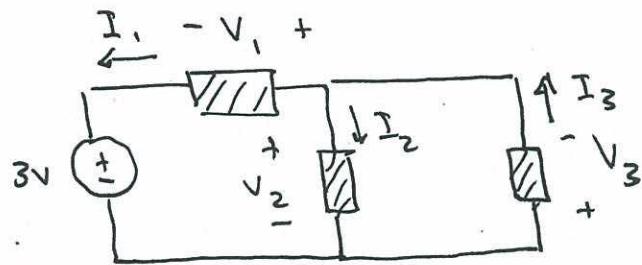
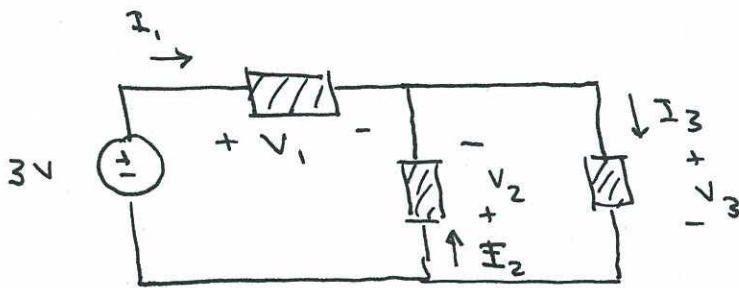
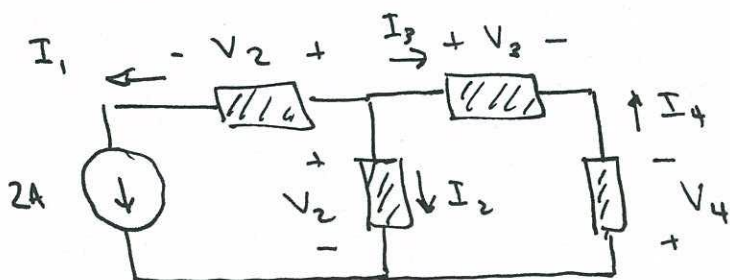
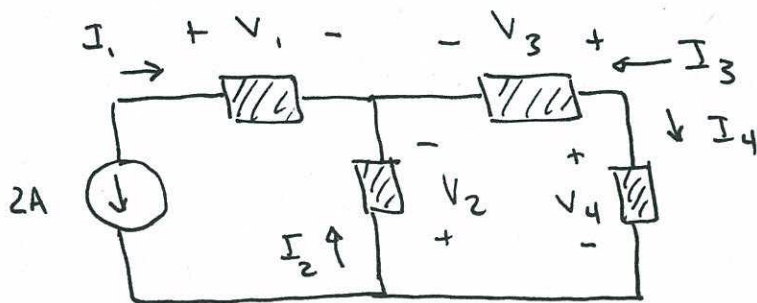


Exercises  
Chapter 1.1

1(a) The only requirement is that the reference current enters the positive reference voltage terminal. Therefore, a number of solutions are correct. Two possible solutions are shown below:

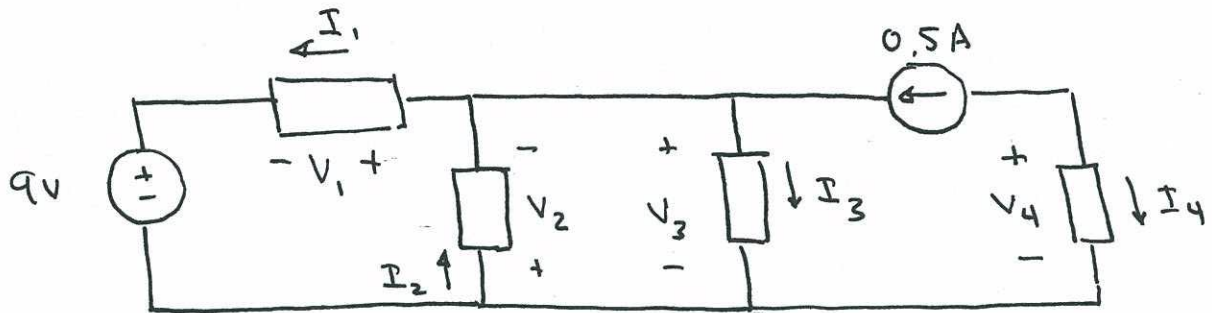


(b) Similar comments as 1(a). Two possible solutions are shown below, others are available.

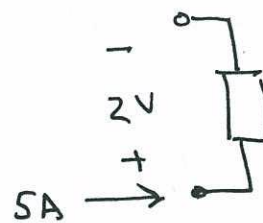
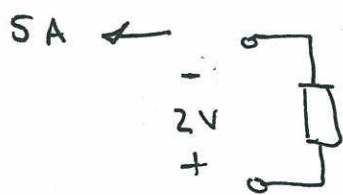


Exercises  
Chapter 1.1

2. Note that current enters (assumed) positive voltage terminal, always.



3. If power is absorbed current must enter the positive voltage terminal. Both of the solutions below are correct; other solutions exist.



4. Power is supplied. current enters negative voltage terminal.

$$P = (2A)(-3V) = \underline{\underline{-6W}}$$

Exercises  
Chapter 1.2

1. Can't tell what the current is, unless more is known about the circuit element. The ideal source can provide any current.
2. Can't tell, unless more is known about the circuit element. Nothing is known (directly) about the voltage across a current source.

Exercises  
chapter 1.3

1.  $I = \frac{V}{R} = \frac{18V}{6\Omega} \Rightarrow \underline{\underline{I = 3A}}$

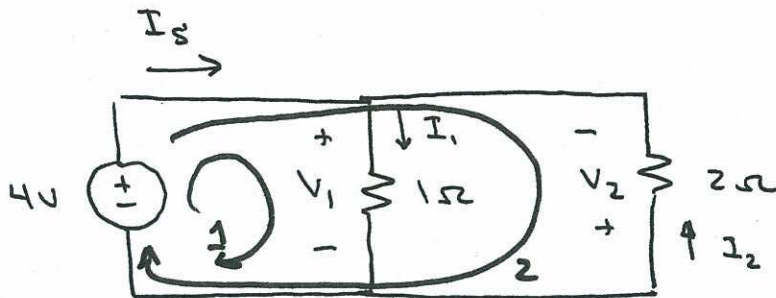
2.  $V = IR = (4mA)(2k\Omega) \Rightarrow \underline{\underline{V = 8V}}$

3.  $I = \frac{V}{R} = \frac{-10V}{2k\Omega} \Rightarrow \underline{\underline{I = -5mA}}$  ←

For resistors, current always enters the positive voltage node. This current must be negative.

Exercises  
Chapter 1.4

1. label voltage, current reference directions



(a) KVL, Loop 2:

$$-4V - V_2 = 0 \Rightarrow V_2 = -4V \Rightarrow I_2 = \frac{V_2}{2\Omega} = \frac{-4V}{2\Omega} = -2A$$

$$\underline{I_2 = -2A} \text{ (in direction shown)}$$

(b) KVL, Loop 1:

$$-4V + V_1 = 0 \Rightarrow V_1 = 4V \Rightarrow I_1 = \frac{V_1}{R} = \frac{4V}{1\Omega} = 4A$$

$$\underline{I_1 = 4A} \text{ (positive in direction shown)}$$

(c) Total source current,  $I_s$ :

$$I_s = I_1 + (-I_2)$$

KCL; be sure to account for signs!

$$I_s = 4A + (+2A) = 6A$$

$$P_s = (4V)(-6A) = \underline{-24W} \text{ (generated)}$$

↑ our assumed signs don't agree with passive