

Name _____

How do Refrigeration Systems Work to Remove Heat from a Space?

Open-Ended Response Answer Key

1. The step-by-step process of heat exchange in a refrigeration system begins with the evaporator coil absorbing heat from the interior space, causing the refrigerant to evaporate. The compressor then compresses the refrigerant into a high-pressure, high-temperature gas, which releases heat in the condenser. Finally, the expansion valve reduces the pressure of the refrigerant, and the cycle repeats.
2. Using environmentally friendly refrigerants is crucial because older refrigerants like CFCs and HCFCs harm the ozone layer and contribute to global warming. By using refrigerants with lower global warming potential, we can reduce their impact on the environment.
3. A world without refrigeration systems would lead to challenges in preserving food, especially perishable items. The food industry would face difficulties in storing and transporting goods, potentially resulting in more food waste and higher prices for consumers.
4. In a refrigerator, the refrigeration system's primary goal is to keep the interior space cool to preserve food. In an air conditioner, the system cools indoor air to maintain a comfortable temperature in a living space. While both systems use similar principles, they are applied differently to achieve their respective purposes.

