

A2

2.4 (a)  $V = iR$

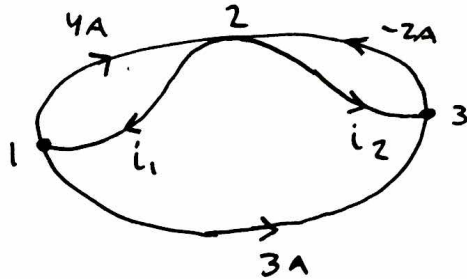
$$i = \frac{V}{R}$$

$$i = \frac{15}{100}$$

$$i = .15A \quad \text{OR} \quad \boxed{150mA}$$

(b)  $C = \frac{15}{180} = \frac{1}{10} = \boxed{100mA}$

2.10



NODE 1:

$$+i_1 - 4A - 3A = 0$$

$$\boxed{i_1 = 7A}$$

NODE 3:

$$i_2 - (-2A) + 3A = 0$$

$$\boxed{i_2 = -5A}$$

2.11 LEFT LOOP:

$$-V_1 + 1 + 5 = 0$$

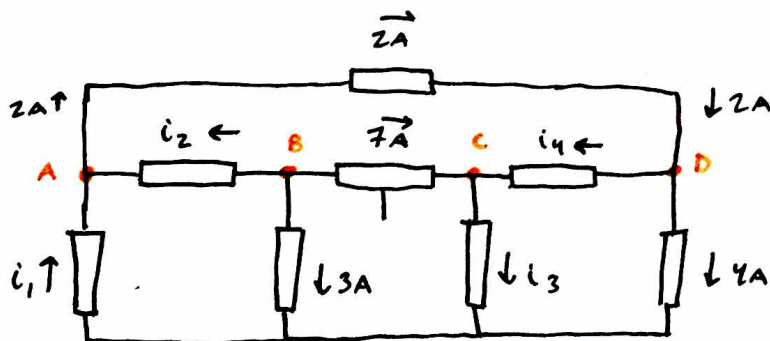
$$V_1 = 6V$$

RIGHT LOOP:

$$-5 + 2 + V_2 = 0$$

$$V_2 = 3V$$

2.15



AT NODE A:

$$i_1 + i_2 - 2 = 0$$

$$i_1 + (-10) - 2 = 0$$

$$i_1 = 12A$$

AT NODE B:

$$-i_2 - 7 - 3 = 0$$

$$i_2 = -10A$$

AT NODE C:

$$i_4 + 7 - i_3 = 0$$

$$(-2) + 7 - i_3 = 0$$

$$i_3 = +5A$$

AT NODE D:

$$2 - i_4 - 4 = 0$$

$$i_4 = -2A$$

2.20



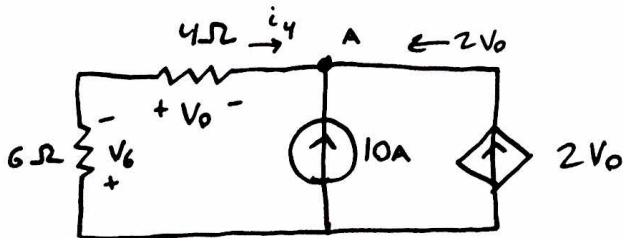
$$-36V + 4i_o \dots + 5i_o \quad V = iR$$

DIFFERENT APPROACH...

$$-36V + 4i_o + 5i_o = 0$$

$$i_o = 4A$$

2.22

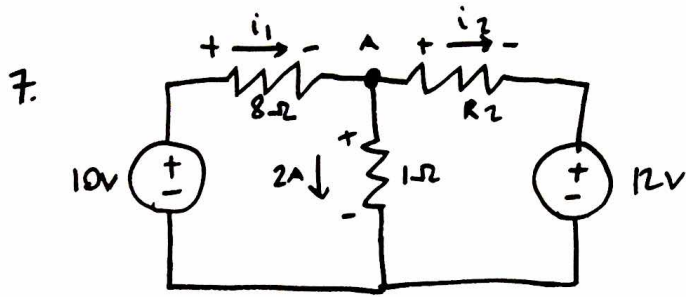
NODE A

$$10 + i_4 + 2V_0 = 0$$

$$V = iR \rightarrow V_0 = 4i_4 \quad i_4 = \frac{1}{4}V_0$$

$$10 + \frac{1}{4}V_0 + 2V_0 = 0 \quad \frac{9}{4}V_0 = -10$$

$$V_0 = -\frac{40}{9} = -4.\bar{4}V$$



$$V_1 = iR = (2)(1) = 2V$$

LEFT LOOP KVL:

$$-10 + 8i_1 + 2V = 0$$

$$-8 + 8i_1 = 0$$

$$i_1 = 1A$$

NODE A

$$i_1 - i_2 - 2 = 0$$

$$1 - i_2 - 2 = 0$$

$$i_2 = -1A$$

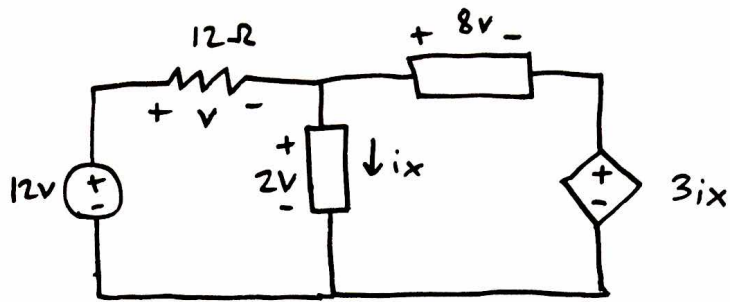
RIGHT LOOP KVL:

$$-2 + (R_2 \cdot -1) + 12 = 0$$

$$-2 - R_2 + 12 = 0$$

$$R_2 = 10 \Omega$$

2.15

KVL LEFT LOOP:

$$-12 + v + 2 = 0$$

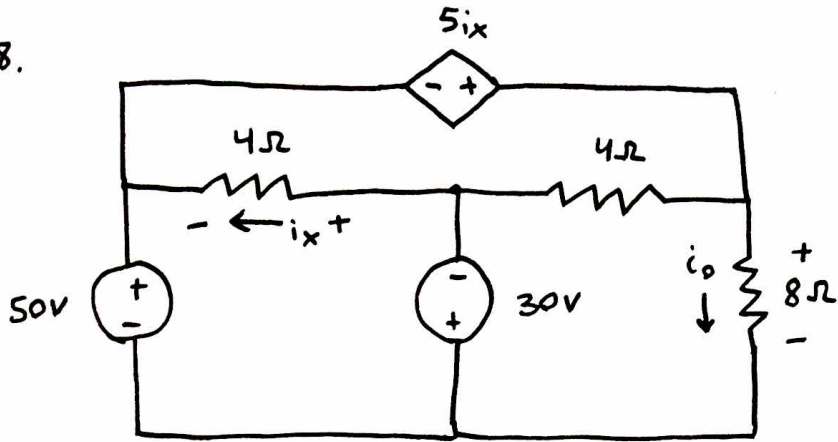
$$v = 10V$$

KVL RIGHT LOOP:

$$-2 + 8 + 3i_x = 0$$

$$i_x = -2A$$

8.

KVL OUTER LOOP:

$$-50 - 5i_x + 8i_o = 0$$

$$-5i_x + 8i_o = 50$$

KVL LOWER LEFT LOOP:

$$-50 - 4i_x - 30 = 0$$

$$-4i_x = 80$$

$$i_x = -20 \text{ A}$$

$$-5(-20) + 8i_o = 50$$

$$100 + 8i_o = 50$$

$$i_o = \frac{-50}{8} = -6.25 \text{ A}$$