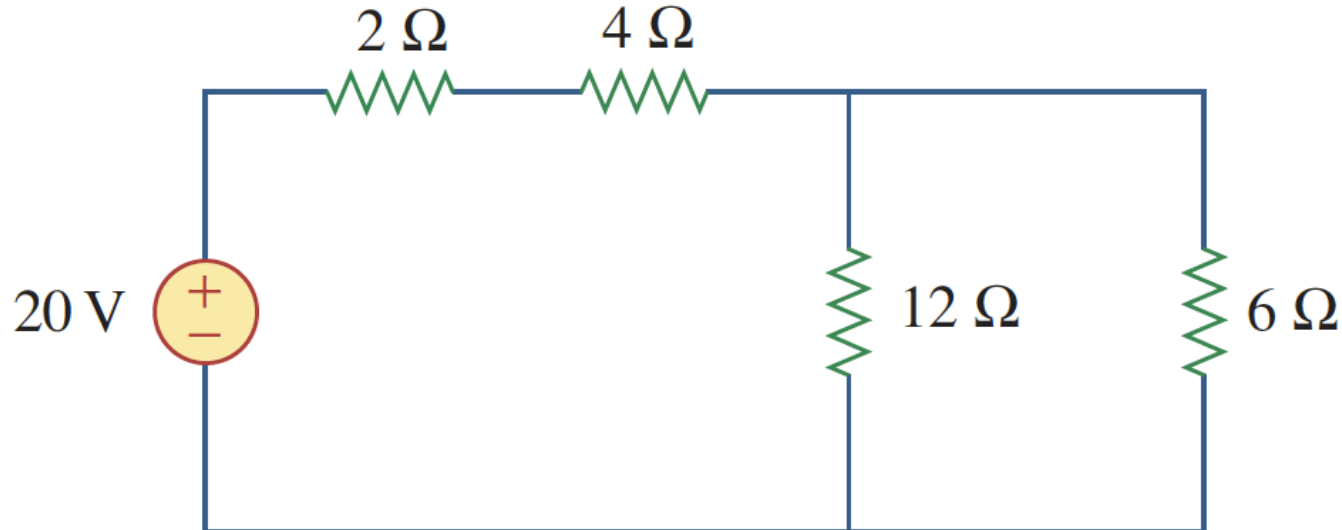# Basics – 4

series/parallel resistance;
voltage/current division
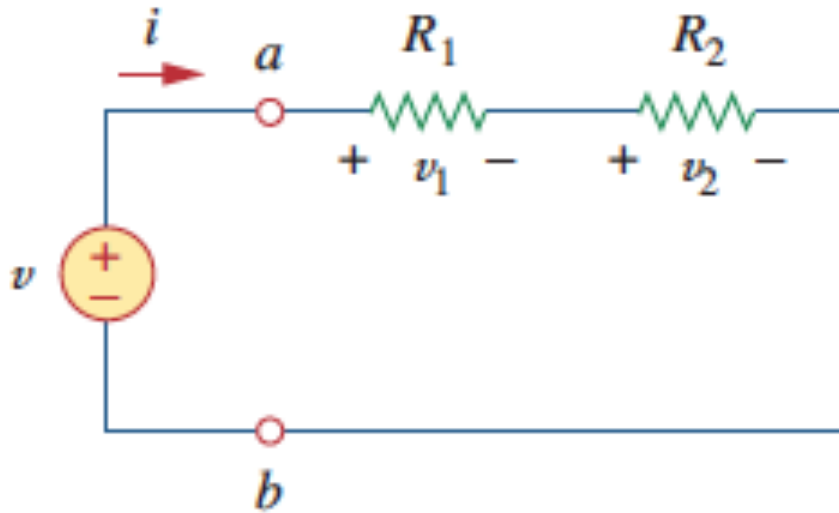
Applying KCL and KVL

Consider:
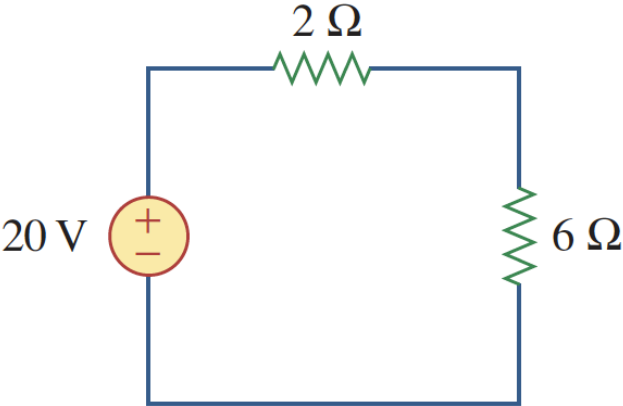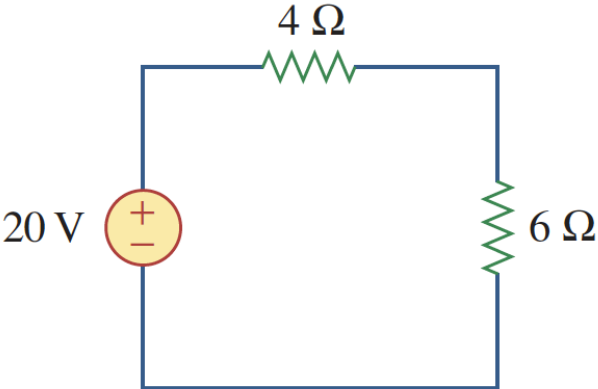
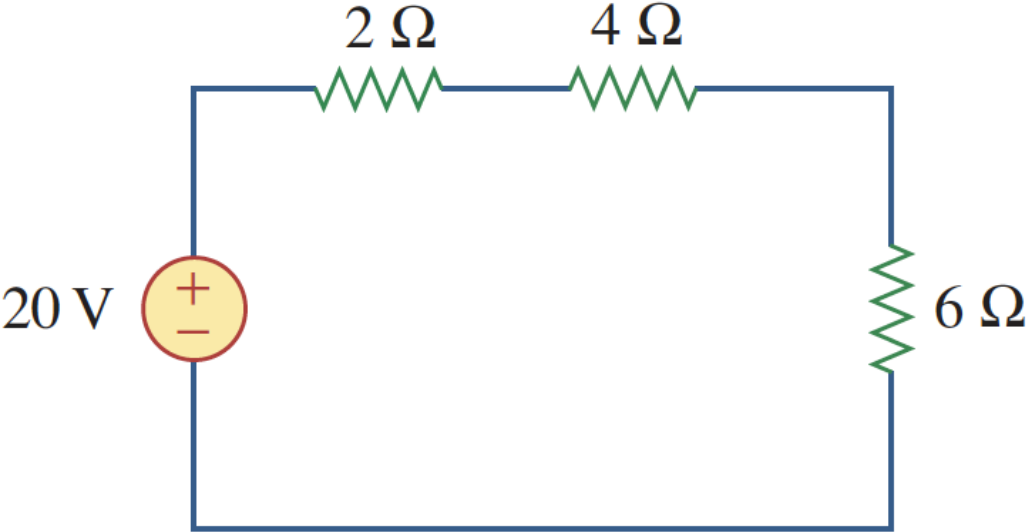- Currents in the 2 and 4 Ω resistors (KCL)
- Voltages across the 6 and 12 Ω resistors (KVL)
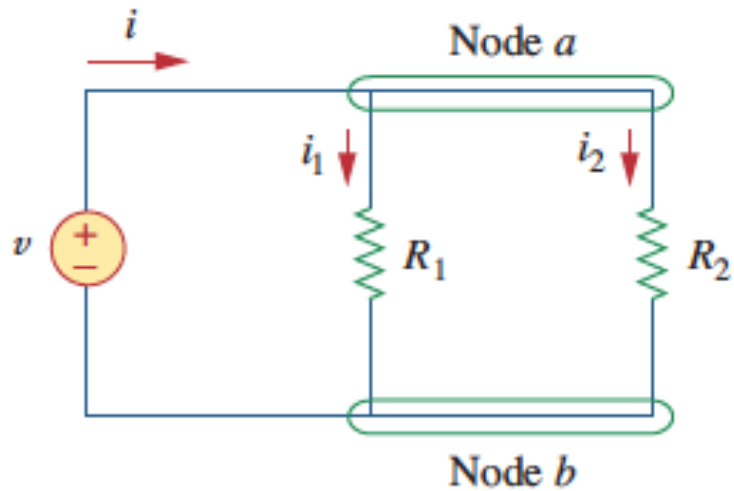
Series Resistors & Voltage Division

Examples

Example:

20 V source (+/−), 2 Ω and 4 Ω resistors in series across the top, 6 Ω resistor on the right side.
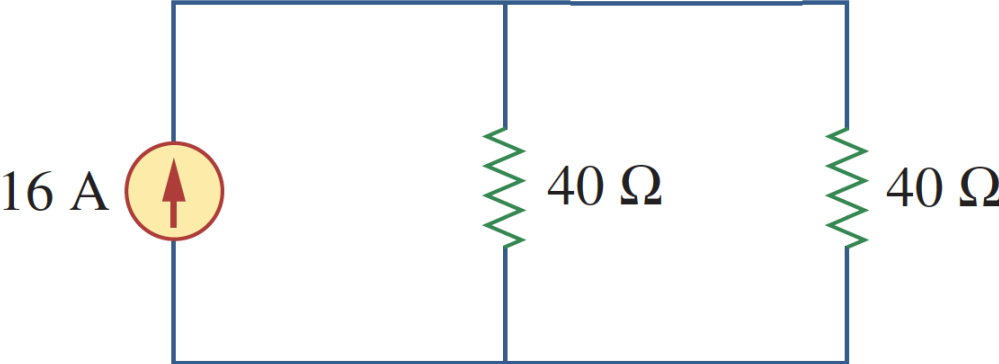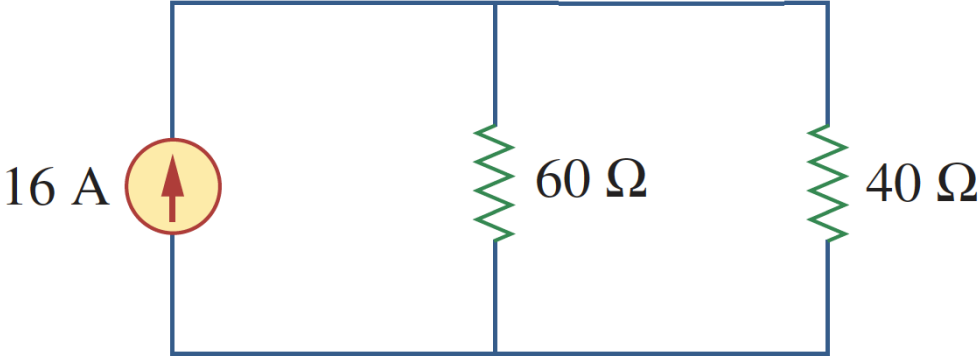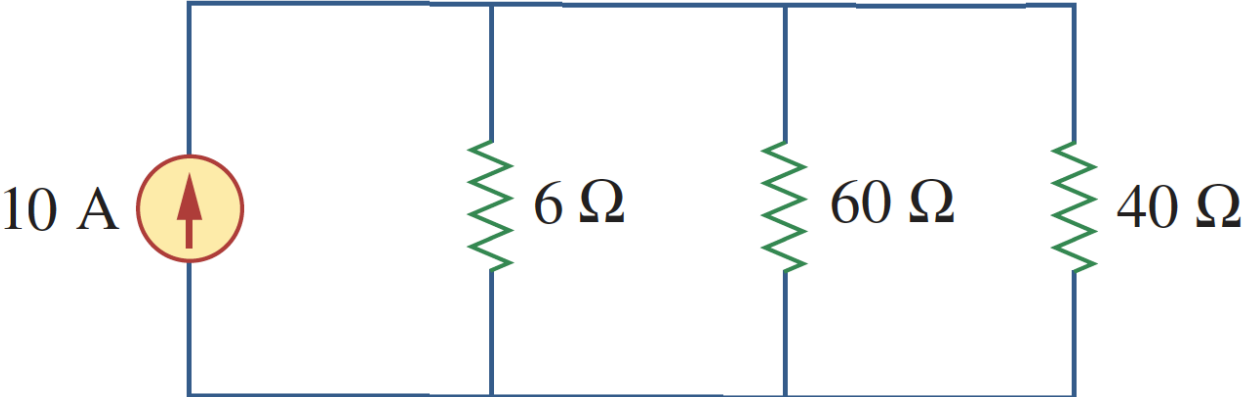
Parallel Resistors & Current Division

Examples:

16 A — 60 Ω — 40 Ω
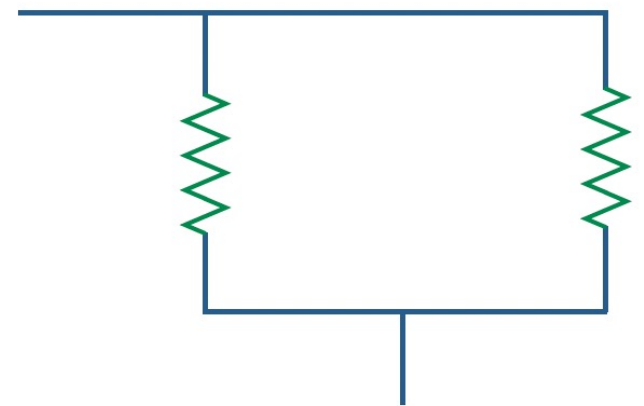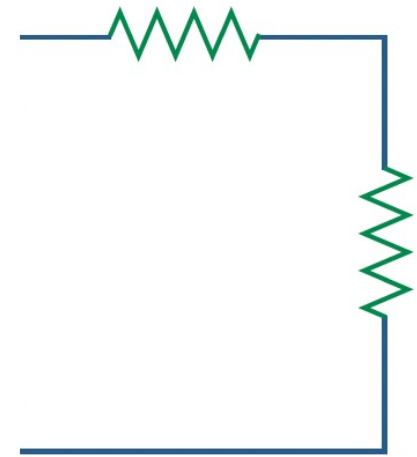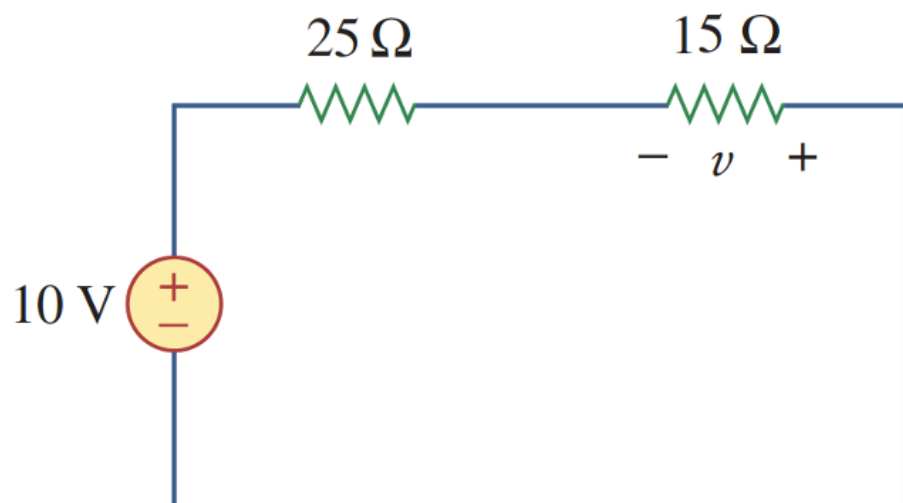
16 A — 40 Ω — 40 Ω

Example:

Series/Parallel Summary

- Series: resistances add
  - <u>Nothing</u> connected in the middle
  - **Same current (KCL)**
  - Voltage divides proportionally

- Parallel: resistances add inversely
  - Connected at <u>both</u> ends
  - **Same voltage (KVL)**
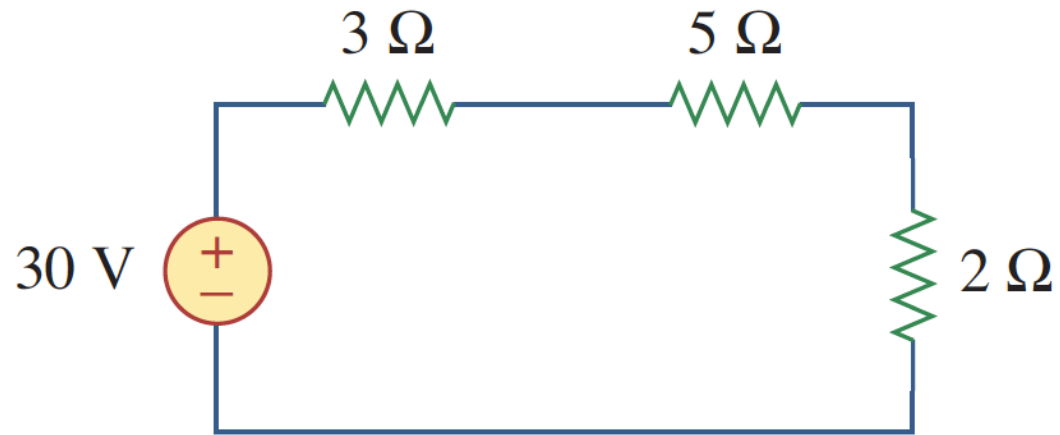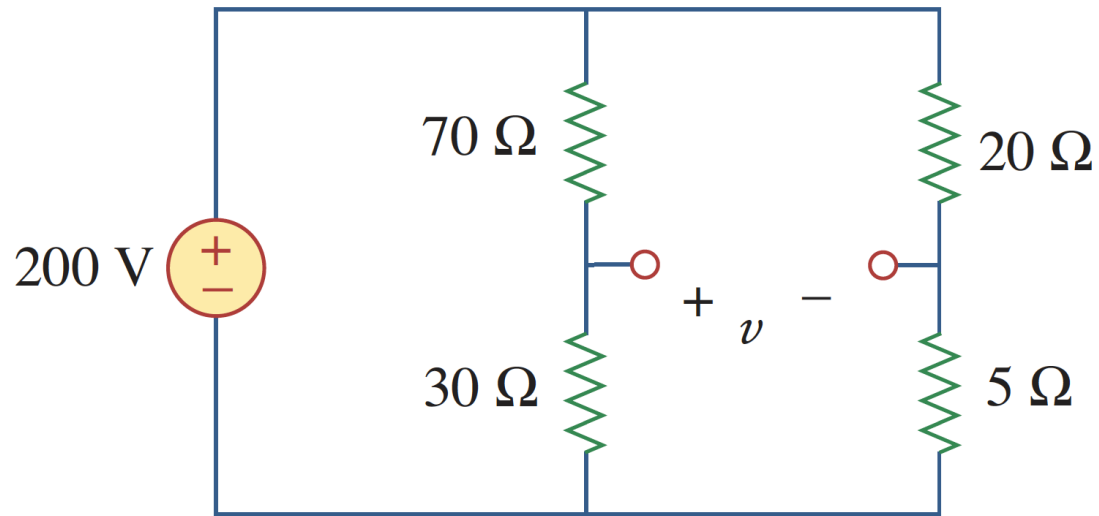 - Current divides proportionally

Example: find v

Practice problem: find the power in the 3 Ω resistor

Practice problem: find v

Practice problem: find the power in the 50 Ω resistor

60 Ω

200 Ω

40 Ω

50 Ω

16 A