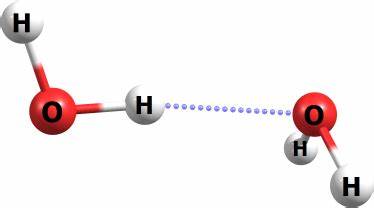
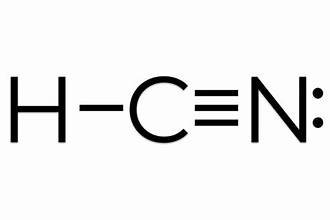
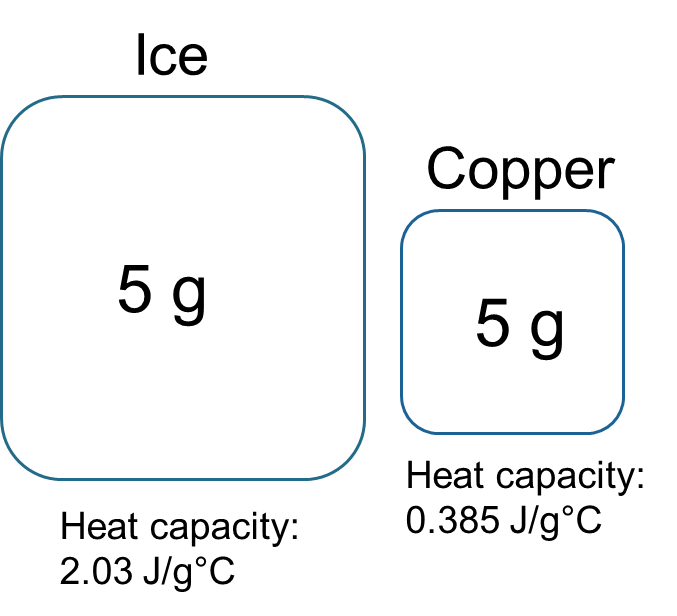
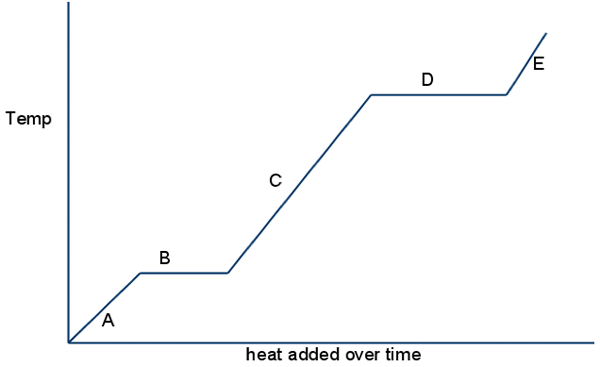
1. London dispersion forces are \_\_\_\_\_\_.
   1. Only experienced by polar molecules.
   2. Only experienced by nonpolar molecules.
   3. Experienced by only certain nonpolar molecules.
   4. Experienced by all molecules.
2. Which substance would experience London dispersion forces as its predominant intermolecular force?
   1. H2Se
   2. C6H12O6
   3. CO2
   4. CH3Cl
3. Which substance experiences the strongest dipole-dipole interactions?
   1. C2H2
   2. CI4
   3. CH3Cl
   4. CHCl3
4. Which pure substance is capable of hydrogen bonding?
   1. CH2O
   2. CH3OCH3
   3. CH3CH2OH
   4. CH3F
   5. All the substances can hydrogen bond.
5. What is true about the intermolecular forces acting between the molecules in the picture?
   * 1. The London dispersion force is present.
     2. The dipole-dipole force is present.
     3. The hydrogen bonding force is present.
   1. ii only
   2. iii only
   3. i and ii
   4. ii and iii
   5. i, ii, and iii
6. Which statement is true about hydrogen cyanide?
   1. It only experiences London dispersion forces.
   2. It is capable of hydrogen bonding.
   3. It only experiences dipole-dipole interactions.
   4. It experiences both London dispersion forces and dipole-dipole interactions.
   5. It experiences all three IMFs.
7. Which substance is likely to have the strongest IM forces?
   1. C4H10
   2. CF4
   3. CH3Cl
   4. CH3OH
8. Which electrostatic potential map shows a substance that only experiences London dispersion forces? d

|  |  |
| --- | --- |
| * 1. An electrostatic potential map with red at the top, green in the middle, and blue at the bottom. | * 1. An electrostatic potential map with a large red area on the left, a small yellow and green center, and a large blue area on the right. |
| * 1. An electrostatic potential map with a large blue area on top, green and yellow in the middle, and a small red area at the bottom. | * 1. An electrostatic potential map with blue and green evenly dispersed. |

1. Melting and boiling points for nonpolar substances typically increase as molar mass increases. This is due to \_\_\_\_\_\_\_\_.
   1. Dipole-dipole interactions
   2. Dispersion forces
   3. Hydrogen bonding
   4. Ion-dipole interactions
2. How much energy is needed to raise the temperature of a 25-gram sample of water from 11.0°C to 19.0°C? The specific heat of water is 4.184 J/g°C.
   1. 840 J
   2. 1200 J
   3. 2.0 x 103 J
   4. -840 J
   5. -1200 J
3. Two lunch boxes at the same initial temperature were packed with the same amount of soft drink and the same amount of ice. The temperatures inside of the lunch boxes were measured five hours later. One lunchbox still had ice and was colder, while the other had no ice left. What could explain this observation?
   1. The lunch boxes were left in different locations.
   2. The lunch boxes were made from different materials.
   3. The soft drinks started at different initial temperatures.
   4. One lunch box was better insulated than the other lunch box.
   5. All of the above could explain it.
4. A 55.3 cm3 sample of aluminum absorbed 42.7 J of heat. What is its final temperature if its initial temperature was 25.0 °C? The density of aluminum is 2.70 g/cm3, and its specific heat capacity is 0.903 J/g°C.
   1. 25.9 °C
   2. 42.5 °C
   3. 27.3 °C
   4. 25.3 °C
   5. 0.3 °C



1. The ice and copper samples start at -30°C. What is true about the samples if the temperature of the surroundings is -5°C? Select any that apply.
   1. It takes more energy to raise the temperature of ice to -5°C than it does for copper
   2. Both samples would eventually reach -5°C
   3. The ice would never reach -5°C because its specific heat capacity is higher than the copper
   4. It takes the same amount of energy to increase both samples to the same temperature



Use the heating curve to answer questions 14-16.

1. If line A represents temperatures from 0 to 25 °C and line C represents temperatures from 25 to 150 °C, at what temperature(s) do phase changes occur?
   1. 0 °C
   2. 25 °C only
   3. 150 °C only
   4. 25 and 150 °C
   5. It can’t be determined from the provided information.
2. What happens after point E?
   1. There is another, unseen phase change.
   2. The phase and temperature remain the same.
   3. The phase remains the same, but the temperature increases.
   4. There isn’t enough information.
3. What is happening to the substance represented by the heating curve as energy is added?
   1. Chemical bonds are broken
   2. Intermolecular forces are broken
   3. Electrons are removed
   4. a and b