Wijnald Visser
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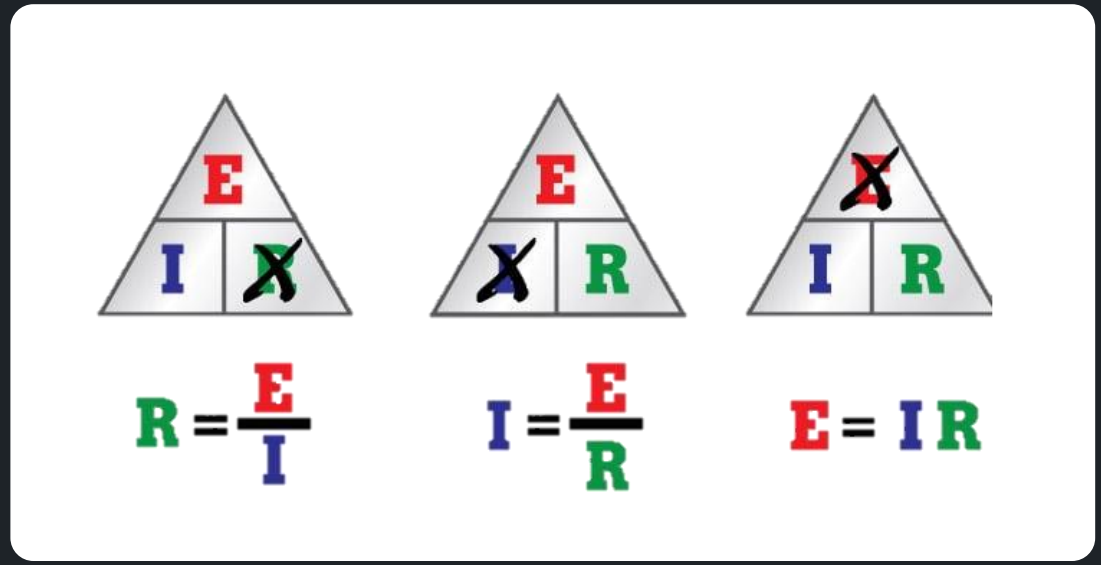
LESINSTRUCTIE

Parallelschakelingen



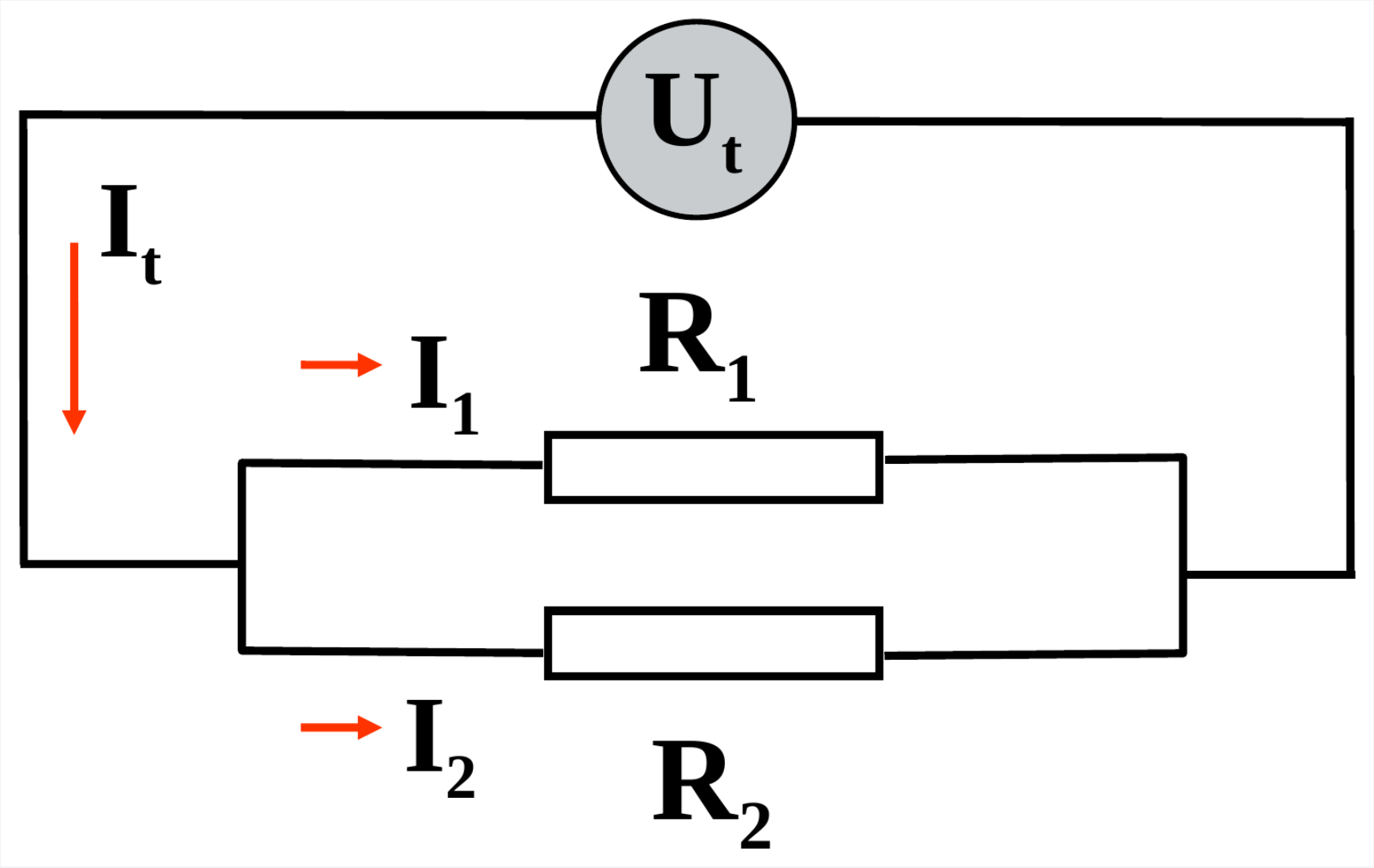
Parallelschakelingen

$$U = I \times R$$

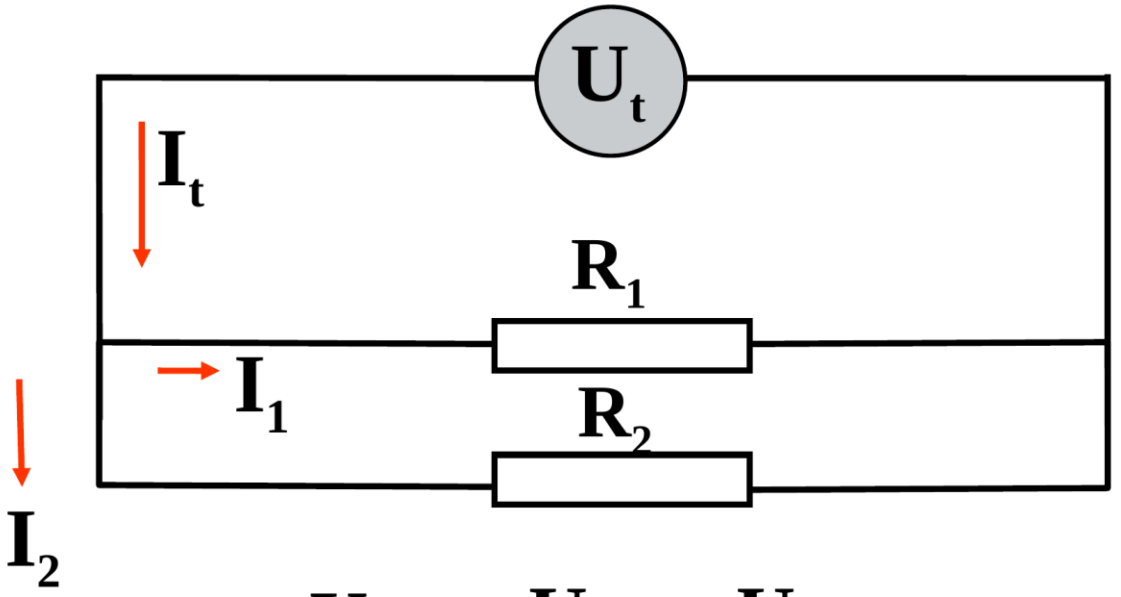
U = spanning in ?	Volt (V)
I = stroomsterkte in ?	Ampère (A)
R = weerstand in ?	Ohm (Ω)

Cu en Al

Parallelschakelingen



Parallelschakelingen

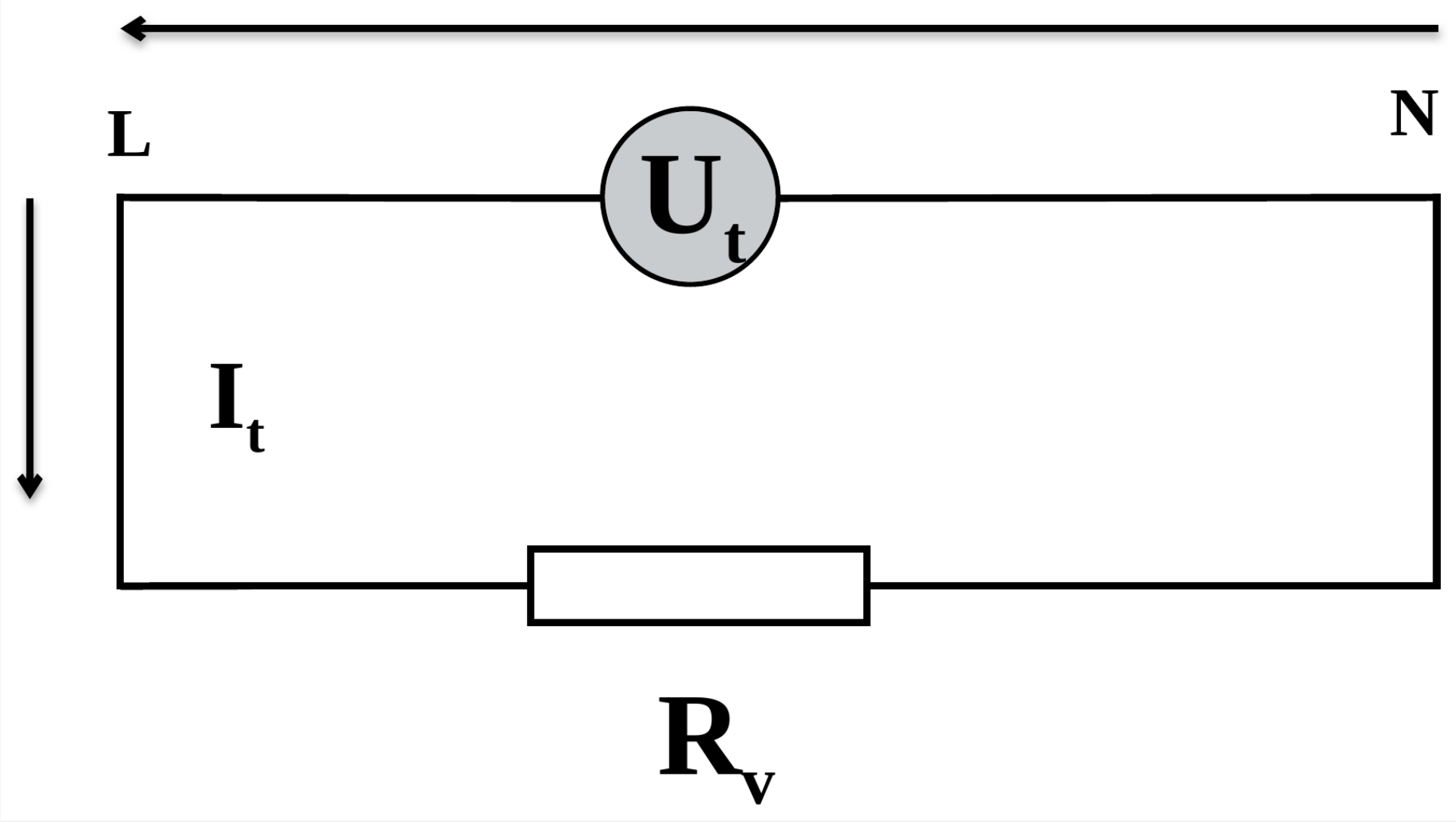


$$U_t = U_1 = U_2$$

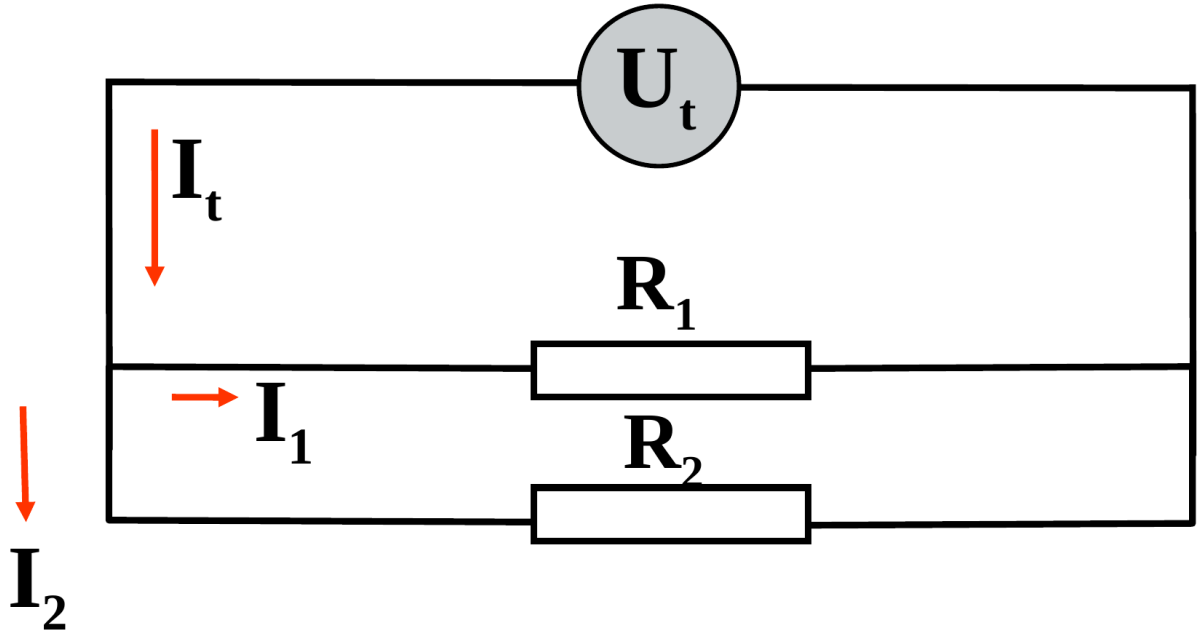
$$I_t = I_1 + I_2$$

$$\frac{1}{R_v} = \frac{1}{R_1} + \frac{1}{R_2}$$

Vervangingsschakeling



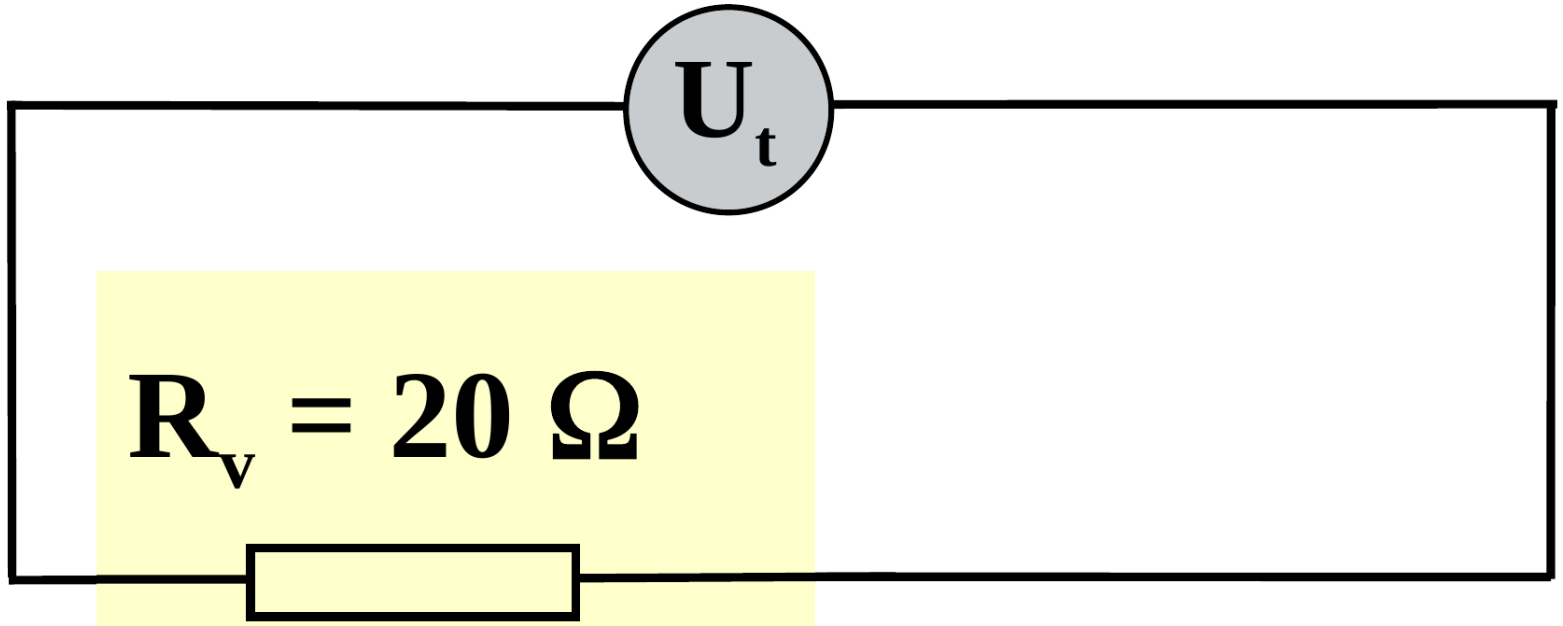
Parallelschakelingen



$$\frac{1}{R_v} = \frac{1}{R_1} + \frac{1}{R_2} \qquad R_v = \frac{R_1 \cdot R_2}{R_1 + R_2}$$

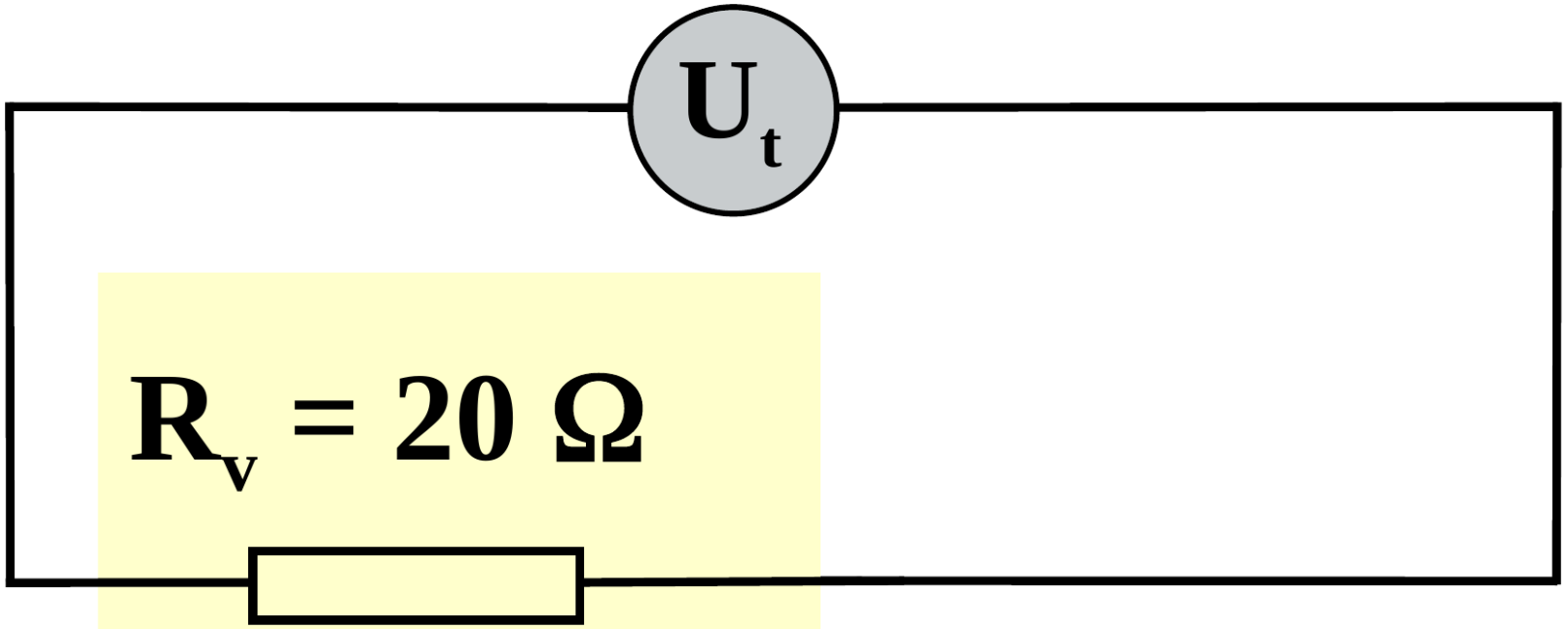
Bereken Rv

$$\frac{1}{R_v} = \frac{1}{R_1} + \frac{1}{R_2} \longrightarrow R_v = 20\ \Omega$$



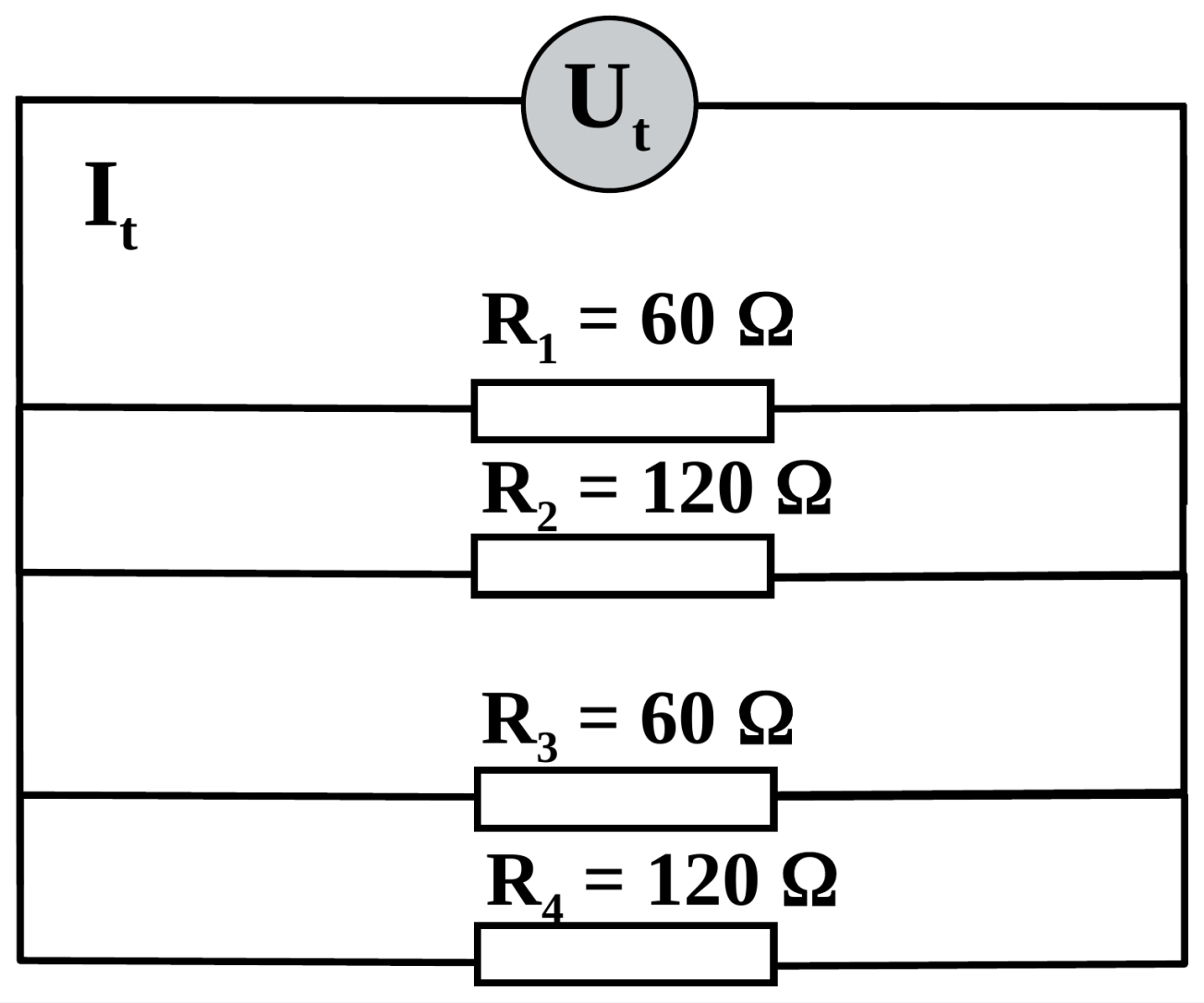
Bereken Rv

$$R_v = \frac{R_1 \cdot R_2}{R_1 + R_2} \qquad R_v = \frac{30 \cdot 60}{30 + 60}$$



$$R_v = 20\ \Omega$$

Bereken op twee manieren Rv



Bereken op twee manieren Rv

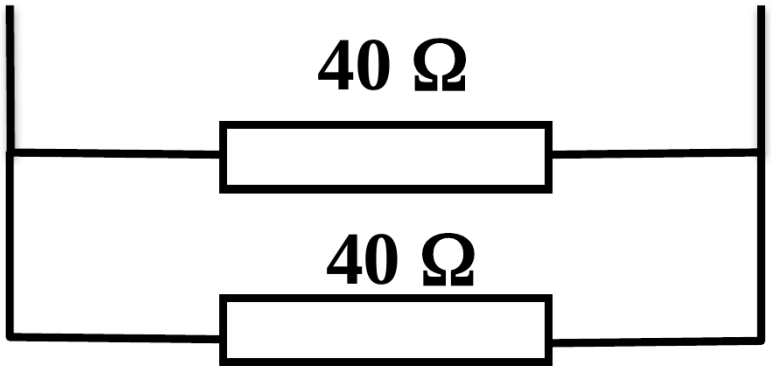
$$\frac{1}{R_v} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4}$$

$$\frac{1}{R_v} = \frac{1}{120} + \frac{1}{60} + \frac{1}{120} + \frac{1}{60}$$

$$\frac{1}{R_v} = 0{,}05 \qquad \frac{1}{0{,}05} = 20\ \Omega$$

Bereken op twee manieren Rv

$$R_v = \frac{R_1 \cdot R_2}{R_1 + R_2} \qquad R_v = \frac{120 \cdot 60}{120 + 60} = 40\ \Omega$$



$$R_v = \frac{40 \cdot 40}{40 + 40} = 20\ \Omega$$

Eigenschappen parallelschakeling

De vervangingsweerstand is altijd kleiner dan de kleinste weerstand

Bij twee gelijke weerstanden is de vervangingsweerstand de helft

Bij twee grote afwijkende waarden vervalt de grootste waarde

SAMENVATTING

De belangrijkste punten

- U = I x R
- Parallel: Ut = U1 = U2
- Parallel: It = I1 + I2
- 1/Rv = 1/R1 + 1/R2, of bij twee weerstanden Rv = (R1 · R2) / (R1 + R2)
- De vervangingsweerstand is altijd kleiner dan de kleinste weerstand
- Twee gelijke weerstanden: de vervangingsweerstand is de helft