**Approach**

For Part a)

The current through each bulb can be found by using the current divider rule.

$I\_{x}=$ $(I)\frac{R\_{1}+R\_{2}}{Rx}$ where I is the total current

To find the total current, Jim must use ohm’s law. Ohm’s law states that V=IR. We can find the total resistance by summing them up in parallel. So,

$\frac{R\_{1}\*R\_{2}}{R\_{1}+R\_{2}}$ = $\frac{4 Ω\*6 Ω}{4Ω+6 Ω}$ = 2.4 Ω

V=IR 🡪 12 V= I(2.4Ω) so I=5 A

$I\_{1}$=5 A($\frac{2.4 Ω}{4 Ω}$) therefore, $I\_{1}$= 3 A

$I\_{2}$=5 A($\frac{2.4 Ω}{6 Ω}$) therefore, $I\_{2}$ = 2 A

This is true because $I\_{1}+I\_{2}=5 A$

For Part b)

The voltage for each bulb can be found by using ohm’s law, V=IR.

$V\_{1}=(I\_{1 })(R\_{1})$= 3 A \* 4 Ω = 12 V

$V\_{2}=\left(I\_{2}\right)(R\_{2})$= 2 A \* 6 Ω = 12 V

This is true and defines the definition of a parallel circuit. Since the light bulbs are in parallel, they both receive the same voltage as the battery even though their resistance is different.

For part c)

Power can be defined as P=VI with the units of Watts

$P\_{1}=VI\_{1}$= 12 V \* 3 A = 36 W

$P\_{2}=VI\_{2}$= 12 V \* 2 A = 24 W