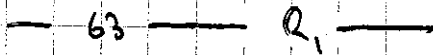
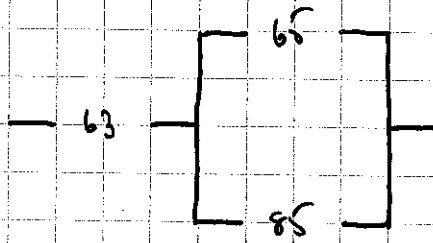


# Circuits 7

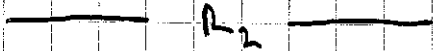
a)



$$\frac{1}{R_1} = \frac{1}{65} + \frac{1}{85}$$

$$\frac{1}{R_1} = 0.027$$

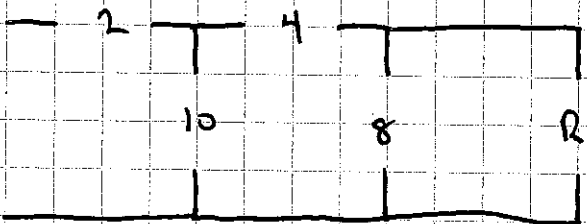
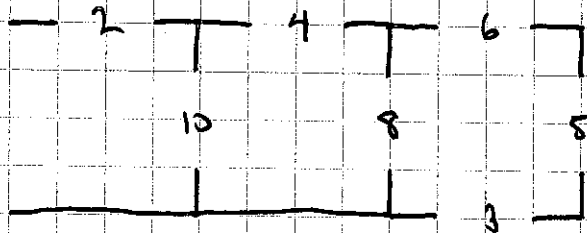
$$R_1 = 36.8 \Omega$$



$$R_2 = 63 + 36.8$$

$$R_2 = \boxed{99.8 \Omega}$$

b)

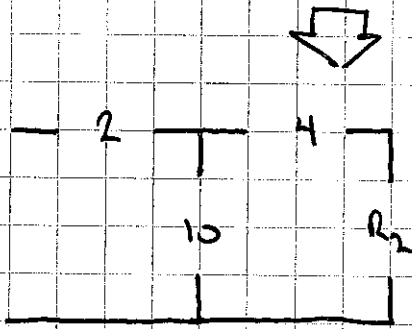


$$R_1 = 6 + 5 + 3$$

$$R_1 = 14 \Omega$$

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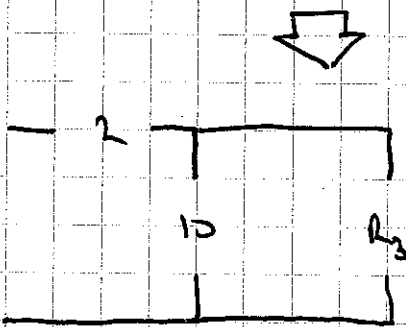
① b) continued



$$\frac{1}{R_3} = \frac{1}{8} + \frac{1}{14}$$

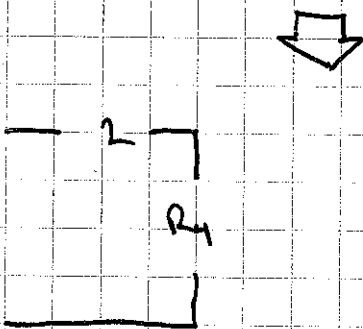
$$\frac{1}{R_3} = 0.196$$

$$R_3 = 5.09 \Omega$$



$$R_3 = 4 + 5.09$$

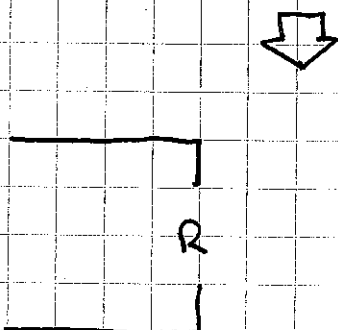
$$R_3 = 9.09 \Omega$$



$$\frac{1}{R_4} = \frac{1}{10} + \frac{1}{9.09}$$

$$\frac{1}{R_4} = 0.21$$

$$R_4 = 4.76 \Omega$$

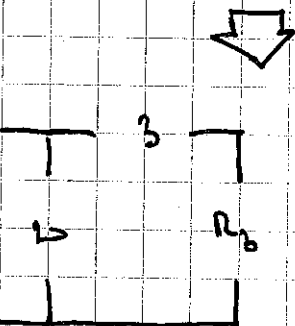
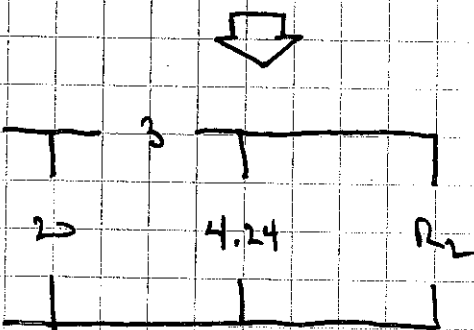
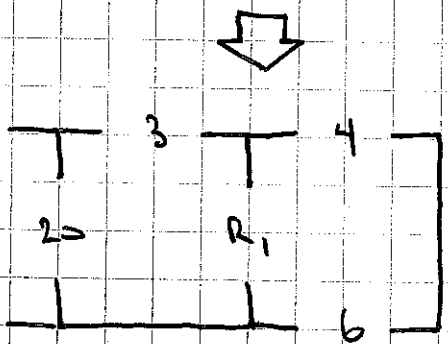
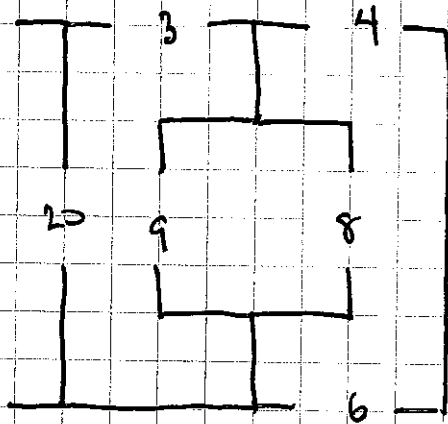


$$R = 2 + 4.76$$

$$R = \boxed{6.76 \Omega}$$

b)

c)



$$\frac{1}{R_1} = \frac{1}{9} + \frac{1}{8}$$

$$\frac{1}{R_1} = 0.236$$

$$R_1 = 4.24 \Omega$$

$$R_2 = 4 + 6$$

$$R_2 = 10 \Omega$$

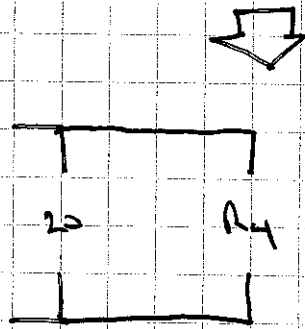
$$\frac{1}{R_0} = \frac{1}{4.24} + \frac{1}{10}$$

$$\frac{1}{R_0} = 0.336$$

$$R_0 = 2.98 \Omega$$

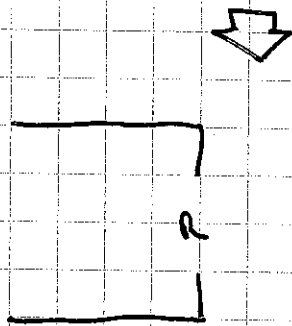
(Continued on next page)

D c) continued



$$R_T = 3 + 2.98$$

$$R_T = 5.98 \Omega$$



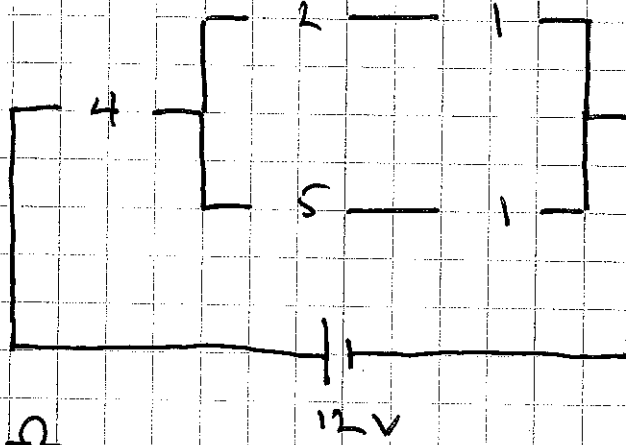
$$\frac{1}{R_T} = \frac{1}{20} + \frac{1}{5.98}$$

$$\frac{1}{R} = 0.217$$

$$R = \boxed{4.60 \Omega}$$

②

Start Here



$$V_5 = I_5 R$$

$$= (0.6)(5)$$

$$V_5 = 3.0 \text{ V}$$

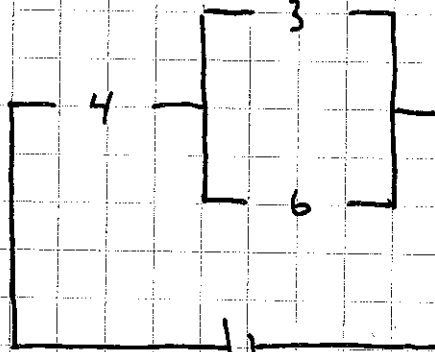
$$P_5 = I_5 V_5$$

$$= (0.6)(3.0)$$

$$P_5 = \boxed{2.2 \text{ W}}$$

$$R_1 = 2 + 1 = 3 \Omega$$

$$R_2 = 5 + 1 = 6 \Omega$$



$$I_6 = \frac{V}{R_6}$$

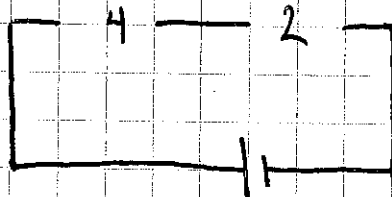
$$= \frac{4}{6}$$

$$I_6 = 0.6 \text{ A}$$

$$\frac{1}{R_3} = \frac{1}{3} + \frac{1}{6}$$

$$\frac{1}{R_3} = 0.5$$

$$R_3 = 2 \Omega$$

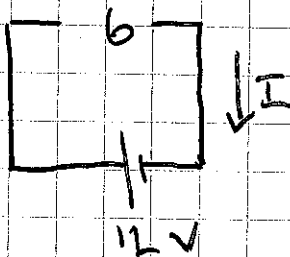


$$V_2 = I_2 R$$

$$= (2)(2)$$

$$V_2 = 4 \text{ V}$$

$$R_4 = 4 + 2 = 6 \Omega$$



$$I = \frac{V}{R} = \frac{12}{6} = 2 \text{ A}$$

$$\textcircled{3} \text{ a) } V_8 = I_8 R$$
$$= (0.5)(8)$$

$$V_8 = 4 \text{ V}$$



$$V_{16} = V_8 = 4 \text{ V}$$

$$I_{16} = \frac{V_{16}}{R_{16}} = \frac{4}{16} = 0.25 \text{ A}$$



$$I_{20} = I_8 + I_{16}$$
$$= 0.5 + 0.25$$

$$I_{20} = \boxed{0.75 \text{ A}}$$



$$\text{b) } V_{20} = I_{20} R$$
$$= (0.75)(20)$$

$$V_{20} = 15 \text{ V}$$



$$V_9 = V_{20} + V_8 \quad (\text{or } V_{20} + V_{16})$$
$$= 15 + 4$$

$$V_9 = 19 \text{ V}$$



$$I_9 = \frac{V_9}{R_9} = \frac{19 \text{ V}}{9 \Omega} = \boxed{2.11 \text{ A}}$$