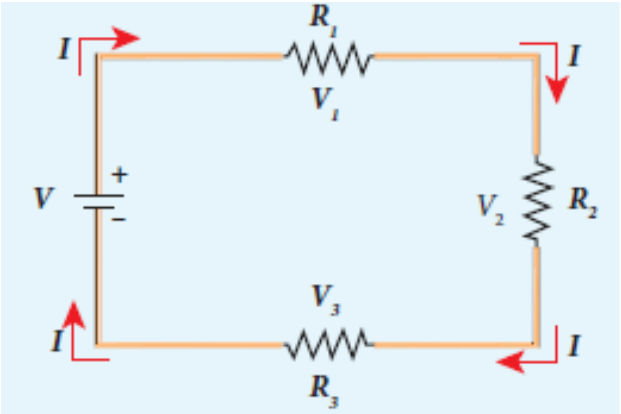
# Resistors in series and parallel

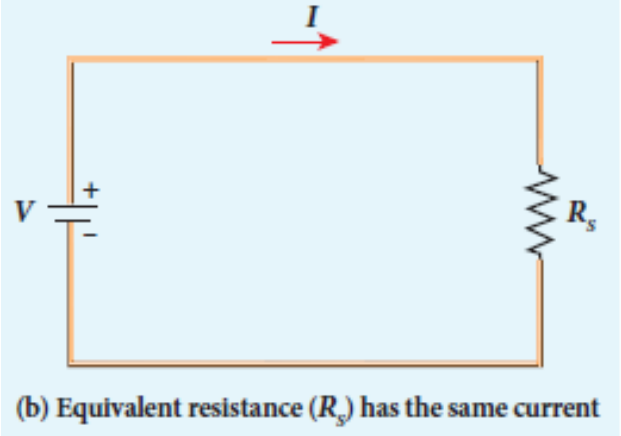
An electric circuit may contain a number of resistors which can be connected in different ways. For each type of circuit, we can calculate the equivalent resistance produced by a group of individual resistors.

**Resistors in series**

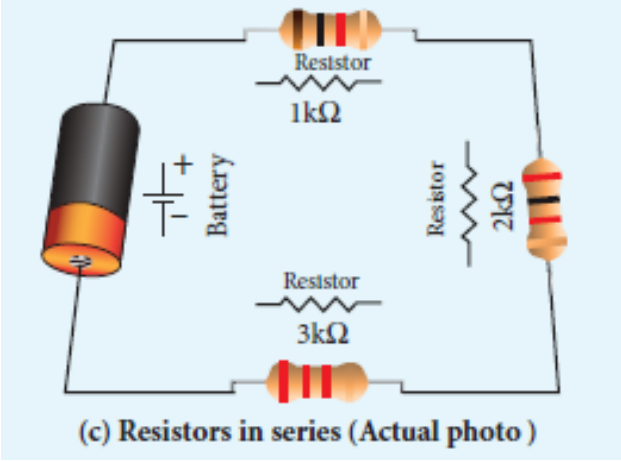
When two or more resistors are connected end to end, they are said to be in series. The resistors could be simple resistors or bulbs or heating elements or other devices. The following figure shows three resistors $R_1$R$_2$ and R$_3$ connected in series.




(a) Three resistors in series




(b) Equivalent resistance ($R_s$) has the same current

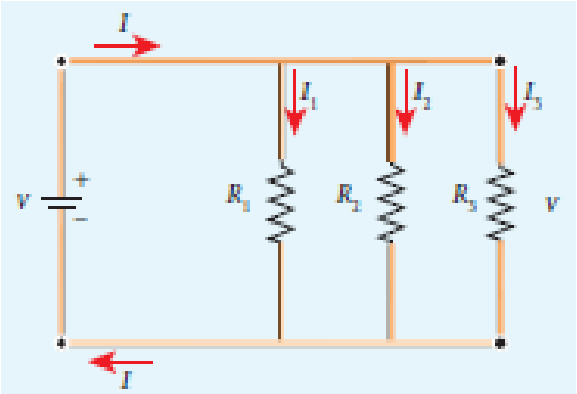



(c) Resistors in series (Actual photo )

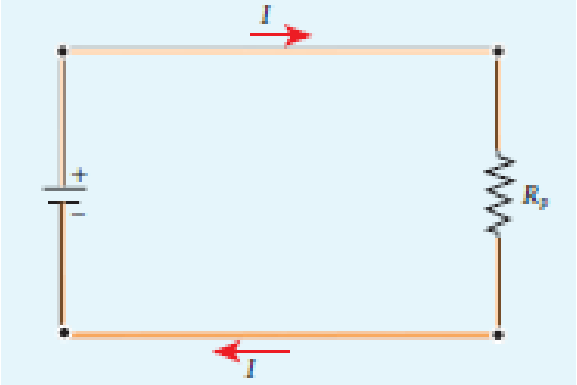
**Note:**The value of equivalent resistance in series connection will be greater than each individual resistance.

**Resistors in parallel**

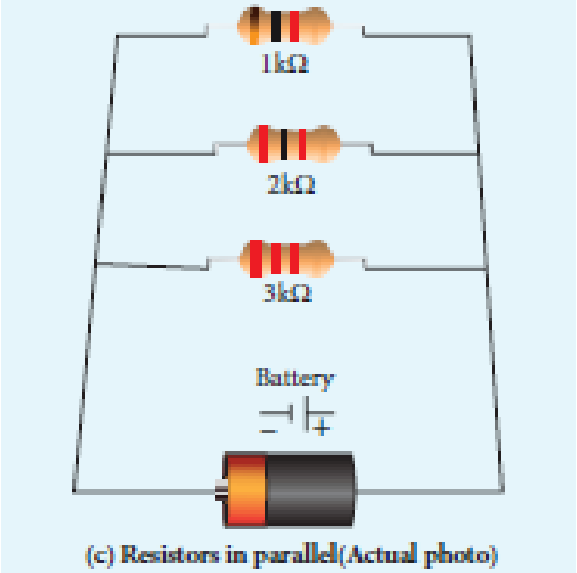
Resistors are in parallel when they are connected across the same potential difference as shown in following figure




(a) Three resistors in parallel




(b) Equivalent resistance ($R_p$) has the same current




(c) Resistors in parallel(Actual photo)

**Note:** The value of equivalent resistance in parallel connection will be lesser than each individual resistance.