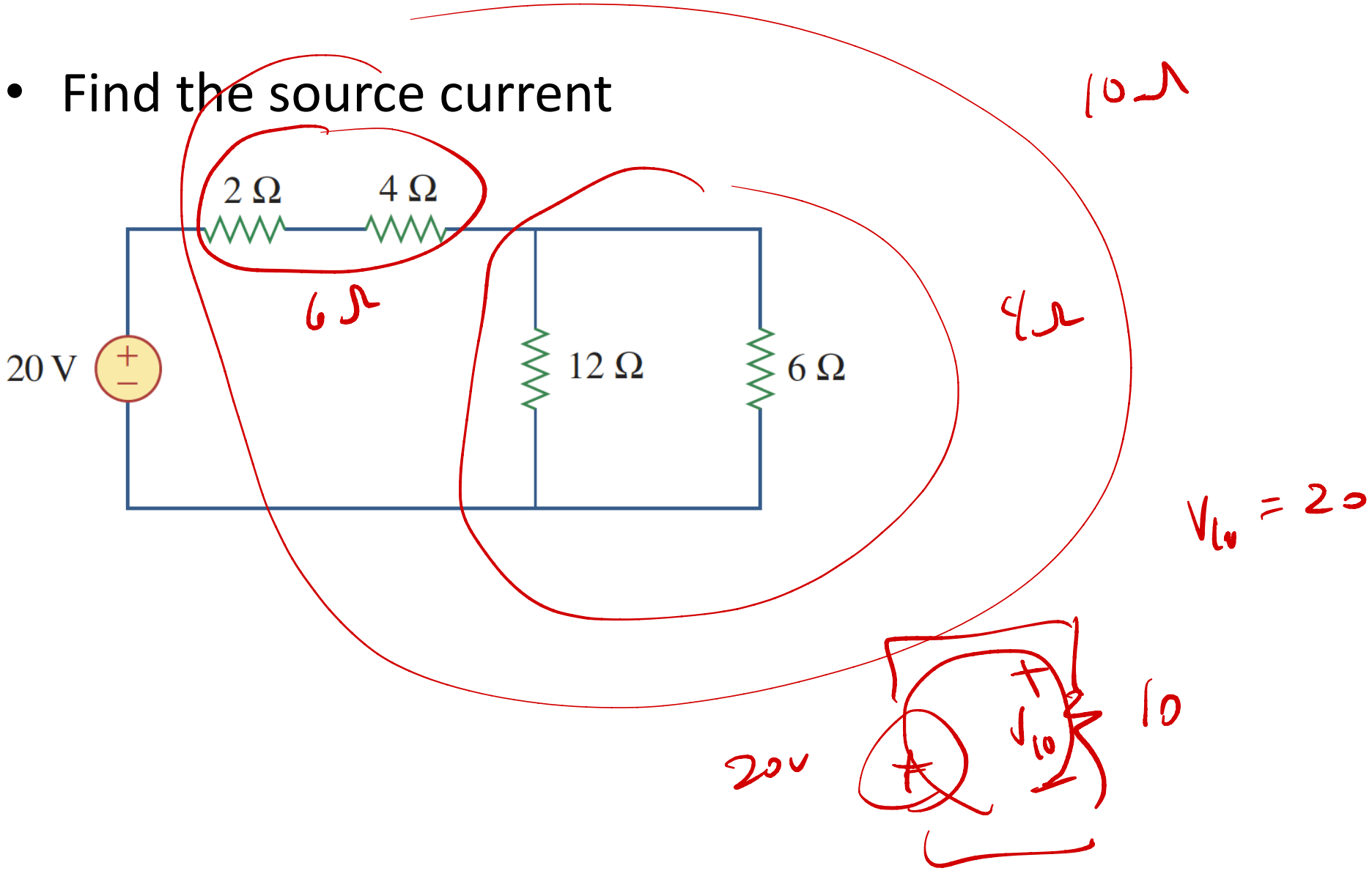
Lecture 5
Basics – 5 of 7

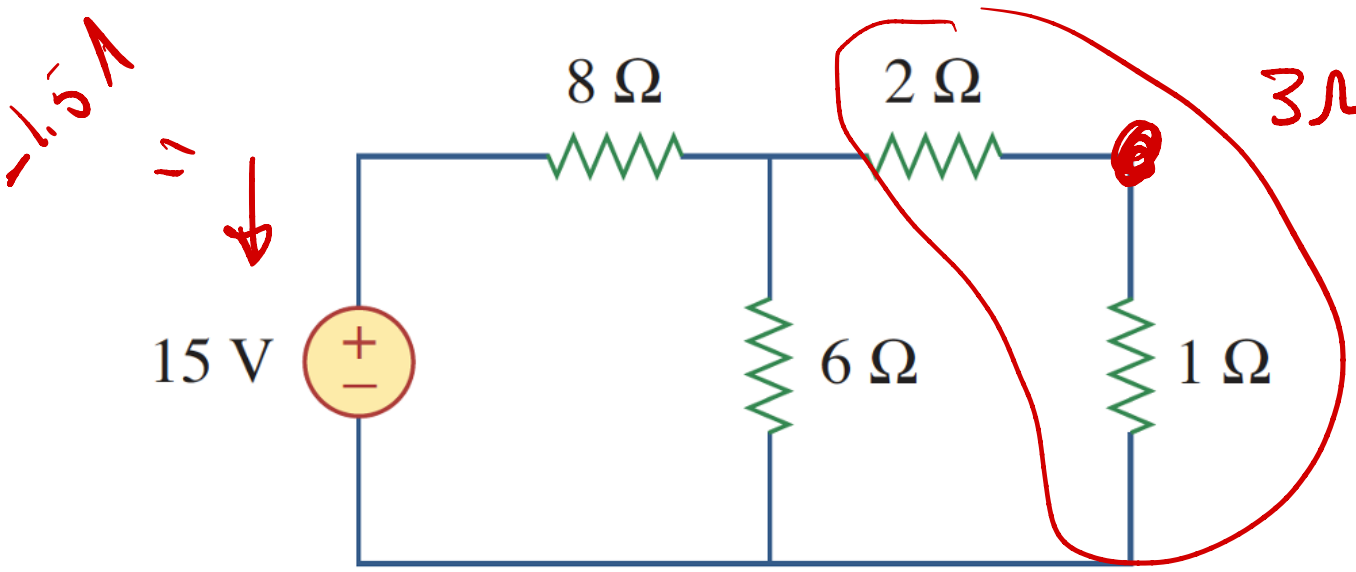
equivalent resistance

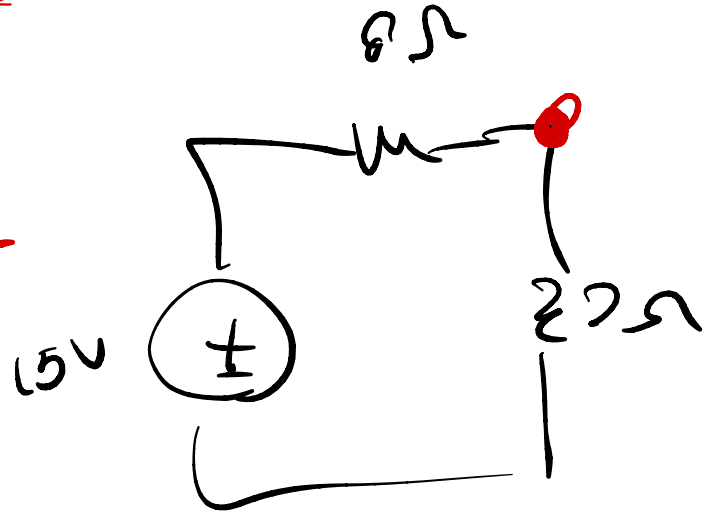
Applying Series/Parallel Ideas

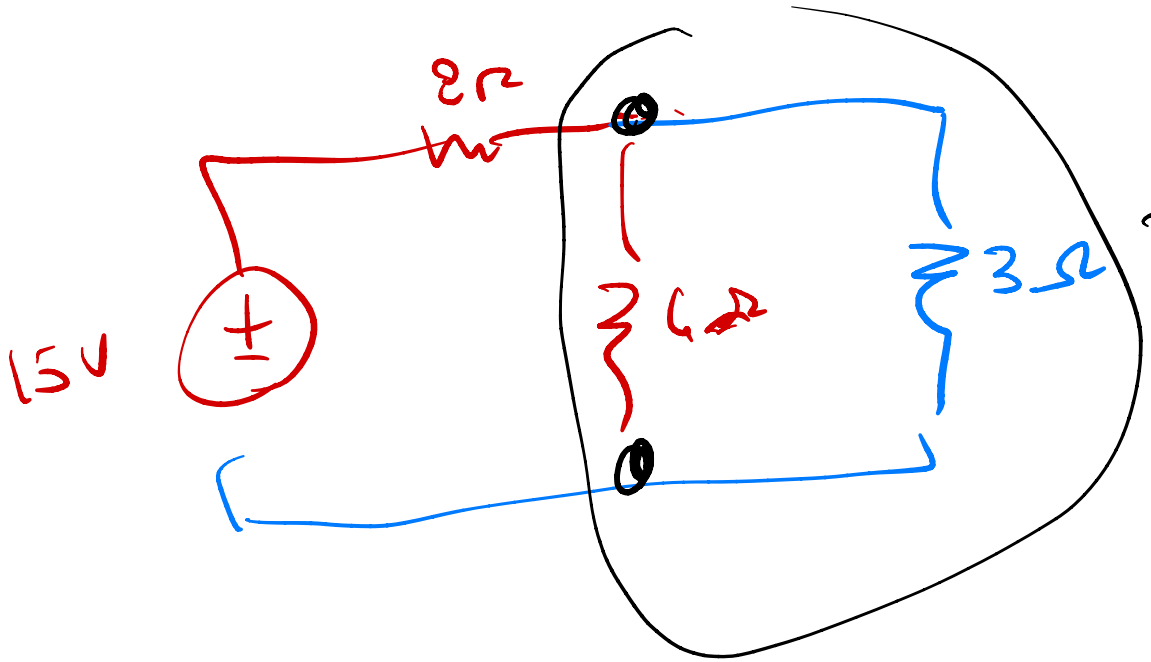
- Find the source current

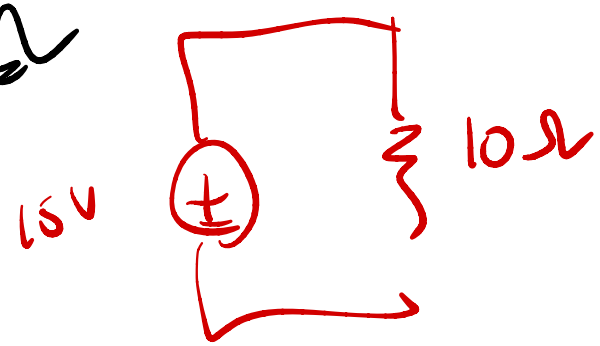


Example: find the source power



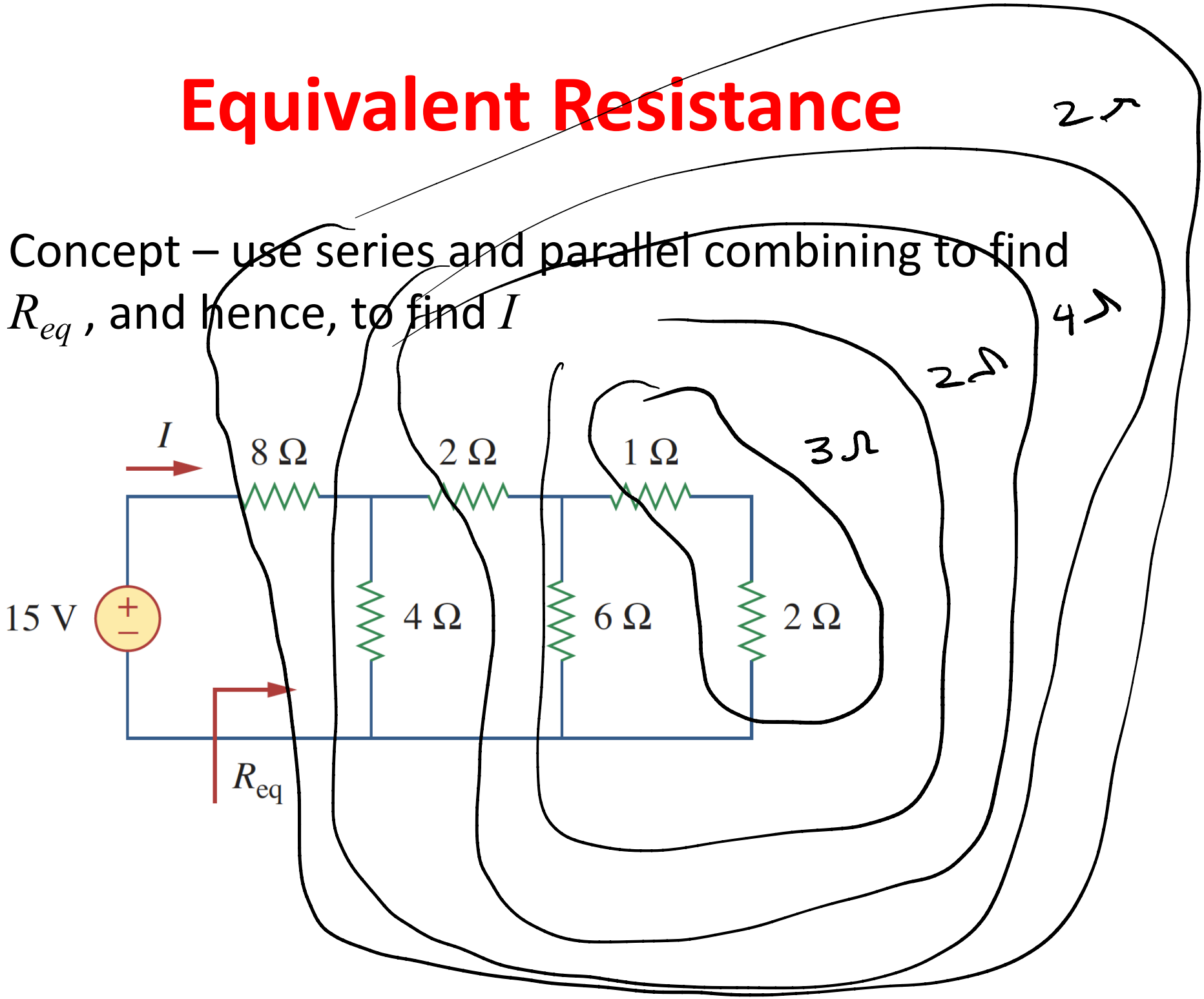






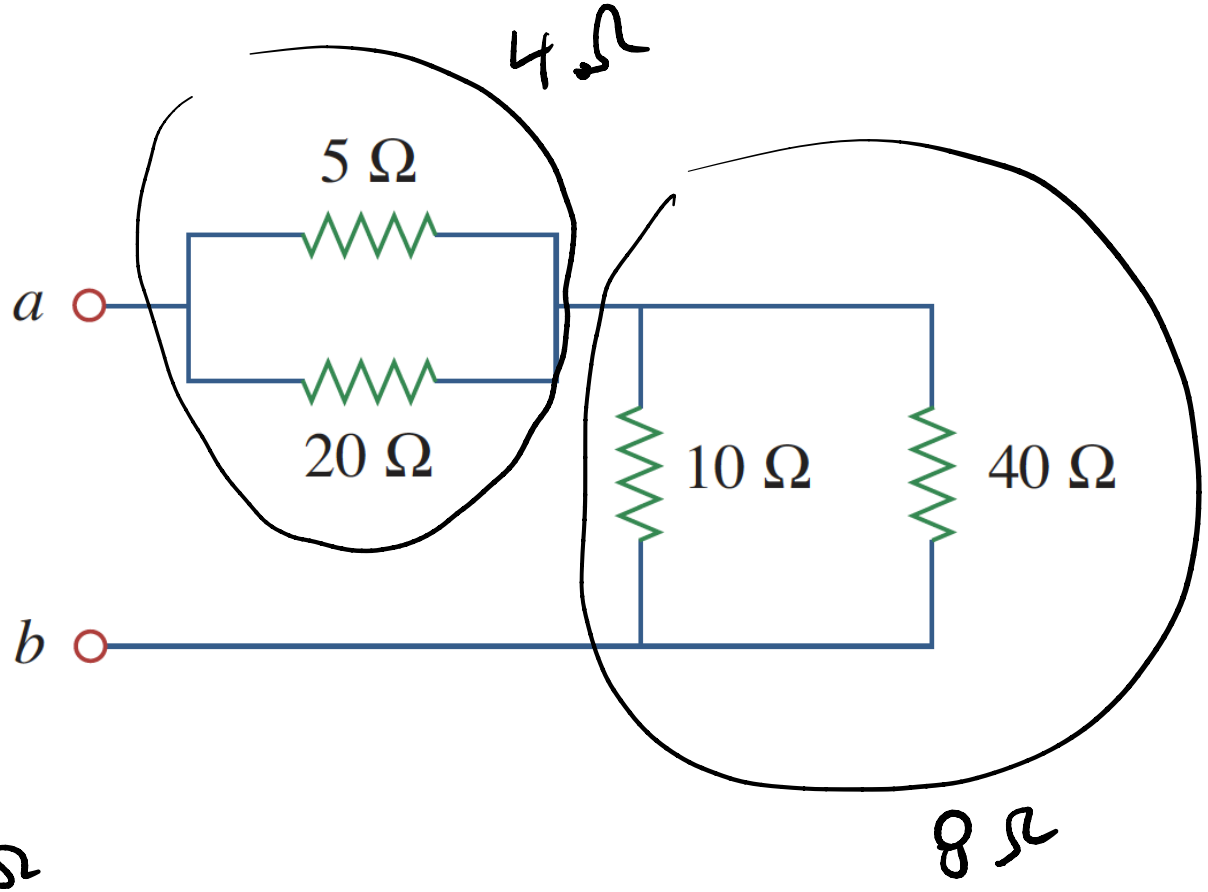
Equivalent Resistance

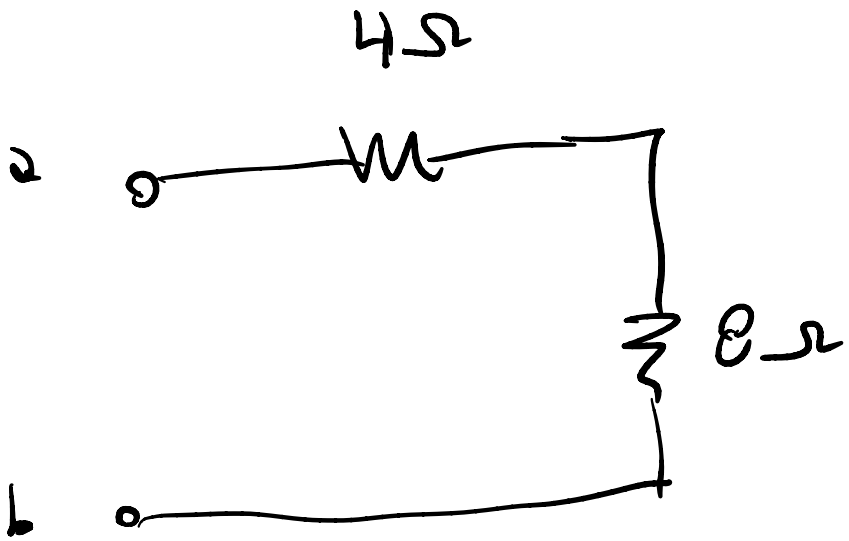
- Concept – use series and parallel combining to find R_{eq} , and hence, to find I



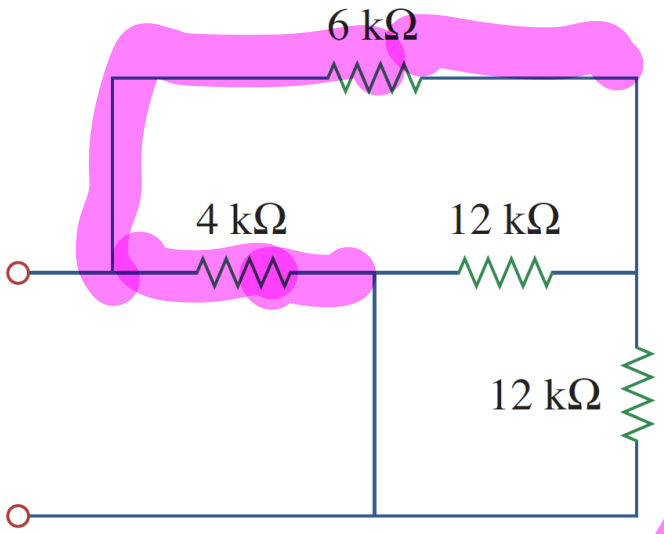
Example:

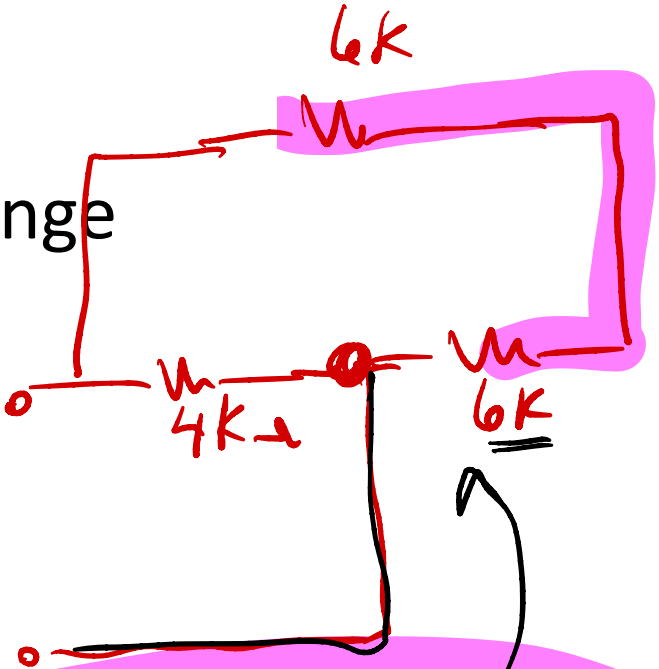
12 Ω

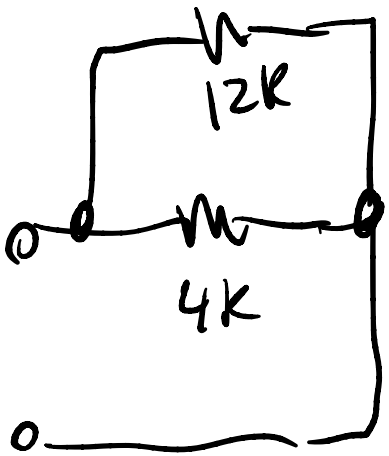


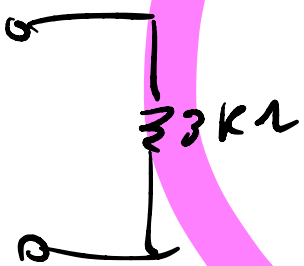


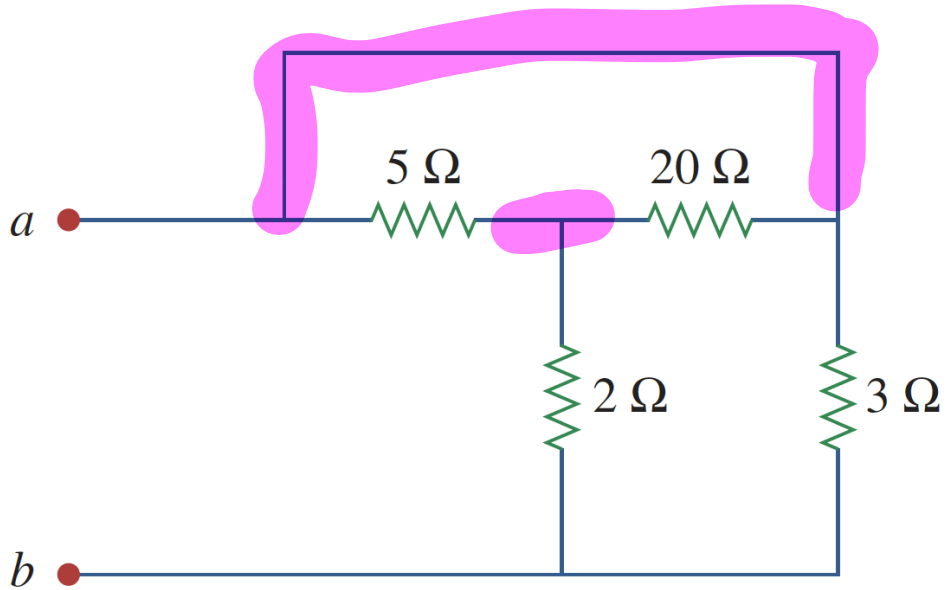
Sometimes the circuit looks strange



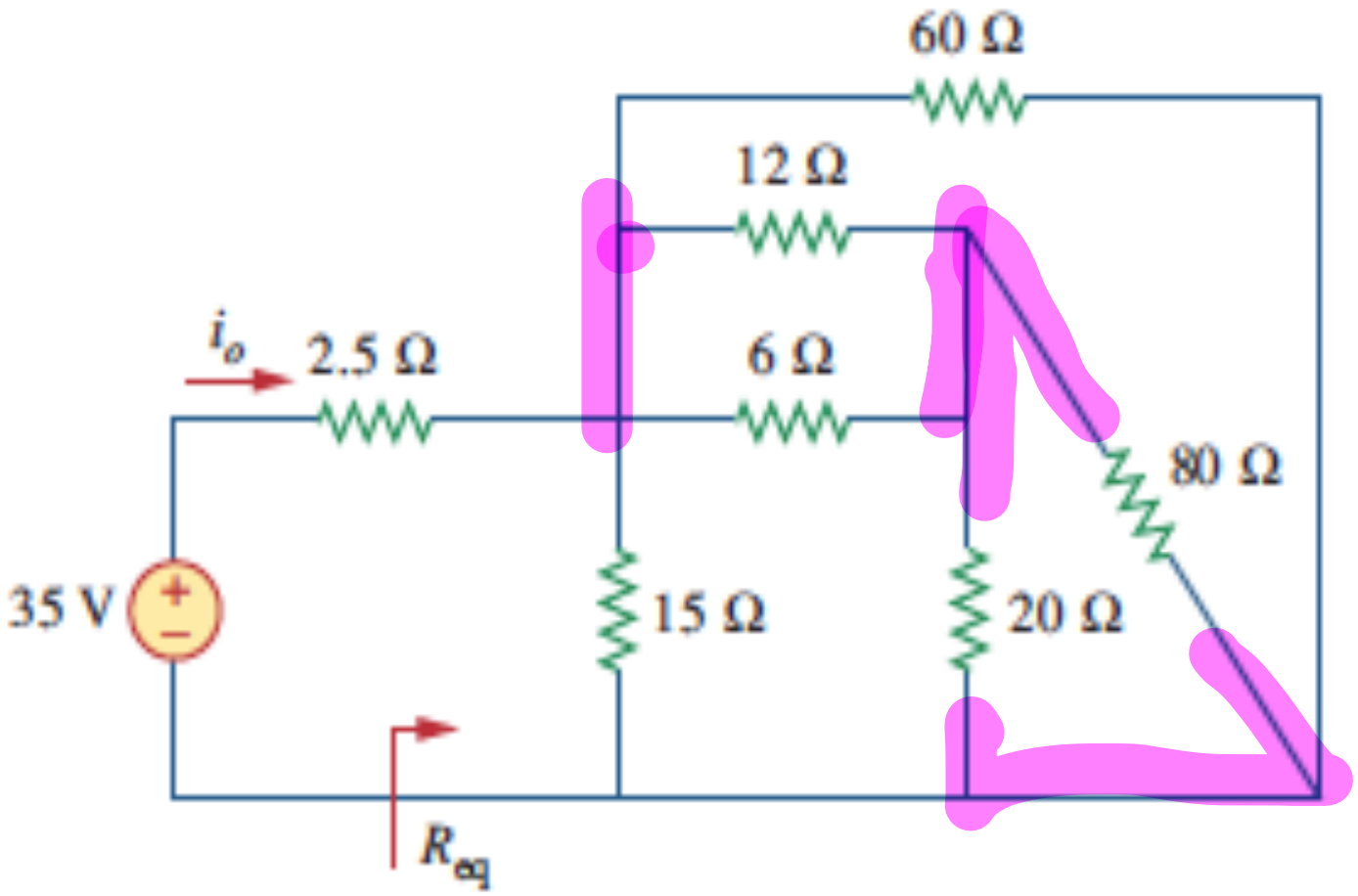






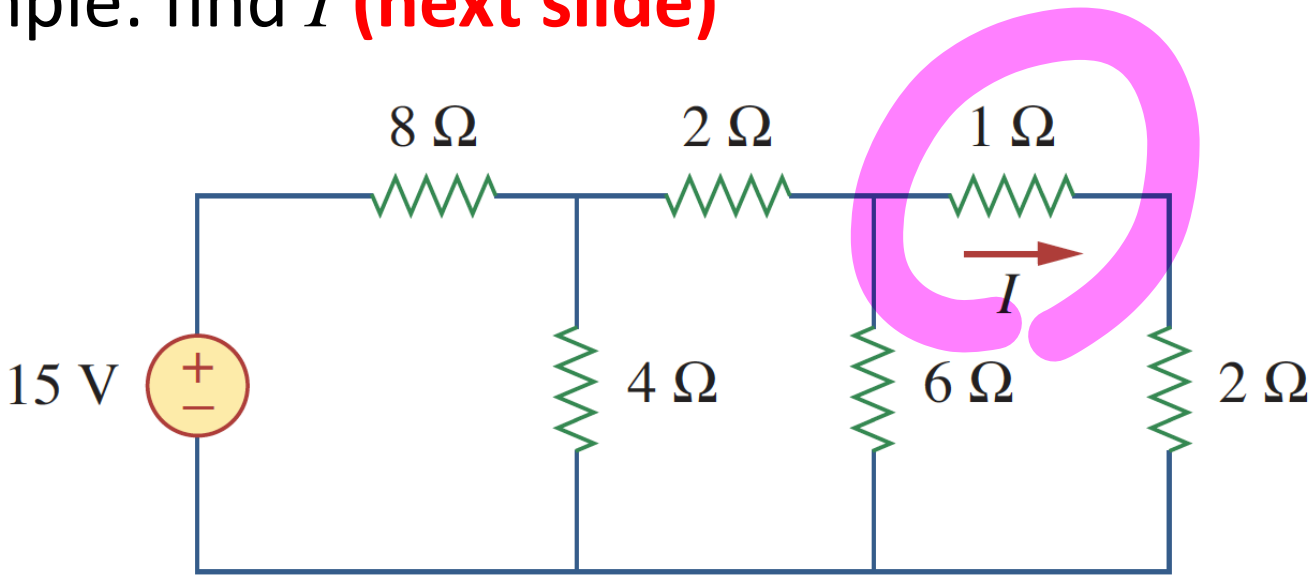


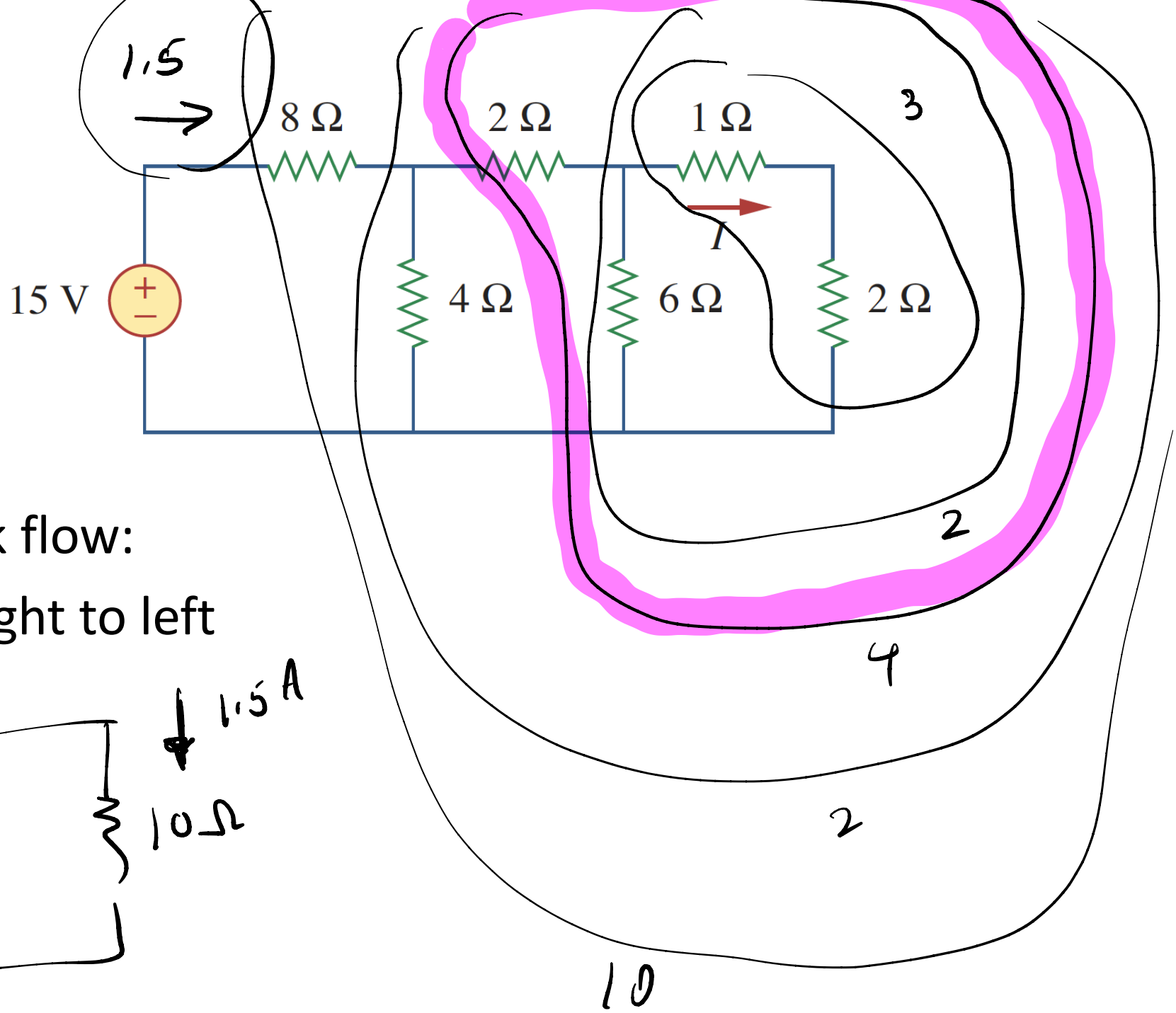
Example: find R_{eq} and i_o



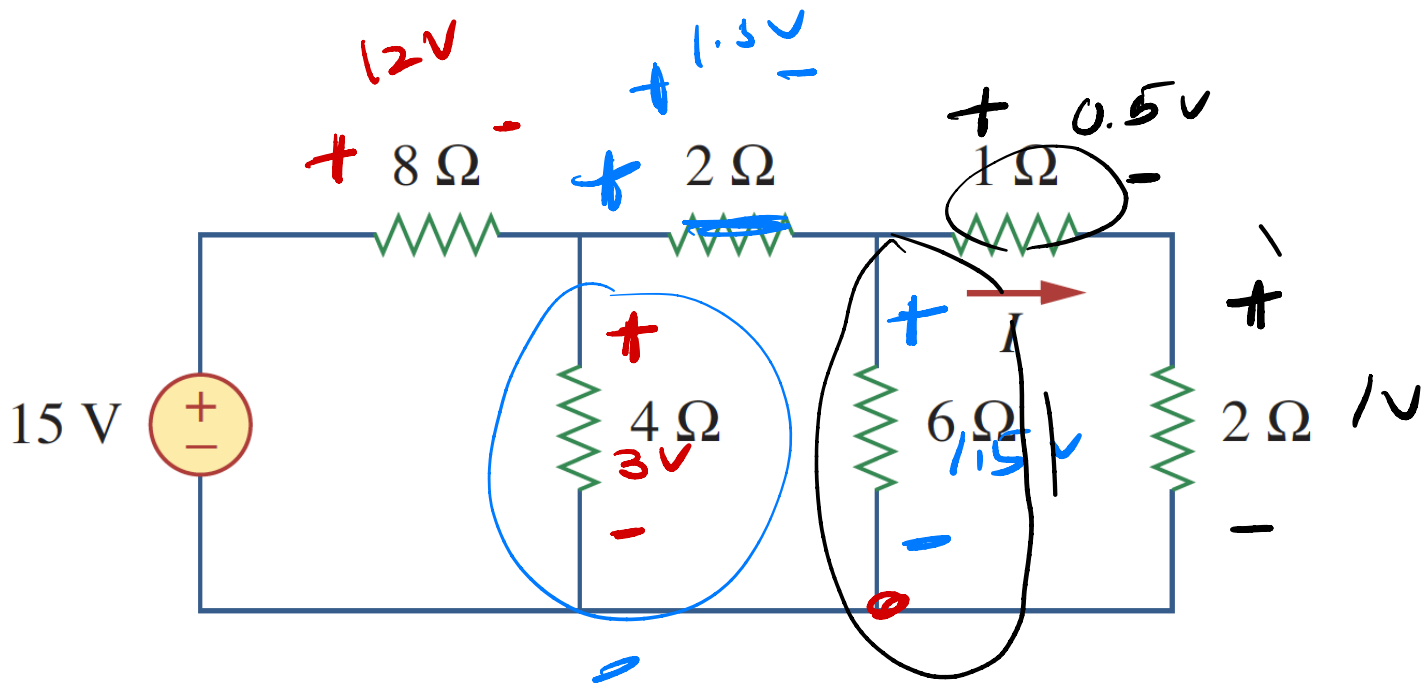
Circuit Analysis

- Sometimes we can do a full analysis using just series/parallel combining and voltage/current division
- Example: find I **(next slide)**





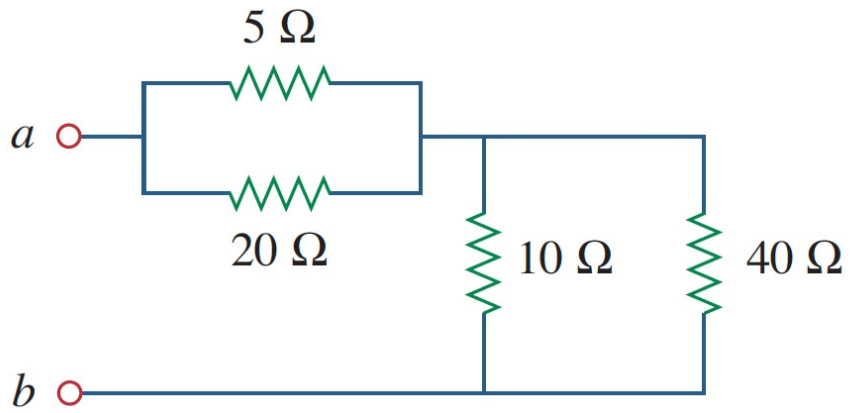
- Work flow:
  - Right to left



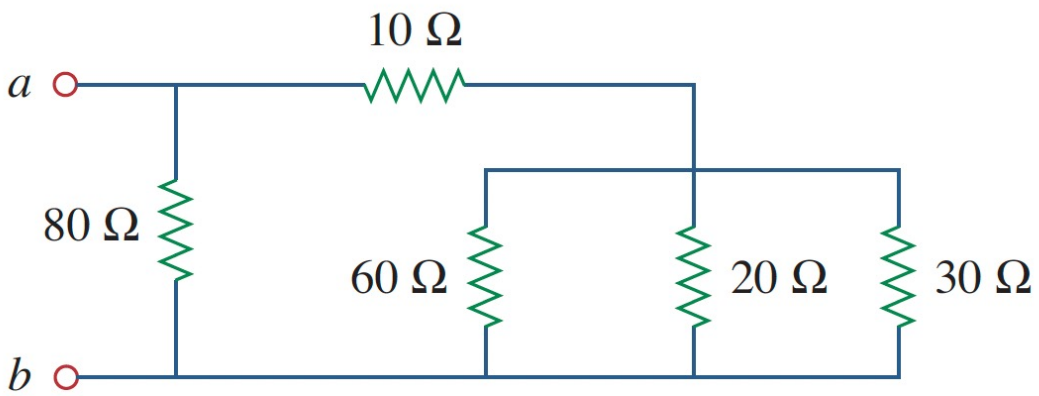
- Work flow:
  - Left to right

12 Ω, 16 Ω

Practice problems: find the equivalent resistances



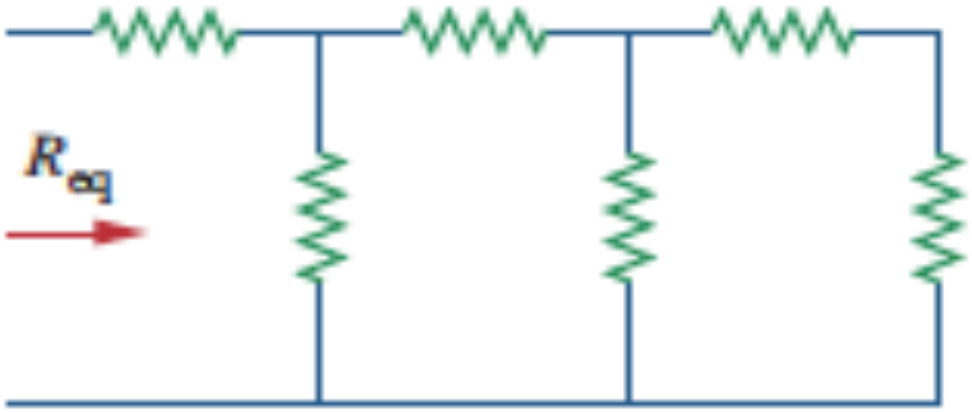
(a)



(b)

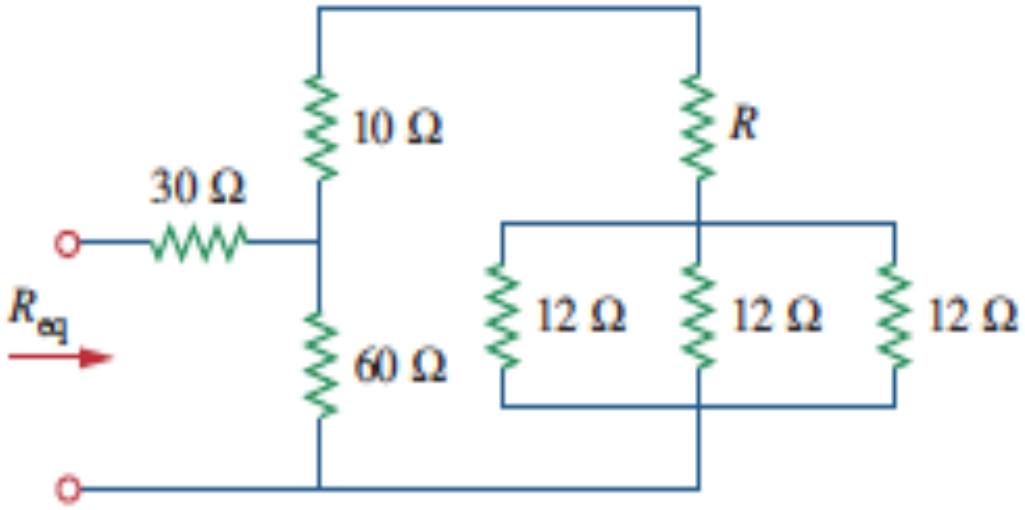
13 Ω

Practice problem: find R_{eq} if all resistors are 8 Ω



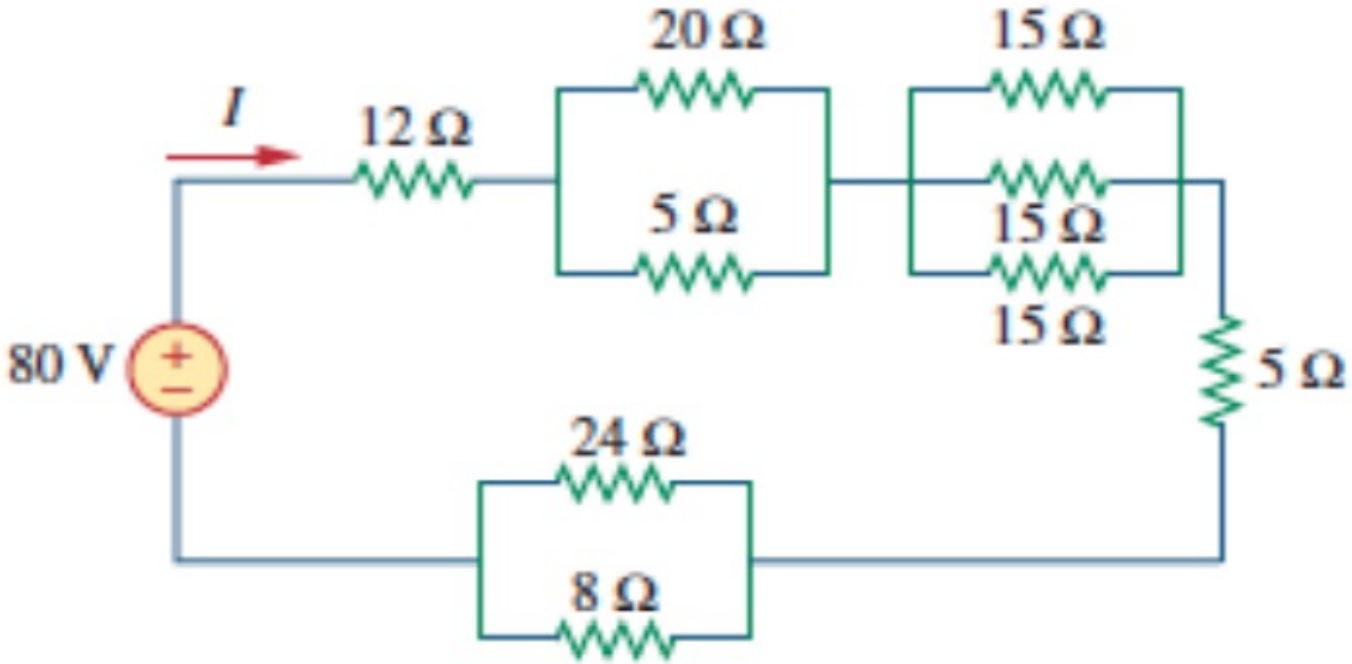
16 Ω

Practice problem: if $R_{eq} = 50\ \Omega$, find R



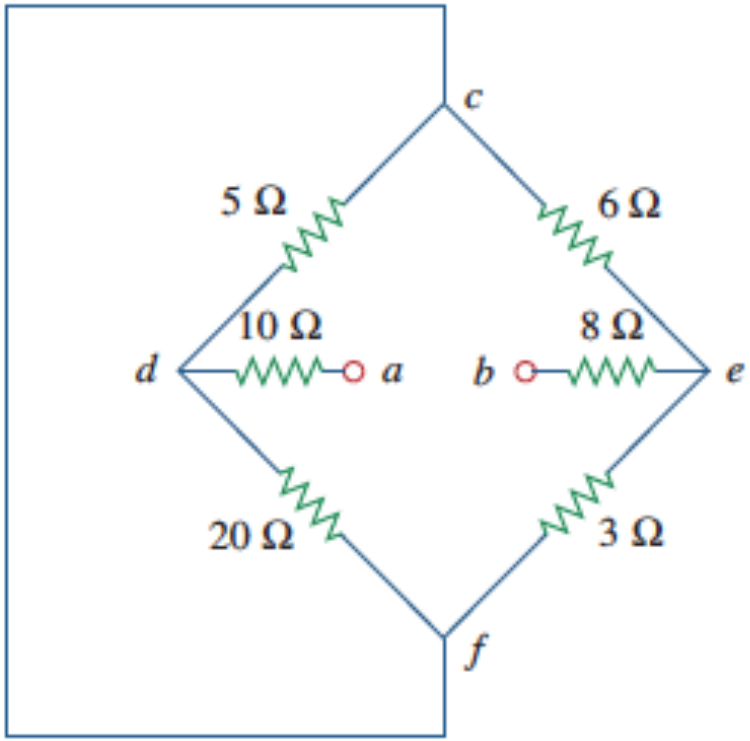
2.5 A

Practice problem: find I



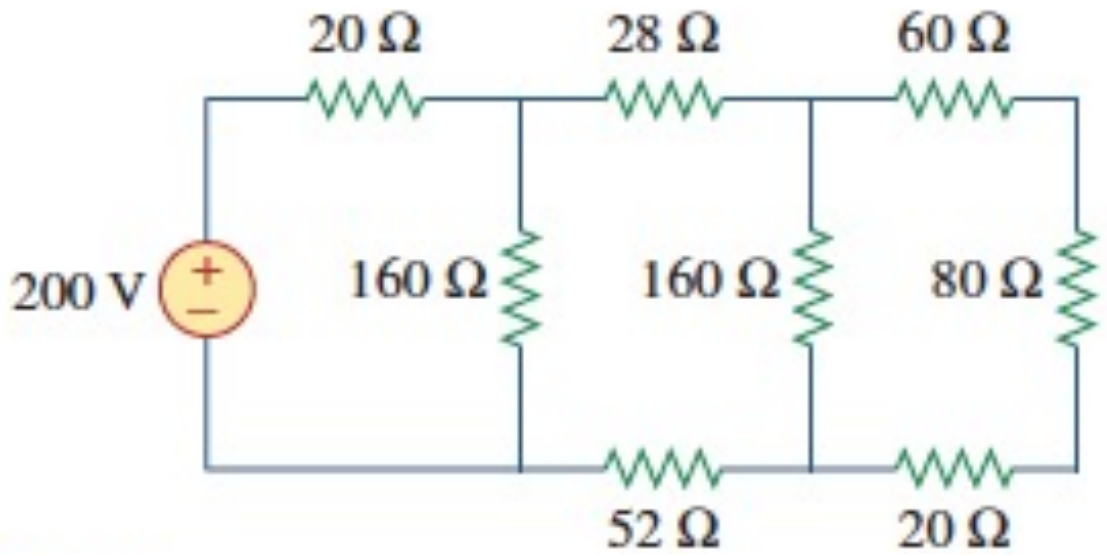
24 Ω

Practice problem: find the equivalent resistance at a-b



$-400\ W$

Practice problem: find the source power



$20\ V$

Practice problem: find v