1.

R1

10V 7V R2

100 mA

Find the values of R1, R2.

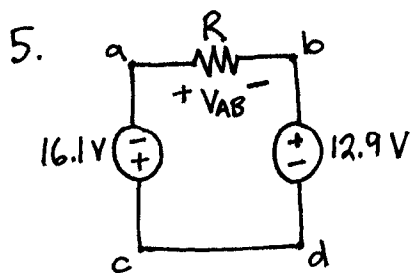**2.**

6Ω 12V 15Ω I
4Ω V₁
20V V₂ 25Ω
10Ω 30Ω 14V

Find I, V_1, V_2, power supplied by 12V source.

3.

I 200Ω
V₁ R
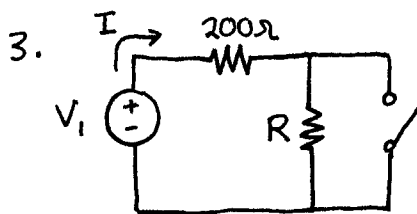
When the switch is open, $I = 1\,mA$.
When closed, $I = 10\,mA$.
Find V_1 and R.

4.

R1
V₁ I R2
R3
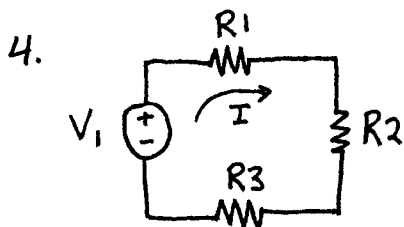
When $V_1 = 10V$, $I = 1A$, and the voltage drops across R1 and R2 are 2V and 3V, respectively. Find R3 and the power dissipated in R3.

5.

a R b
+ V_AB −
16.1V 12.9 V
c d

Determine V_{AB} using KVL. If a voltage source were inserted between C and D to make $V_{AB} = 12.3\,V$, draw the circuit showing the voltage source polarity and magnitude.

6.

d +5V− 3V b
V_AD +2V−
12 V a V_BC
V₁
c
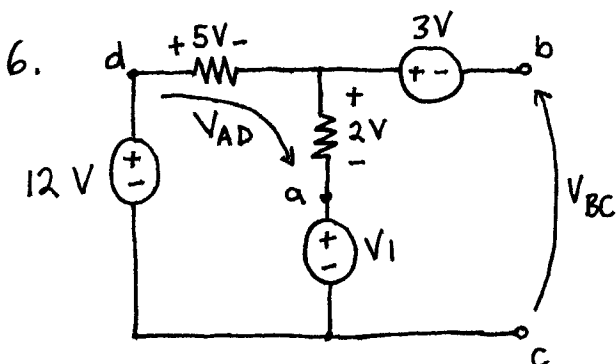
Find V_1, V_{AD}, V_{BC}.

Note: the convention V_{AD} means the voltage between points "A" and "D" with "A" understood as the more positive point, i.e., node "D" is the reference (−) node.

7. A car radio designed to operate from 6.3 volts draws 4.5 A of current. What value of R should be placed in series with the radio if it is to be used in a 12.6 volt car? What should the power rating of the resistor be?


8.
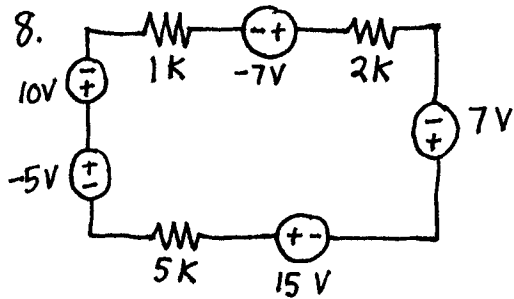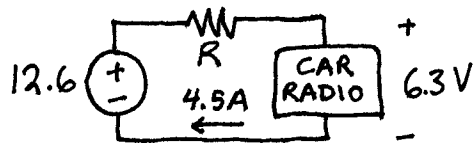
Draw an equivalent circuit that contains only one resistor and one voltage source.

9.
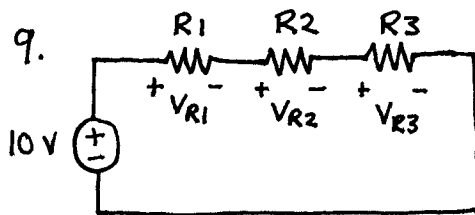
R1 is twice R2.
R1 is one-half R3.
Determine V_{R1}, V_{R2}, V_{R3}.

10. The following circuit was left on your floor. Spot, your faithful homework checking dog, begins to bark, as if he senses an error in your calculations. Is something wrong with your calculations or is Spot simply asking to use your homework as a restroom?
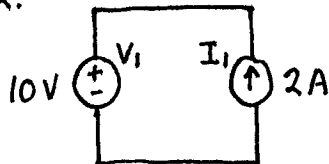
11.

1K

8V

I ↓ 2K

A

B
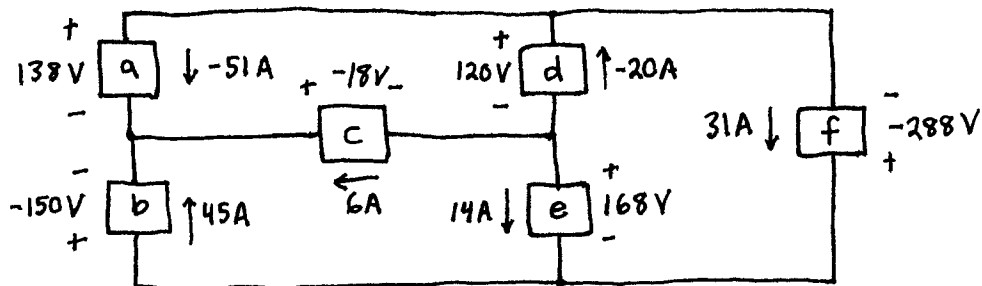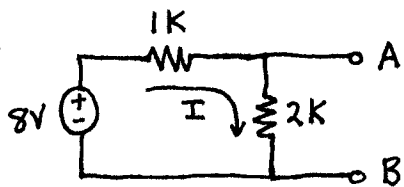
If a voltmeter is connected to points "A" and "B," what is I, and what is the voltage measured?

If an ammeter is connected to points "A" and "B," what is I, and is this a dangerous thing to do?

12.

10V V_1 I_1 2A

How much power is supplied by V_1 + I_1?

13.

2K   12V   ← I_y

-6V

$+ V_{5K} -$

5K

1K
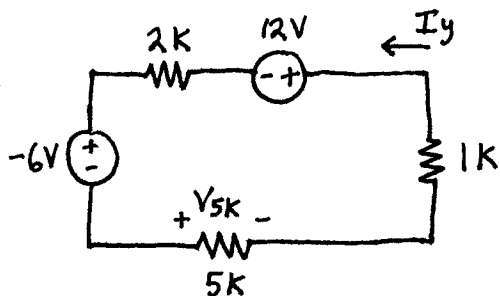
Determine I_y, V_{5K}, power generated by -6V source.