Answer on question #51578, Physics / Electric Circuits

Question   An electrical source with internal resistance r is used to operate a lamp of resistance R. What fraction of the total power is delivered to the lamp?

Solution   We suppose that internal and external resistance are connected in series. Hence, they have same current. Power is

$$P = I^2 R$$

Hence, fractions of energy are proportional to resistance. To lamp is delivered

$$\frac{R}{R + r}$$