

Ch. 9 Prob. 60

$V = 12V$
2 headlights @ $P = 40W$
Battery Rating $100 A \cdot h$

How long will the lights be on?

Now for Power

$$P = I \cdot V$$

Therefore, each headlight will have a current of

$$I = \frac{P}{V} = \frac{40W}{12V} = 3.33 A$$

Both headlights will draw a current of
~~I~~ $I = 6.66 A$

Battery Rating (judged by the units) ~~is~~ is

$$\text{Rating} = I \cdot \Delta t$$

$$\text{So } \Delta t = \frac{\text{Rating}}{I} = \frac{100 A \cdot h}{6.66 A}$$

$$\Delta t = 15 \text{ hours}$$