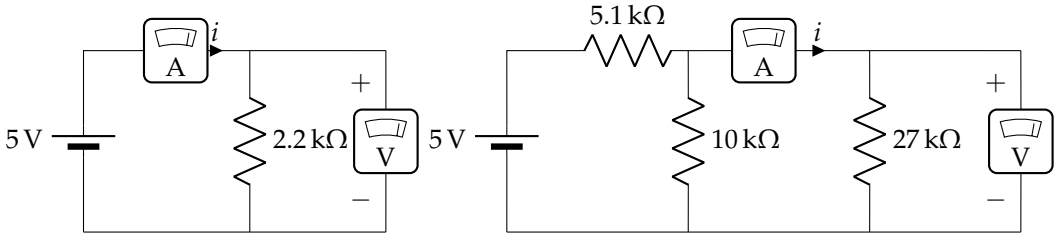
Problem Set 1: Due Tuesday 28 Jan

Physics 251

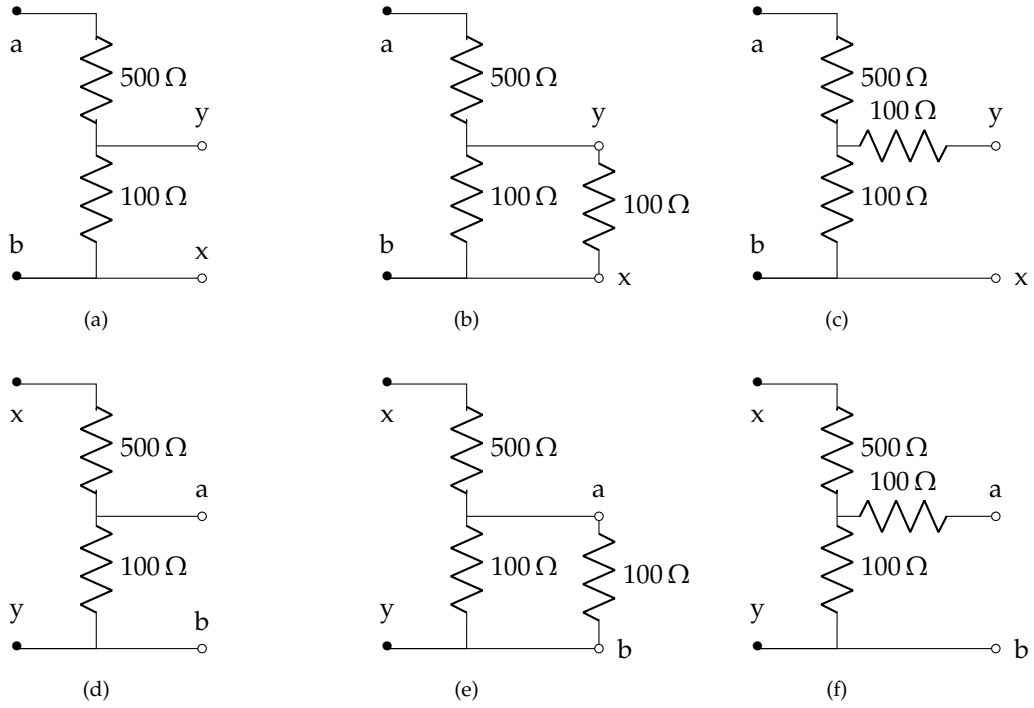
Spring 2025

These problems are designed to give you practice with Ohm's Law and basic circuits.

1. Find the voltmeter and ammeter readings in the two circuits below. Briefly explain your thinking and show any needed calculations neatly and box your answers.



2. An ideal voltage source which supples 12 Volts DC is connected between the points marked *a* and *b* in the circuits below. Point *a* is positive relative to point *b*. Find the voltage between the points marked *x* ands *y* and note whether *x* or *y* is at a higher potential.



3. Repeat problem 2; only this time assume an ideal current source of 20 mA is connected between a and b. The current flows into a.

4. A large number of high precision 10 Ω resistors is available. Find a way to produce each of the following values of resistance:
   a) 5 Ω b) 30 Ω c) 25 Ω d) 9 Ω e) $\frac{\pi^2}{6}$ Ω