

# REVIEW : CIRCUITS

1.) C POTENTIAL DIFF = VOLTAGE

- RESISTANCE DOES NOT DEPEND ON VOLTAGE - IS NOT CHANGED

$$I = \frac{V}{R} \rightarrow I \text{ IS DOUBLED.}$$

2.) B

1 KILOWATT · HOUR  
POWER · TIME = ENERGY

3.) B

$$40 \text{ W} = \frac{V^2}{R_1} \quad 60 \text{ W} = \frac{V^2}{R_2} \Rightarrow V = V$$

$$V^2 = R_1(40 \text{ W}) \quad V^2 = R_2(60 \text{ W})$$

$$R_1(40) = R_2(60)$$

$$R_1\left(\frac{2}{3}\right) = R_2$$

4.) B

$$P = I^2 R$$

$$R = \frac{P}{I^2} = \frac{20 \text{ W}}{(5 \text{ A})^2} = 0.8 \Omega$$

5.) B

SERIES  
 $\rightarrow I = I = I$   
 $V = V + V$   
 $R = R + R$

6.) A

↓  
 $R_T = 50 + 100 + 200 = 350 \Omega$

7.) **C**

$$P = \frac{V^2}{R} \quad R = 68 + 68 = 136 \Omega$$

$$P = \frac{(4.5V)^2}{136 \Omega} = 0.148W$$

8.) **B**

- Parallel  
 $V = V = V = 120V$

$$P = \frac{V^2}{R}$$

$$R = \frac{V^2}{P} = \frac{120^2}{60}$$

$$I = \frac{V}{R} = \frac{120V}{240 \Omega} = 0.5A$$

$$R = 240 \Omega$$

- IF EACH BULB IS 0.5 A, THEN

17 BULBS IS 8.5 A & 18 IS 9A  
 ↑  
 TOO MUCH

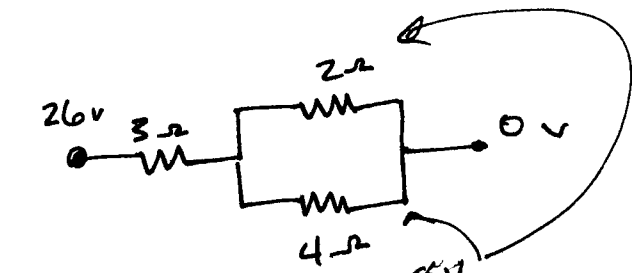
9.) **D**

Parallel

$$\frac{1}{R_T} = \frac{1}{6} + \frac{1}{9} + \frac{1}{15}$$

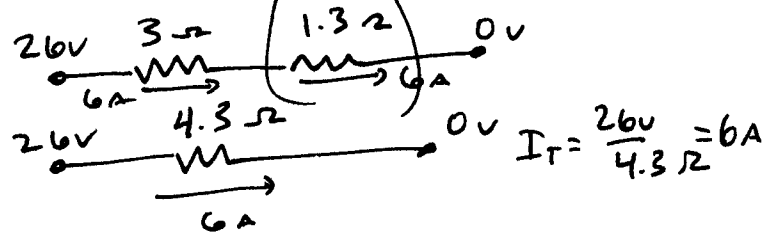
$$R_T = 2.9 \Omega$$

10.) **B**



11.) **C**

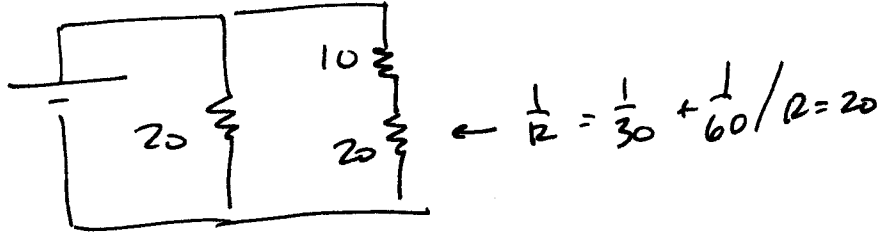
- CURRENT THROUGH  
 $3 \Omega$  &  $1.3 \Omega$  IS  
 SAME AS TOTAL



12.) **B**

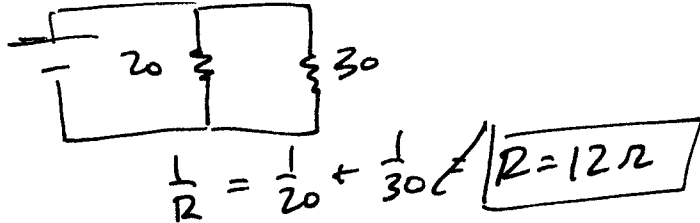
- VOLTAGE ACROSS  $2 \Omega$  &  $4 \Omega$   
 IS SAME AS TOTAL VOLTAGE @  $1.3 \Omega$ .

13.) E



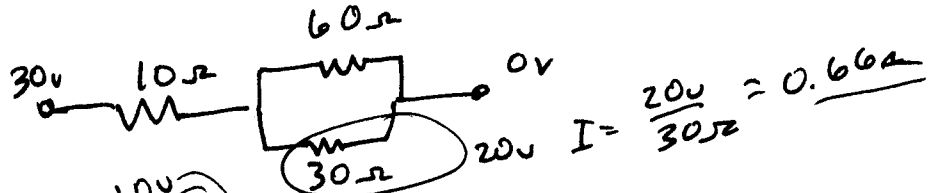
14.) D

→ CURRENT SPLITS 2X  
↑ HAS BIG R.



15.) B - ALL 6V IS DROPPED @ 20 Ω.

16.) C



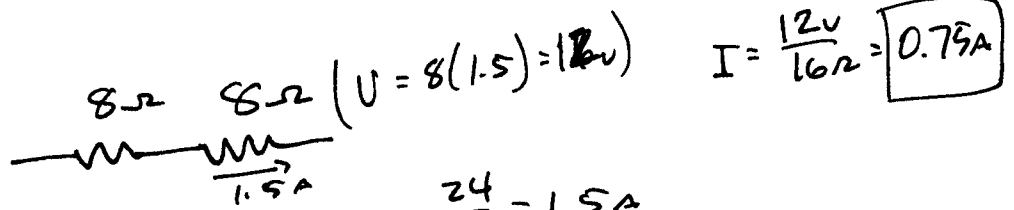
17.) A



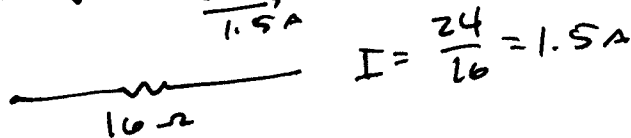
18.) ~~A~~ B



19.) C

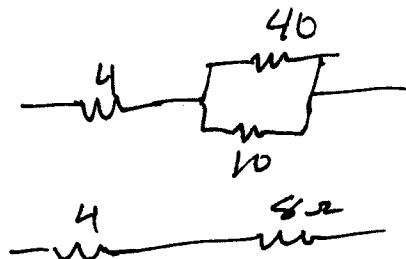


20.) B



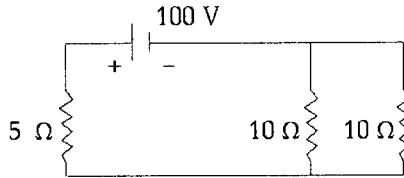
21.) C

$$P = I^2 R = (1.5A)^2 (4 \Omega) = 9W$$

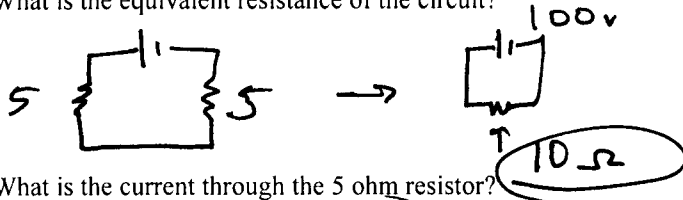


$$\frac{1}{40} + \frac{1}{10} = \frac{1}{R} / R = 8 \Omega$$

$$I = \frac{18V}{12 \Omega} = 1.5A$$

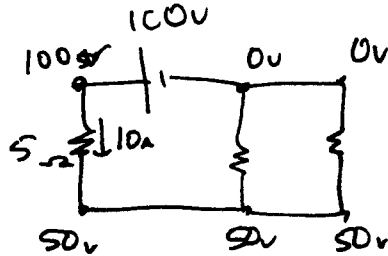


1. What is the equivalent resistance of the circuit?



2. What is the current through the 5 ohm resistor?

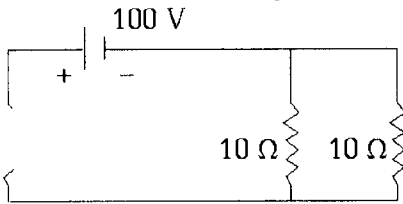
$$I_T = \frac{100V}{10\Omega} = 10A$$



3. What is the voltage dropped across one of the 10 ohm resistors?

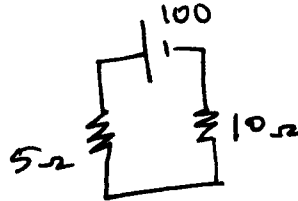
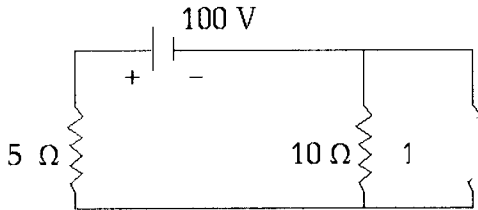
$$50V$$

4. What would the current through one of the 10 ohm resistors be if the 5 ohm resistor were to fail (see picture)



0 - CIRCUIT IS BROKEN.

5. What would the current through the 5 ohm resistor be if one of the 10 ohm resistors failed?



$$V_T = 100V$$

$$R_T = 15\Omega$$

$$I_T = \frac{100}{15} = 6.67A$$