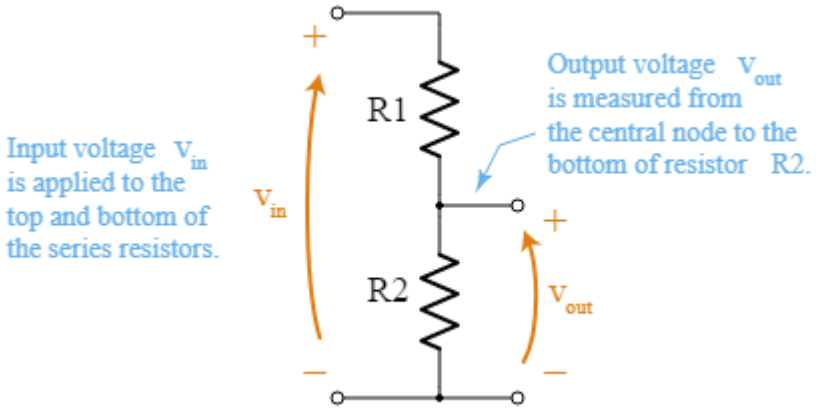
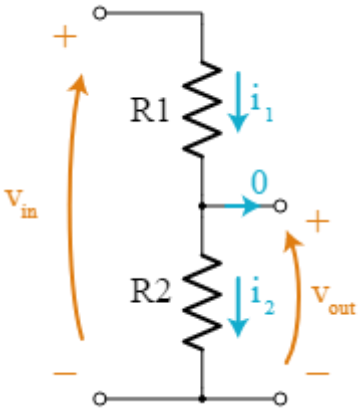
Voltage Divider





$i_1 = i_2$ (series circuit)

$V = iR$ (Ohms Law)

$V_{in} = i\,(R1 + R2) \rightarrow i = \mathbf{V_{in} / (R1 + R2)}$

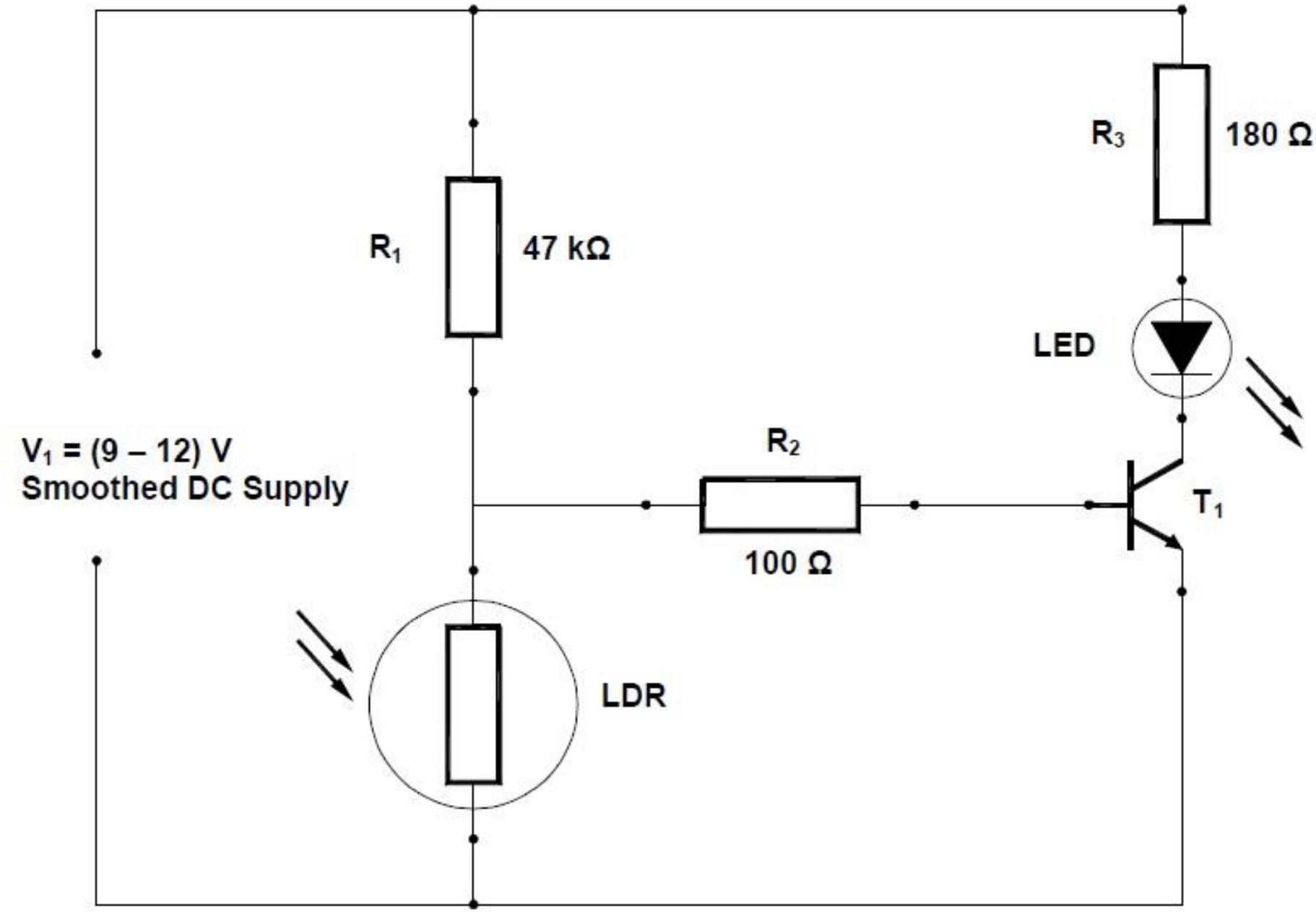
$V_{out} = i\,R2 \rightarrow V_{out} = (\mathbf{V_{in} / (R1 + R2)})\,R2 = V_{in}\,(R2 / (R1 + R2))$

resistor ratio

$$v_{out} = v_{in} \frac{R2}{R1 + R2}$$

output voltage

input voltage


R3
180 Ω
R1
47 kΩ
LED
V1 = (9 – 12) V
Smoothed DC Supply
R2
T1
100 Ω
LDR