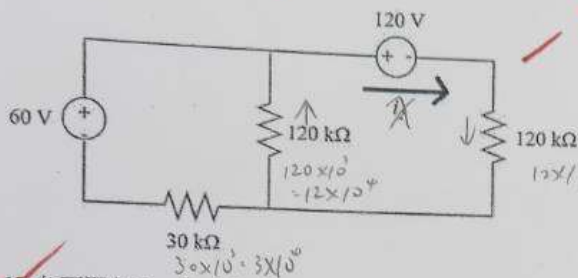


12. 如下圖所示電路，求電流 $i_2 = 5.00 \times 10^{-4}$ 安培 (amp) Find i_2



$$120 = 12 \times 10^4 \times i_2 + 12 \times 10^4 \times i_2$$

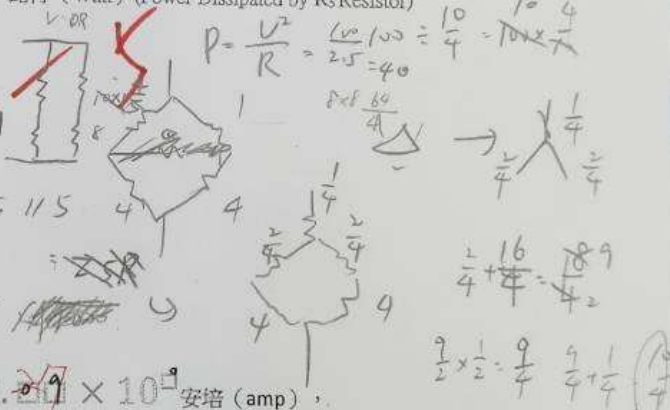
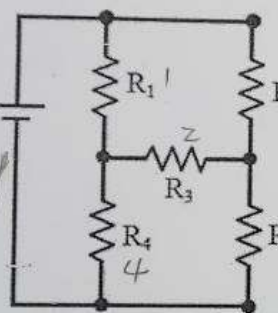
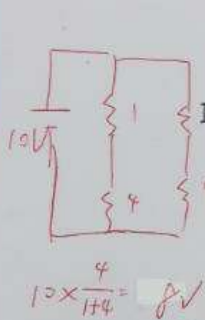
$$120 = 24 \times 10^4 \times i_2$$

$$\frac{120}{24} = 10^4 \times i_2$$

$$5 \times 10^{-4} = i_2$$

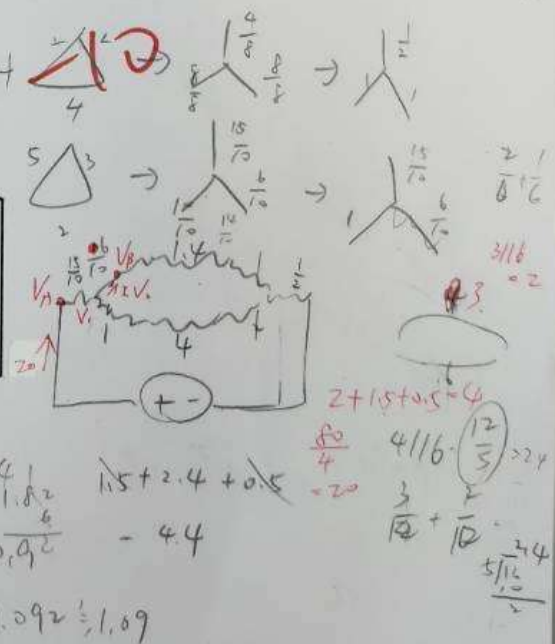
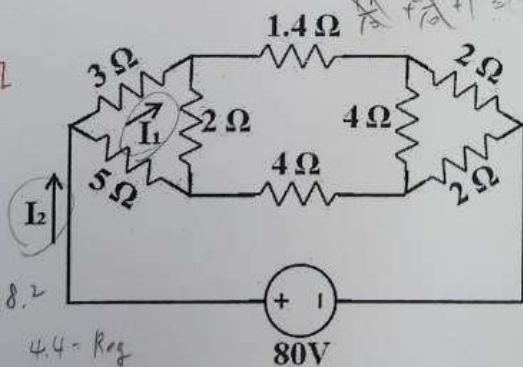
13. 如下圖所示， $R_1=1\Omega$ ， $R_2=1\Omega$ ， $R_4=4\Omega$ ， $R_5=4\Omega$ ， $R_3=2\Omega$ ，

R_5 所消耗的功率 $= 4.00 \times 10^{-1}$ 瓦特 (Watt) (Power Dissipated by R_5 Resistor)



14. 下圖中流經 3 歐姆電阻之電流 $I_1 = 1.09 \times 10^{-1}$ 安培 (amp)，

$I_2 = 1.09 \times 10^{-1}$ 安培 (amp) Find I_1 and I_2



$I_1 = V_{AB}$ 間的 I

$$V_1 = 20 \times 1.5$$

$$= 30$$

$$I = 20 \times \frac{6}{10}$$

$$V_2 = 18 \times 20 \times \frac{1}{10} = 18.2$$

$$= 8$$

$$V_1 + V_2 = 38$$

$$I = \frac{38}{3} = 1.27$$

$$4.4 = R_{eq}$$

$$\frac{1.27 \times 4.4}{1.27 + 4.4} = 1.09$$

$$1.82 \times \frac{6}{10} = 1.092$$

$$1.5 + 2.4 + 0.5 = 4.4$$

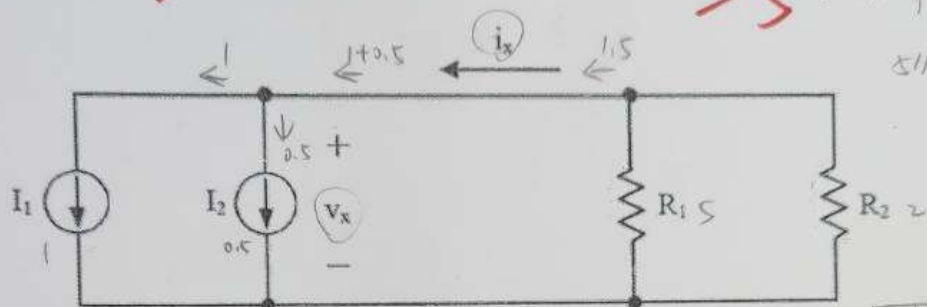
$$1.092 \approx 1.09$$

$$2 + 1.5 + 0.5 = 4$$

$$\frac{80}{4} = 20$$

$$\frac{3}{12} + \frac{1}{10} = \frac{24}{120}$$

6. 如下圖所示, $I_1=1A$, $I_2=0.5A$, $R_1=5\Omega$, $R_2=2\Omega$, 試求電流 $i_x = \boxed{1.52} \times 10^{-3}$ 安培 (amp), 電壓 $V_x = \boxed{2.14} \times 10^0$ 伏特 (volt) Find i_x and V_x



$$V = IR = \frac{15}{9} \times \frac{15}{9} = \frac{225}{81} = \frac{25}{9}$$

$$5/12 = \frac{2}{15} + \frac{5}{10}$$

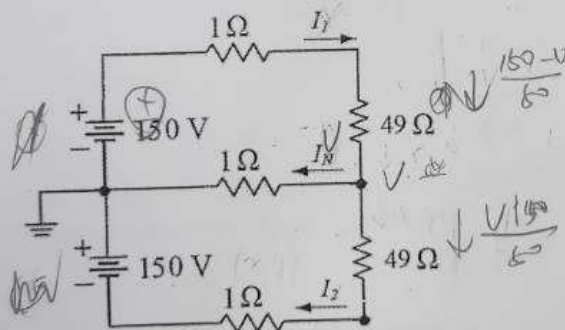
$$= \frac{10}{9}$$

$$\frac{7 \sqrt{15}}{10} = \frac{153.0}{10} = 15.3$$

7. 如下圖所示, 試求電流 $I_1 = \boxed{8.8} \times 10^{-3}$ 安培 (amp),

$I_N = \boxed{5.51} \times 10^{-3}$ 安培 (amp) Find I_1 and I_N

T.T



$$\frac{150-V}{50} = V + \frac{49V}{50}$$

$$150 - V = 50V + 49V$$

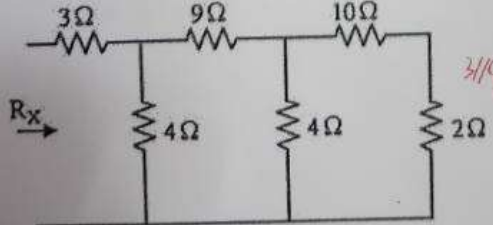
$$150 - V = 99V$$

$$150 = 100V$$

$$V = 1.5V$$

8. 如下圖示電路, 等效電阻 $R_x = \boxed{6.2} \times 10^0 \Omega$ Find R_x

T.T



$$12 // 4 = 3$$

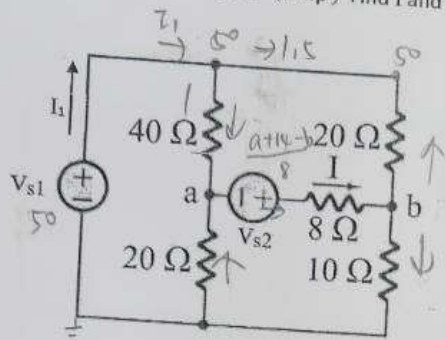
$$\frac{1}{16} + \frac{3}{16} = \frac{4}{16} = \frac{1}{4}$$

$$3.2 + 3 = 6.2$$

$$12 // 4 = 3$$

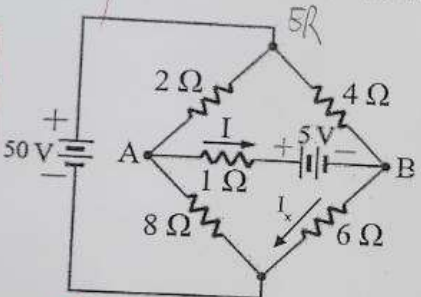
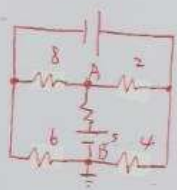
$$\frac{1}{16} + \frac{3}{16} = \frac{4}{16} = \frac{1}{4}$$

3. 如下圖所示, $V_{s1}=50V$, $V_{s2}=14V$, 試求電流 I 安培 (amp), I_1 安培 (amp) Find I and I_1

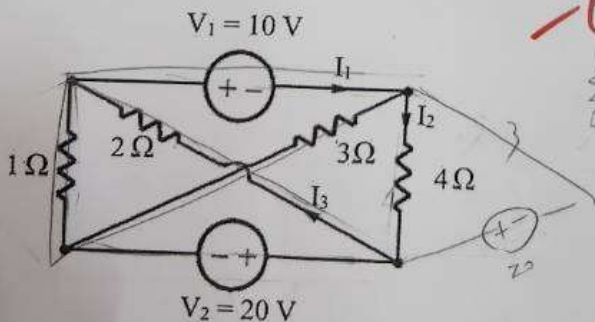


$$\begin{aligned} \frac{a+14-b}{8} &= \frac{b-50}{20} + \frac{b}{10} \\ 5a+70-5b &= 2b-100+4b \\ 170 &= -5a+11b \\ \frac{50-a}{40} - \frac{a}{20} &= \frac{a+14-b}{8} \\ 50-a-2a &= 5a+70-5b \\ -20 &= 8a-5b \\ a &= 10 \end{aligned}$$

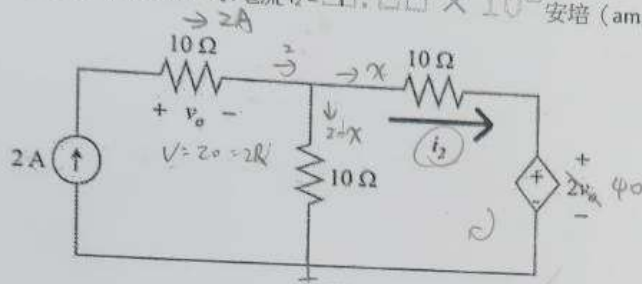
4. 如下圖所示, 試求電流 I 安培 (amp), I_x 安培 (amp) Find I and I_x



5. 如下圖所示電路, 求 I_1 安培 (amp), I_3 安培 (amp) Find I_1 and I_3



9. 如下圖所示電路，求電流 $i_2 = \boxed{1.00} \times 10^2$ 安培 (amp) Find i_2



$$40 - 20 + 10x + 10x = 0$$

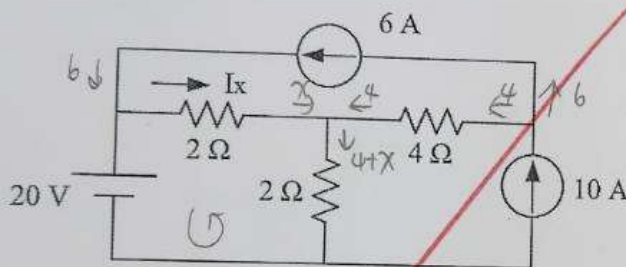
$$20x = -20$$

$$x = -1$$

$$40 - 20 - 10x = 0$$

$$x = -2$$

10. 如下圖所示，試求電流 $I_x = \boxed{3.00} \times 10^2$ 安培 (amp) Find I_x

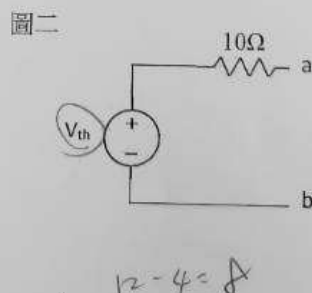
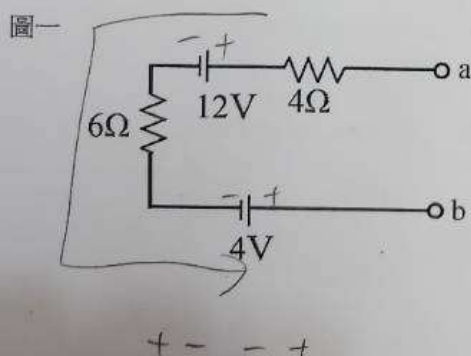


$$20 - 8 - 2x - 2x = 0$$

$$12 = 4x$$

$$3 = x$$

11. (圖二)為(圖一)之戴維寧等效電路，則 $V_{th} = \boxed{8.00} \times 10^1$ 伏特(Volt) (The following two circuits are equivalent, find V_{th})



$$12 - 4 = 8$$

所有答案請以科學符號表示，例如：

計算出來的答案為 $\frac{1}{3}$ ，則填寫 3.33×10^{-1} (科學符號的小數第三位，四捨五入進第二位)。

計算出來的答案為 $-\frac{2}{3}$ 則填寫 -6.67×10^{-1} (科學符號的小數第三位，四捨五入進第二位)

計算出來的答案為 7，則 7.00×10^0

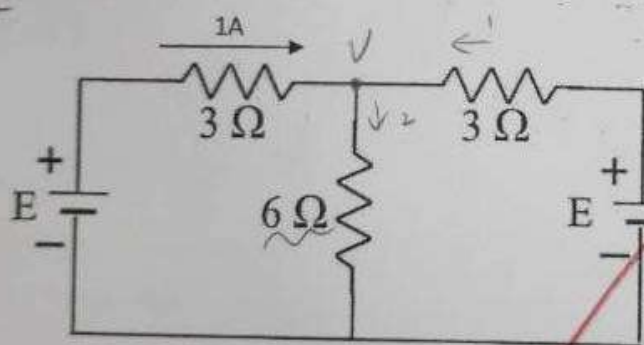
計算出來的答案為 -7，則 -7.00×10^0

計算出來的答案為 70，則 7.00×10^1

如還不知道怎麼填寫答案，請詢問監考人員

答案以原子筆填寫，每個答案五分

1. 下圖電路中 6 歐姆電阻的消耗功率 = 2.40 $\times 10^0$ 瓦特 (Watt) (Power Dissipated by a 6 Ω Resistor)



$$1+1=2A$$

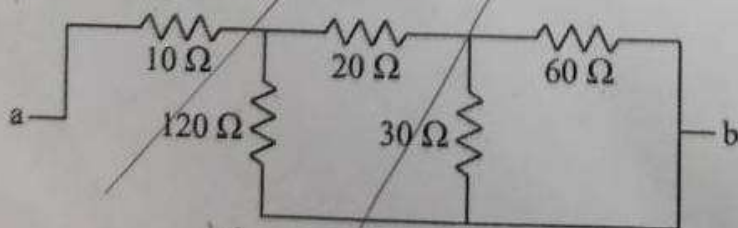
$$P=I^2R$$

$$=2^2 \times 6$$

$$=4 \times 6$$

$$=24$$

2. 如下圖所示，ab 兩端等效電阻 = 40 $\times 10^0$ Ω (Resistor between a and b)



$$(30/60) = 20$$

$$\frac{2}{\frac{1}{30} + \frac{1}{60}}$$

$$20+20=40$$

$$(40/120) = 30$$

$$30+10=40$$

$$\frac{\frac{30}{120} + \frac{1}{120}}{\frac{1}{120}} = 4$$