(20)
(11)

GIVEN

10 V battery supply, constant current 0.5 A
to a resistor (x Ω) for 30 min
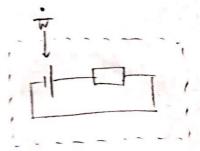
FIND

(a) resistance x
(b) Energy transfer by Work in kJ

EQUATION   ASSUMPTION

$$V = IR \qquad W = Pt \qquad t = time$$ closed system

$$P = VI \qquad P = power \qquad W = work$$

EFD

SOLN

(a) $$x = \frac{V}{I} = \frac{10 \, V}{0.5 \, A} = \boxed{20 \, \Omega}$$

(b) $$W = (60 \times 30 \, s)(10 \, V)(0.5 \, A)$$

$$= 9000 \, J$$

$$= \boxed{9 \, kJ}$$