

- 19** A resistor has resistance  $R$ . When the potential difference across the resistor is  $V$ , the current in the resistor is  $I$ . The power dissipated in the resistor is  $P$ . Work  $W$  is done when charge  $Q$  flows through the resistor.

What is **not** a valid relationship between these variables?

**A**  $I = \frac{PQ}{W}$

**B**  $Q = \frac{W}{IR}$

**C**  $R = \frac{V^2}{P}$

**D**  $R = \frac{W}{PQ}$