Name _____

What is the Difference between AC (Alternating Current) and DC (Direct Current)?

Open-Ended Response Answer Key

1. DC and AC differ in how they generate electricity, their efficiency in transmission, and their applications. DC is generated by batteries and chemical reactions, while AC is produced by generators and power plants. AC is efficient for long-distance transmission, making it suitable for the electrical grid, while DC is used in battery-operated devices. Examples include the use of AC in household appliances and the use of DC in smartphones.
2. The "War of the Currents" was a historical battle between Thomas Edison, a proponent of DC, and Nikola Tesla, an advocate for AC. Edison's DC system was limited in its ability to transmit electricity over long distances, while Tesla's AC system was more efficient. Ultimately, AC prevailed as the preferred choice for power distribution.
3. In a world without either AC or DC electricity, our technological advancements would be severely limited. Without AC, long-distance transmission of electricity would be impractical, affecting industries, infrastructure, and daily life. Without DC, battery-operated devices like smartphones and laptops would cease to exist.
4. Safety measures are crucial when working with AC and DC electricity to prevent electrical shocks and accidents. Proper insulation of wires and components is essential, and using circuit breakers can help in case of emergencies. Additionally, wearing protective gear like gloves and safety goggles provides an extra layer of safety for individuals working with electricity.