

the power across a 75 ohm resistor is 90w find the value of the resistance to be connected in series with 75 ohm across a supply voltage of 120 v

### **Solution**

The power across two resistors connected in series is

$$P = \frac{U^2}{R_1 + R_2} = 90\text{w},$$

where  $U$  - a supply voltage of 120 v,  $R_1$  - a 75 ohm resistor,  $R_2$  - the value of the resistance of second resistor.

We have

$$R_2 = \frac{U^2}{P} - R_1 = \frac{120^2}{90} - 75 = 85 \text{ ohm.}$$

**Answer: 85 ohm.**