



Circle the number that best answers each question.

- Two samples of gold that have different temperatures are placed in contact with one another. Heat will flow spontaneously from a sample of gold at 60°C to a sample of gold that has a temperature of
 - 60°C
 - 80°C
 - 70°C
 - 50°C
- What type of energy is stored within a chemical bond?
 - free energy
 - potential energy
 - activation energy
 - kinetic energy
- Energy of position or stored energy is also called
 - kinetic energy
 - potential energy
 - activation energy
 - chemical energy
- Which of the following statements is true given the reaction
$$\text{N}_{(g)} + \text{N}_{(g)} \rightarrow \text{N}_{2(g)} + \text{energy?}$$
 - A bond is formed and energy is absorbed.
 - A bond is broken and energy is released.
 - A bond is formed and energy is released.
 - A bond is broken and energy is absorbed.
- A 50.0-gram block of copper at 10.0°C is carefully lowered into 100.0 grams of water at 90°C in an insulated container. Which of the following statements describes the transfer of heat in this system?
 - The water loses heat to the block until both are at 10.0°C.
 - The block gains heat from the water until both are at 90.0°C.
 - The water gains heat and the block loses heat until both are at the same temperature between 10.0°C and 90.0°C.
 - The water loses heat and the block gains heat until both are at the same temperature between 10.0°C and 90.0°C.
- Given the reaction:
$$\text{H}_2 + \text{Cl}_2 \rightarrow 2\text{HCl}$$
Which of the following statements *best* describes the energy change as bonds are formed and broken in this reaction?
 - breaking H—H bonds releases energy
 - forming H—Cl bonds absorbs energy
 - forming H—Cl bonds releases energy
 - breaking Cl—Cl bonds releases energy
- Which of the following statements describes the transfer of heat energy that occurs when an ice cube is added to an insulated container with 100 milliliters of water at 25°C?
 - Both the ice cube and the water gain heat energy.
 - Both the ice cube and the water lose heat energy.
 - The ice cube loses heat energy and the water gains heat energy.
 - The ice cube gains heat energy and the water loses heat energy.
- Which best describes exothermic chemical reactions?
 - They always release heat.
 - They never release heat.
 - They never occur spontaneously.
 - They always occur spontaneously.
- Burning is an example of a change that is
 - chemical
 - physical
 - endothermic
 - intensive
- The minimum number of fixed points required to establish the Celsius temperature scale for a thermometer is
 - 1
 - 2
 - 3
 - 4