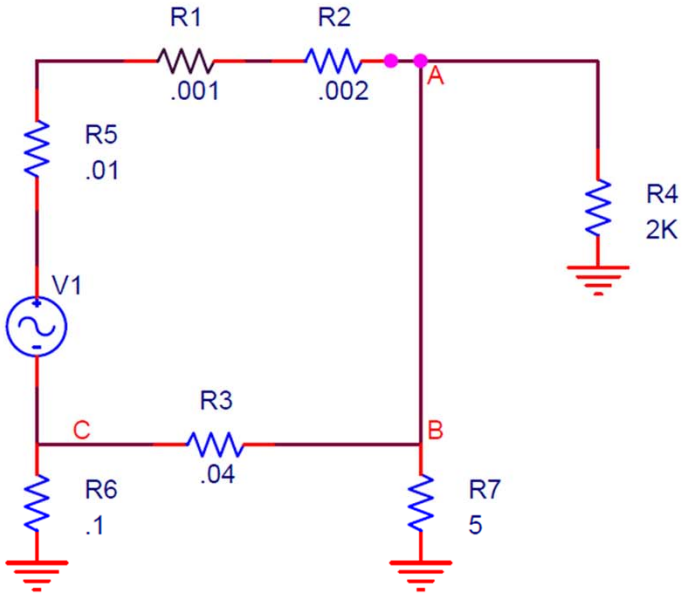
ELECTRICAL THEORY KNOWLEDGE BASE

- In order to get the maximum benefit from this course and to understand WHY behind the principles of grounding we will cover, you should be comfortable with the following concepts and formulas
  - Compute voltage drops for AC and DC circuits using Ohm's Law:

    $$E = I \times R = I \times Z$$
  - Combine series and parallel resistances and inductances into a single equivalent
  - Solve a circuit such as the one shown to determine voltage potentials between any of the nodes (A, B, C, and ground) shown in the circuit diagram to the right
  - You should also be familiar with the voltage divider rule which greatly simplifies the analysis



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The basic circuit above is representative of a basic system comparable to the grounding systems we will be discussing. You can think of the source V1 representing the voltage from a typical transformer. The resistances R1, R2, and R5 the resistances or impedances of the transformer and phase conductor. R3 the impedance of the equipment grounding conductor and R6 and R7 the resistance of the grounding electrodes imbedded in the earth. The resistance R4 might represent some other higher resistance path such as the human body.