Thomas Crow
9/6/21
Chapter 3 HW

Problems
7, 17(a,d,e), 30(a,e,g)
32, 37, 39

7) $R_1 \Rightarrow R = \frac{V}{I}$ $\frac{1V}{2A} = \boxed{0.5\Omega}$

$R_2 \Rightarrow \frac{2V}{2A} = \boxed{1\Omega}$

$R_3 \Rightarrow \frac{1V}{0.5A} = \boxed{2\Omega}$

17)

a) $V = 5V$, $R = 1\Omega$ $I = \frac{V}{R} = \frac{5V}{1\Omega} = \boxed{5A}$

d) $V = 30V$, $R = 15k\Omega$ $\frac{30V}{15k\Omega} = \boxed{2mA}$

e) $V = 250V$, $R = 5.6M\Omega$ $\frac{250V}{5.6M\Omega} = \boxed{44.64\mu A}$

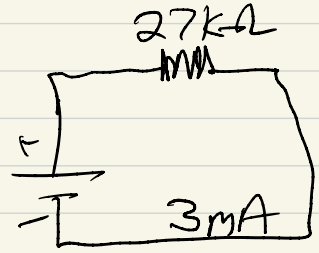
30) $V = I \cdot R$

a) $I = 1mA$, $R = 10\Omega$ $\Rightarrow$ $1mA \cdot 10\Omega = 0.001 \cdot 10 = \boxed{0.01V}$

e) $I = 250\mu A$, $R = 1.0k\Omega = (250 \cdot 10^{-6}) \cdot (1 \cdot 10^{3}) = \boxed{0.25V}$

g) $I = 850\mu A$, $R = 10M\Omega$ $(850 \cdot 10^{-6}) \cdot (10 \cdot 10^{6}) = \boxed{8.5KV}$

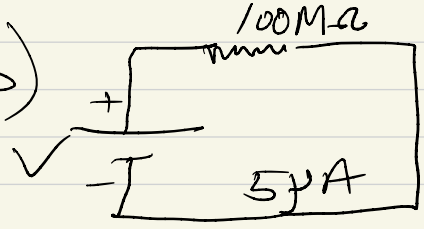
32) a)



$I = 3mA$
$R = 27k\Omega$

$V_a = (3 \times 10^{-3}) \cdot (27 \cdot 10^{3}) = \boxed{81V}$

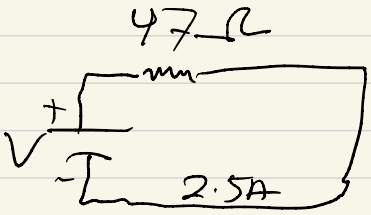
b)



$I = 5\mu A$
$R = 100M\Omega$

$V_b = (5 \cdot 10^{-6}) \cdot (100 \cdot 10^{6}) = \boxed{500V}$

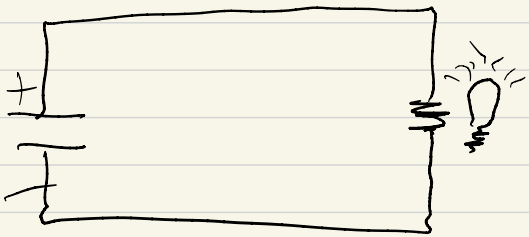
32) C)



$I = 2.5A$
$R = 47\Omega$

$V_c = 2.5 \cdot 47 = \boxed{117.5V}$

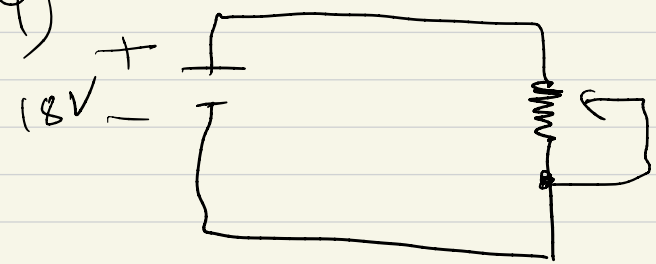
37)



$V = 120V$
$I = 0.8A$

$R = \frac{120V}{0.8A} = \boxed{150\Omega}$

39)



a) $I = 50mA$ $V = 18V$ $R = \frac{V}{I}$ $R_a = \frac{18}{50 \cdot 10^{-3}} = \boxed{360\Omega}$

b) $I = 100mA$ $V = 18V$ $R_b = \frac{18}{100 \cdot 10^{-3}} = \boxed{180\Omega}$

39)

c) If the resistor is set to zero, ignoring the wire's resistance, you would have made a short circuit.