

Name the Statement

The Clausius statement and the Kelvin-Planck statement are expressions of the:

Answer: 2nd law of thermodynamics.

Explanation: The Clausius statement states that it is impossible to construct a device that operates in a cycle and produces no effect other than the transfer of heat from a lower-temperature body to a higher-temperature body. In the Kelvin-Planck statement it is stated that it is impossible for any device that operates on a cycle to receive heat from a single reservoir and produce a net amount of work.

Both are alternative statements of the second law of thermodynamics.

The Clausius inequality is the expression that states that the cyclic integral of $\frac{\delta Q}{T}$ is always less than or equal to zero.

The zeroth law states that if two systems are both in equilibrium with a third system, they are in thermal equilibrium with each other, it forms the basis for temperature measurement. The Kelvin temperature scale is the absolute temperature scale that is independent of the properties of the substance.