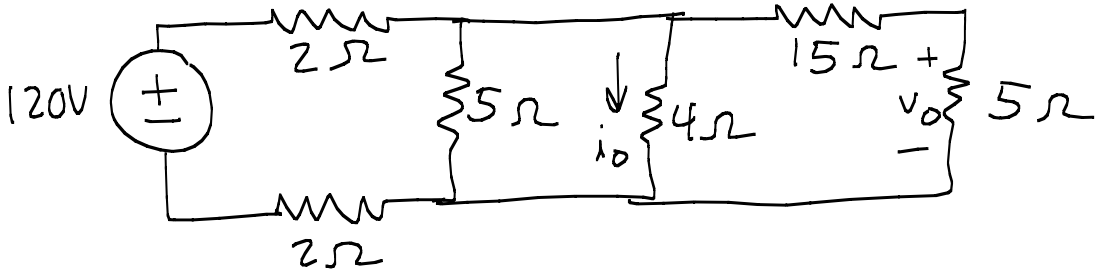
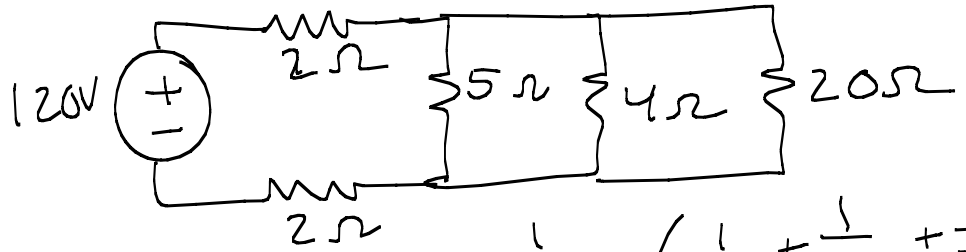
Problem 2

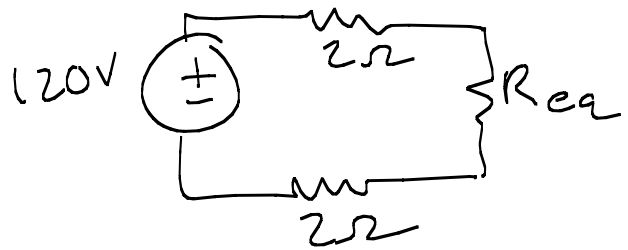
Determine: - v_o
- i_o
- $p_{15\Omega}$
- p_{120V}



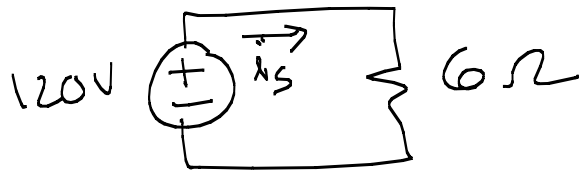


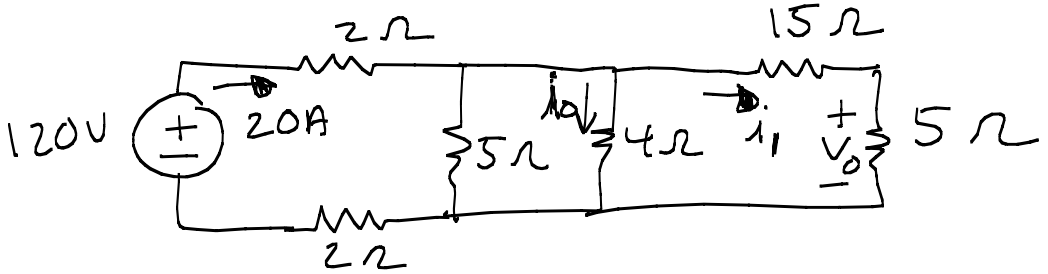
$$\frac{1}{R_{eq}} = \left(\frac{1}{5\Omega} + \frac{1}{4\Omega} + \frac{1}{20\Omega}\right)$$

$$R_{eq} = 2\Omega$$



$$i_s = \frac{120V}{6\Omega} = 20A$$





KVL (Left + Middle Perimeter, cw)

$$-120V + (20A)(2\Omega) + i_0(4\Omega) + (20A)(2\Omega) = 0$$

$$\boxed{i_0 = 10A}$$

KVL (Perimeter, cw)

$$-120V + (20A)(2\Omega) + i_1(15\Omega) + i_1(5\Omega) + (20A)(2\Omega) = 0$$

$$\boxed{i_1 = 2A}$$

$$V_0 = (2A)(5\Omega) = \boxed{10V}$$

$$P_{15\Omega} = i^2R = (2A)^2(15\Omega) = \boxed{60W \text{ (abs)}}$$

$$P_{120V} = -vi = -(120V)(20A) = \boxed{-2400W \text{ (dev)}}$$