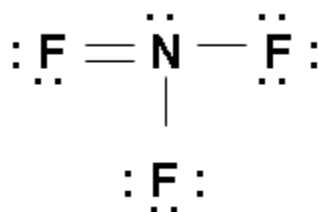
C.



B.



D.

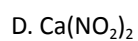
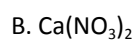


12. Sucrose has a low melting point. This compound exhibits relatively \_\_\_\_\_ intermolecular forces.

13.  $\text{CO}_2$  has a low boiling point of  $-78^\circ\text{C}$ . What can be inferred about the strength of the intermolecular forces between molecules of  $\text{CO}_2$ ?

- A. The intermolecular forces are strong.
- B. The intermolecular forces are weak.
- C. The intermolecular forces are ionic.
- D. The boiling point cannot help predict the forces present.

14. What is the formula for the compound calcium nitrate that forms when calcium ions react with the nitrate ions?



15. What is the name of the compound  $\text{P}_4\text{O}_{10}$  that forms when elemental phosphorus is exposed to oxygen?

A. phosphorus oxide

B. phosphorus decaoxide

C. decaphosphorus tetraoxide

D. tetraphosphorus decaoxide