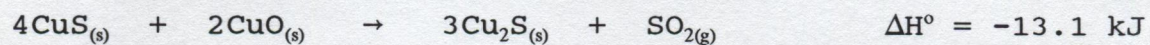
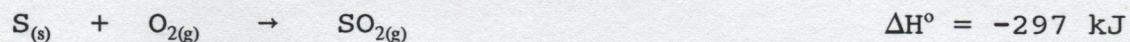
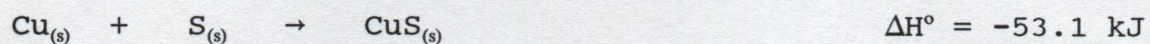
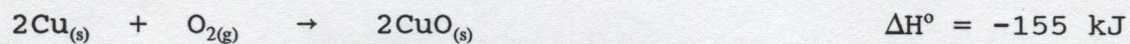
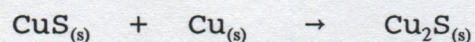


SHOW ALL WORK

1. Given the following thermochemical equations:



calculate the value of ΔH° (in kilojoules) for the reaction



2. How many joules are required to raise the temperature of 0.500 kilograms of liquid water by 24.0 °C? How many calories are needed?

3. Why do the oceans have a moderating influence on the summer and winter temperatures of landmasses along their shores?
4. A metal specimen with a mass of 25.467 g was heated to 100.0°C in boiling water. The sample was quickly dried and placed in a styrofoam cup that contained 15.0 g of H₂O having a temperature of 24.3°C. The mixture was stirred quickly and the temperature of the water rose to 31.2°C. Calculate the specific heat of the metal.

5. The combustion of 1 mole of benzene, $\text{C}_6\text{H}_{6(l)}$, to produce $\text{CO}_{2(g)}$ and $\text{H}_2\text{O}_{(l)}$ liberates 3271 kJ when the products are returned to 25°C and 1 atm. What is the standard heat of formation of $\text{C}_6\text{H}_{6(l)}$ expressed in kilojoules per mole?
6. What is heat energy? By what mechanism does heat flow from a hot object into a cool object?