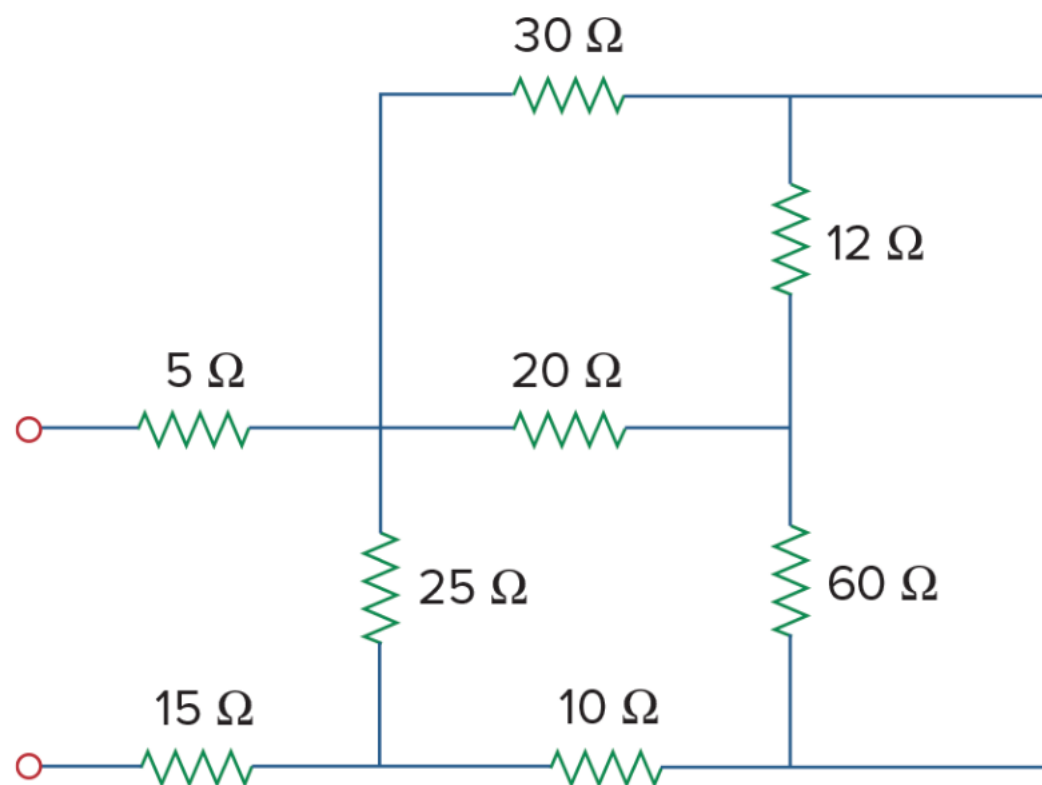




Find the equivalent resistance between points *A* and *B*





THE OHIO STATE UNIVERSITY

COLLEGE OF ENGINEERING

Voltage and Current Division



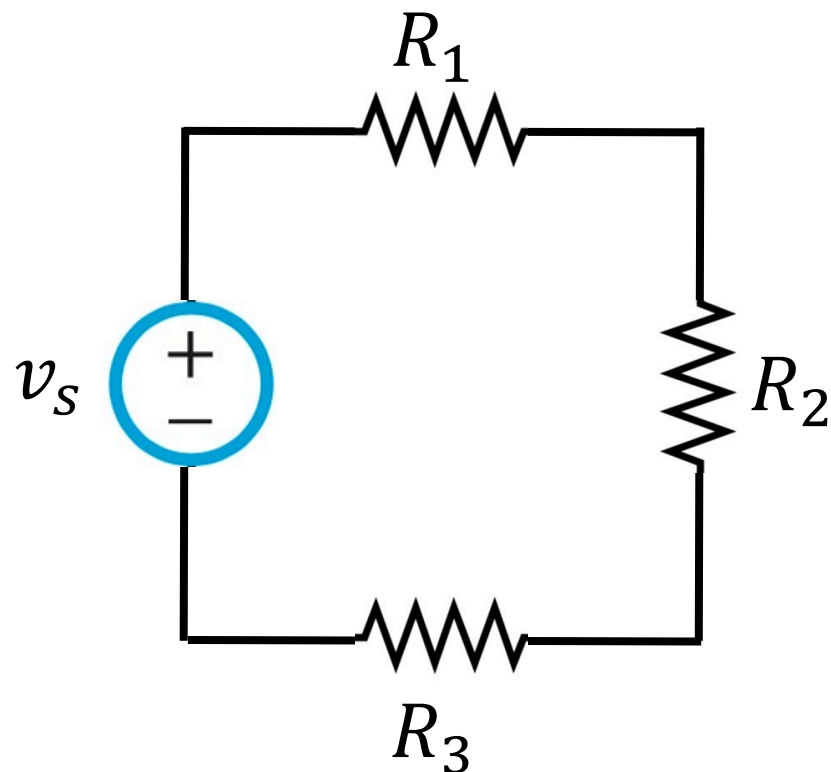
- Learning Objectives:
 - Apply voltage division.
 - Apply current division.





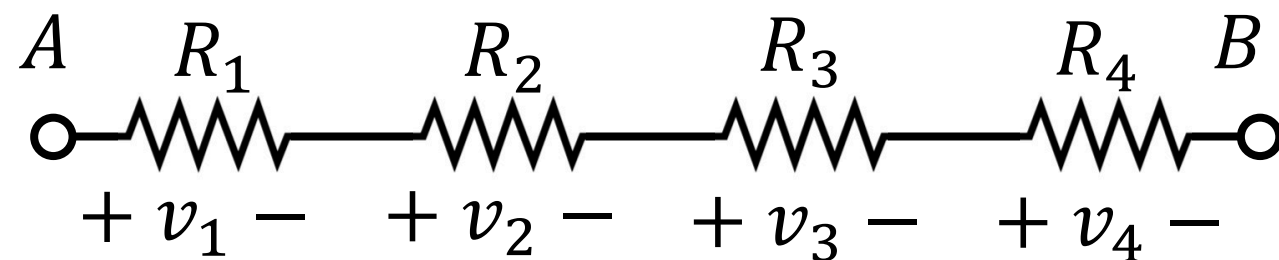
- Recall: Same current flows through all of the resistances in series.

What about the voltage???





- Recall: Same current flows through all of the resistances in series.



What about the voltage???

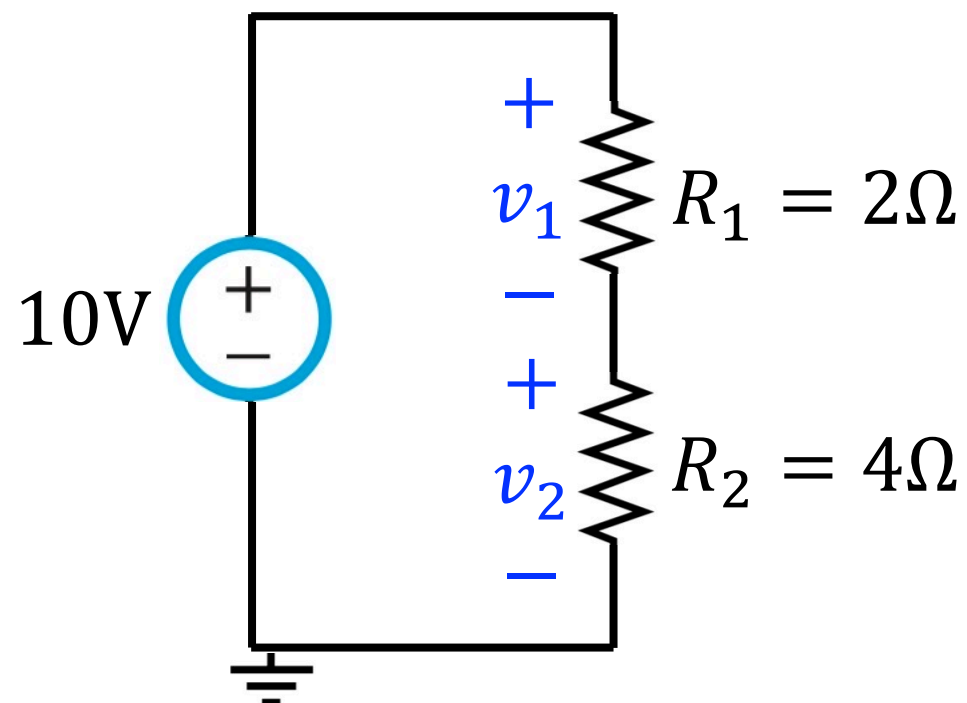
Principle of voltage division:

- The ratio of the voltages across any two or more series resistances equals the ratio of those resistances.
- Applies to any two or more resistances in series.

$$v_1 = \frac{R_1}{R_1 + R_2 + R_3 + R_4} v_{AB}$$

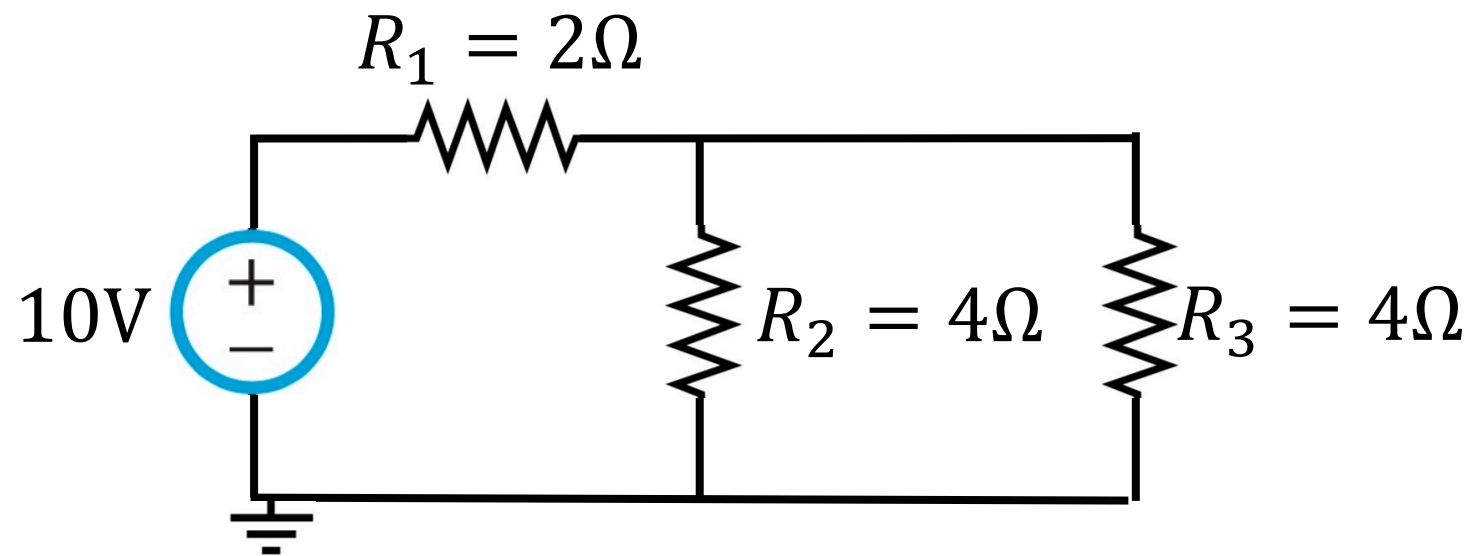


- Find v_1 and v_2



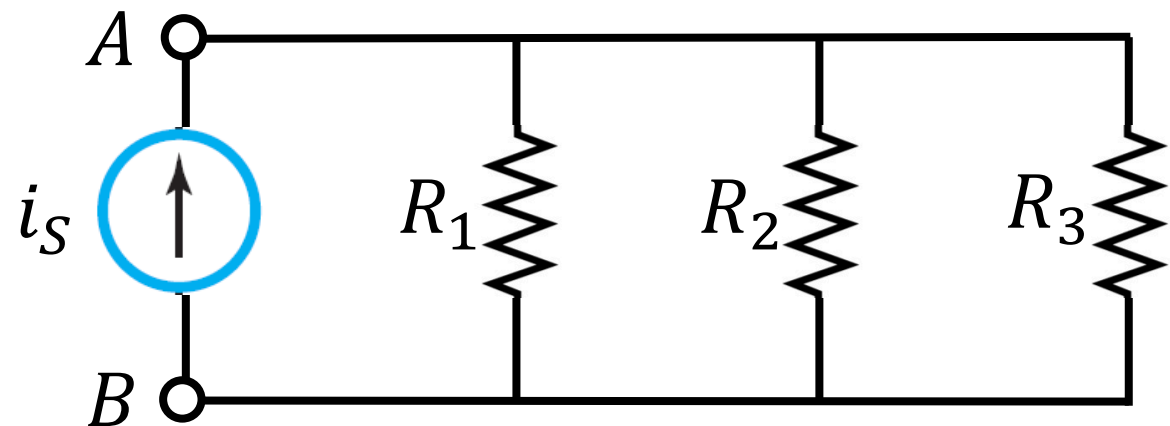


- Find v_1 , v_2 , and v_3





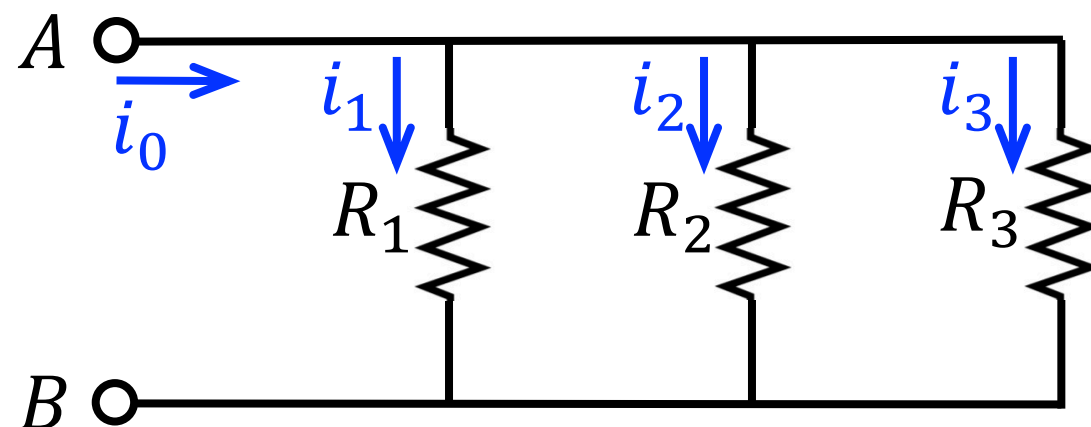
- Recall: Same voltage across resistors in parallel.



What about the current???



- Recall: Same voltage across resistors in parallel.



What about the current???

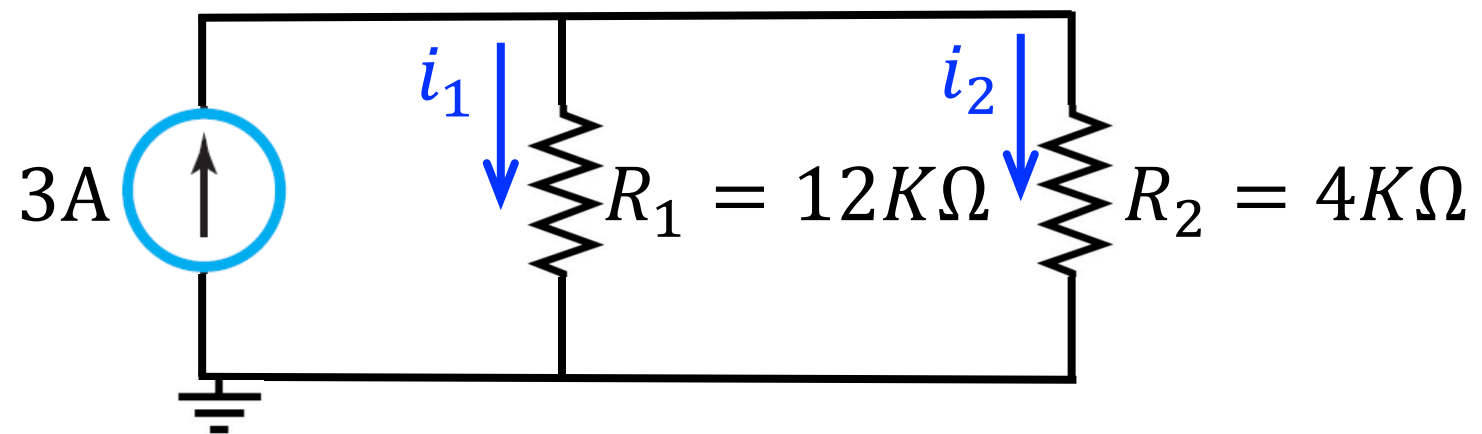
Principle of current division:

- The ratio of the currents through any two or more resistances in parallel equals the inverse ratio of those resistances.

$$i_1 = \frac{\frac{1}{R_1}}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \frac{1}{R_4}} i_0$$



- Find i_1 and i_2





- Find i_1 and i_2

