

HW 7

4 bit

1. a.  $3 + 4$

$$\begin{array}{r} 3 = \quad 0011 \\ 4 = \quad + 0100 \\ \hline \quad 0111 \end{array}$$

No overflow

b.  $-4 + 8$

$$\begin{array}{r} -4 = \quad 1100 \\ 8 = \quad + 01000 \\ \hline \quad 10100 \end{array}$$

overflow

c.  $1 + (-9)$

$$\begin{array}{r} 1 = \quad 0001 \\ -9 = \quad + 11001 \\ \hline \quad 11010 \end{array}$$

overflow

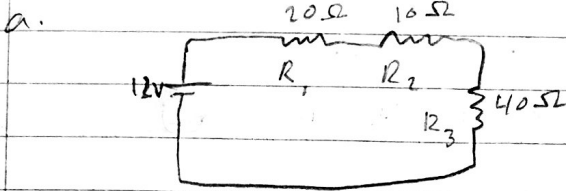
d.  $(5) + (-3)$

$$\begin{array}{r} -5 = \quad 1101 \\ -3 = \quad + 1011 \\ \hline \quad 10110 \end{array}$$

overflow

HW1

2.  $V = IR$



Total:  $V = IR$

$$12 = I(70)$$

$$I = \frac{12}{70} = .1714 \text{ amps}$$

series: current stays the same.

$R_1: V = IR$

$$V = \left(\frac{12}{70}\right)(20) = 3.42 \text{ drop}$$

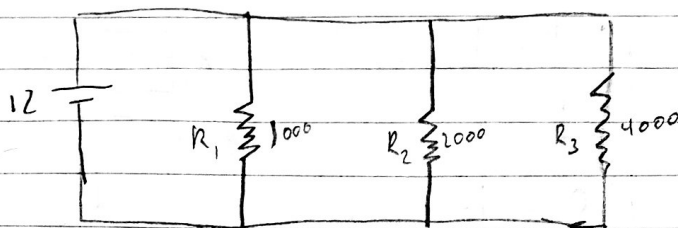
$R_2: V = IR$

$$V = \left(\frac{12}{70}\right)(10) = 1.714 \text{ drop}$$

$R_3: V = IR$

$$V = \left(\frac{12}{70}\right)(40) = 6.85 \text{ drop}$$

2. b.



$$V = IR$$

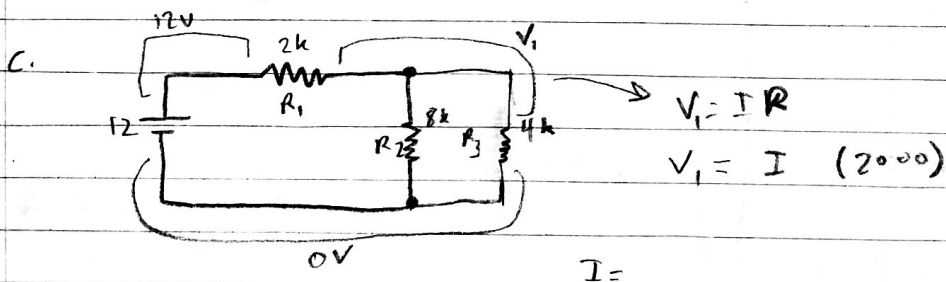
Voltages: 12V before resistor  
0V after FOR ALL resistors

Currents:

$$R_1: 12 = I(1000); I = \frac{12}{1000} = \boxed{.012} \text{ amps}$$

$$R_2: \frac{12}{2000} = I; I = \boxed{.006} \text{ amps}$$

$$R_3: \frac{12}{4000} = I; I = \boxed{.003} \text{ amps}$$



$$V_1 = IR$$

$$V_1 = I (2000)$$

$$\text{Sum of resistance in parallel} = \frac{1}{\left(\frac{1}{8k} + \frac{1}{4k}\right)} = 2666.66 \Omega$$

$$V = IR \quad 2000 + 2666.66 = 4666.66 \Omega; 12V / 4666.66 \Omega =$$

$$2000 \times .00257 = 5.142; 12 - 5.142 = \boxed{6.85 = V_1}$$

$$\boxed{.00257 \text{ amps total}}$$

$$R_2 \text{ current: } 6.85 / 8000 = \boxed{.000857 \text{ amps}}$$

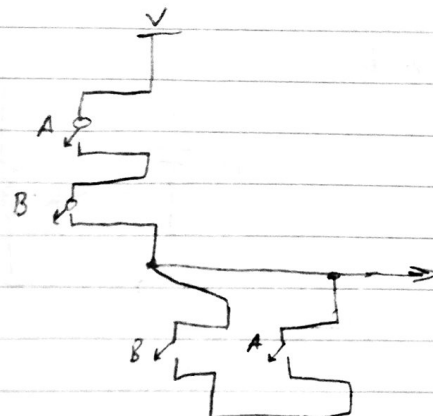
$$R_3 \text{ current: } 6.85 / 4000 = \boxed{.001714 \text{ amps}}$$

## HW 1

3. B, D, E

4.

A	B	F
0	0	1
0	1	0
1	0	0
1	1	0



NOR GATE

5.  $\left( ((AB) + B)' \times (Bc)'c' \right)'$

A	B	C	F
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0