

36.20 What is the thermal efficiency of a reversible heat engine operating between a cold and hot reservoir with temperatures of $100^\circ F$ and $500^\circ F$, respectively?

- A. 42%
- B. 58%
- C. 71%
- D. 80%

For a heat engine to be reversible, it must be operating as a **Carnot Cycle**, which achieves the maximum theoretical efficiency and depends entirely upon the temperatures of the hot and cold reservoirs which heat is being transferred from and to. Be sure to use absolute temperatures when applying the efficiency formula for a Carnot cycle.

$$\eta_c = \frac{(T_H - T_L)}{T_H} = \frac{960^\circ R - 560^\circ R}{960^\circ R} = 42\%$$

Answer A