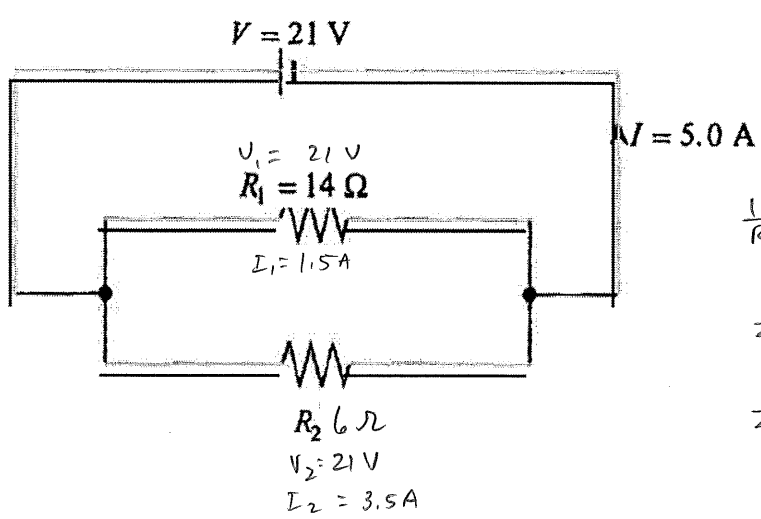


Circuits Review

1) Find the current flowing through resistor R_2 in the circuit shown below.



$R_T = 4.2 \Omega$
 $V_T = 21V$
 $I_T = 5.0A$

$\frac{1}{R_P} = \frac{1}{14} + \frac{1}{R_2}$

$\frac{1}{4.2} = \frac{1}{14} + \frac{1}{R_2}$

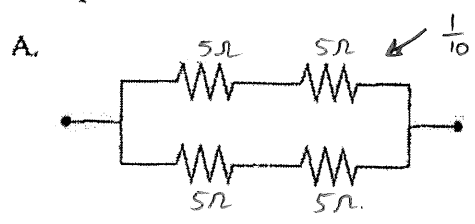
$\frac{1}{4.2} - \frac{1}{14} = \frac{1}{R_2}$

$\frac{14}{58.8} - \frac{4.2}{58.8} = \frac{1}{R_2}$

$\frac{9.8}{58.8} = \frac{1}{R_2} \quad / \quad R_2 = 6 \Omega$

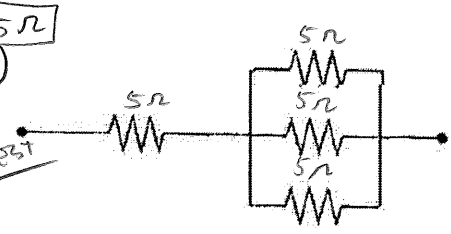
- A. 1.5 A
- B. 2.5 A
- C. 3.5 A**
- D. 5.0 A

2) Which of the following arrangements would have the largest R when connected to the same potential difference? All resistors have the same value.

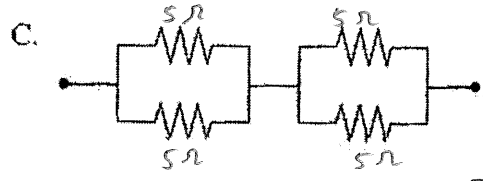


$\frac{1}{10} + \frac{1}{10} = \frac{2}{10} = \frac{1}{5} \Rightarrow 5 \Omega$

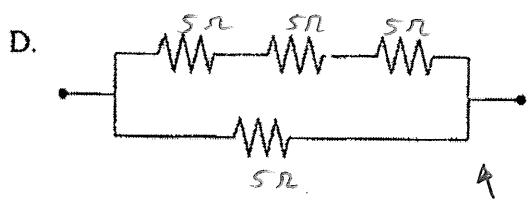
GREATEST



$5 + \frac{5 \times 3}{3} = 16.7 \Omega$

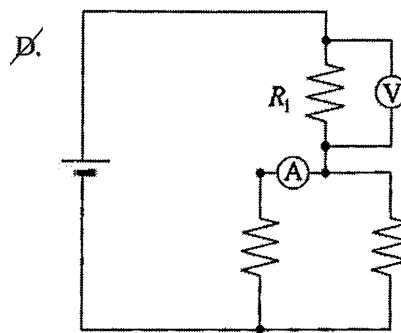
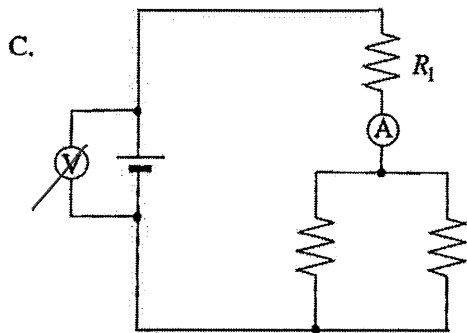
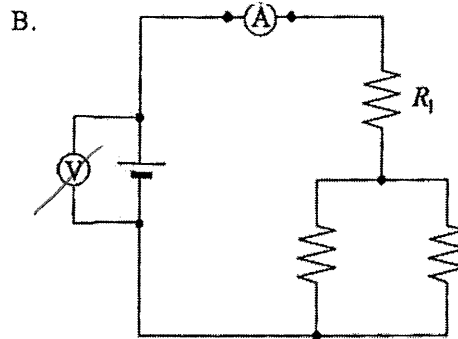
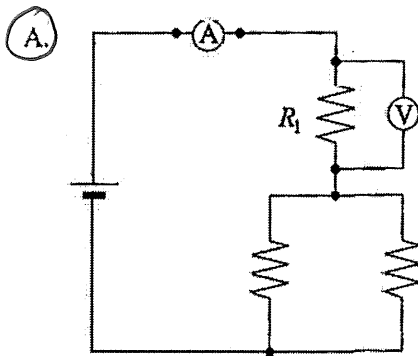


$\frac{1}{5} + \frac{1}{5} = \frac{2}{5} = 2.5 \Omega + 2.5 \Omega = 5 \Omega$

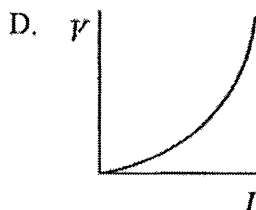
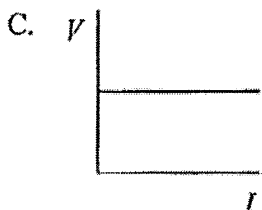
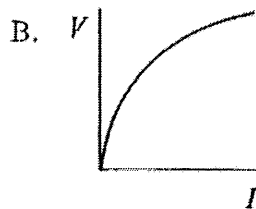
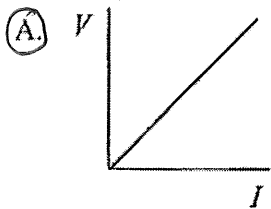


$\frac{1}{15} + \frac{1}{5} = \frac{4}{15} \Rightarrow 3.75 \Omega$

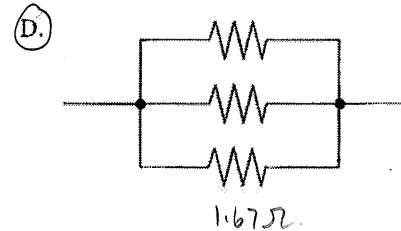
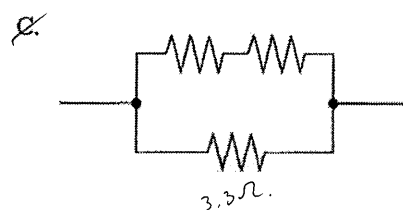
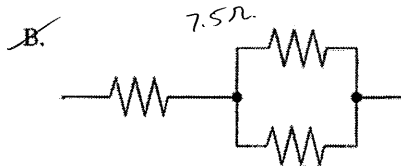
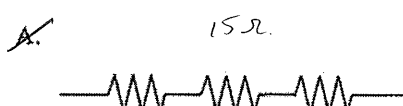
3.) Which one of the following shows the correct placement of an ammeter and a voltmeter to determine the power output of resistor R_1 ?



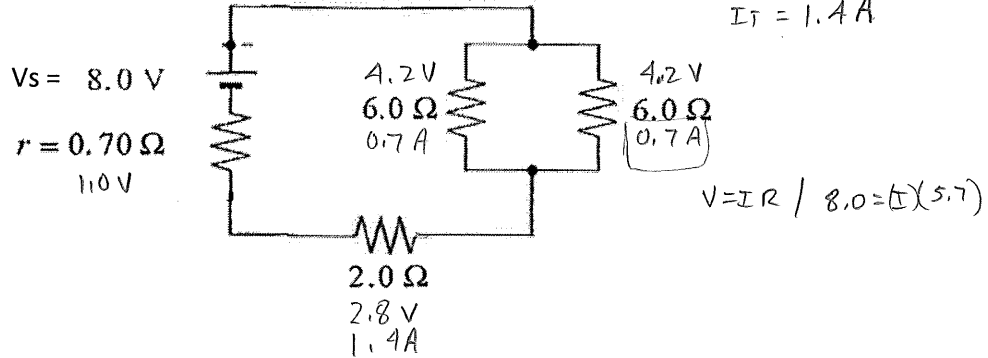
4.) Which of the following graphs illustrates Ohm's law?



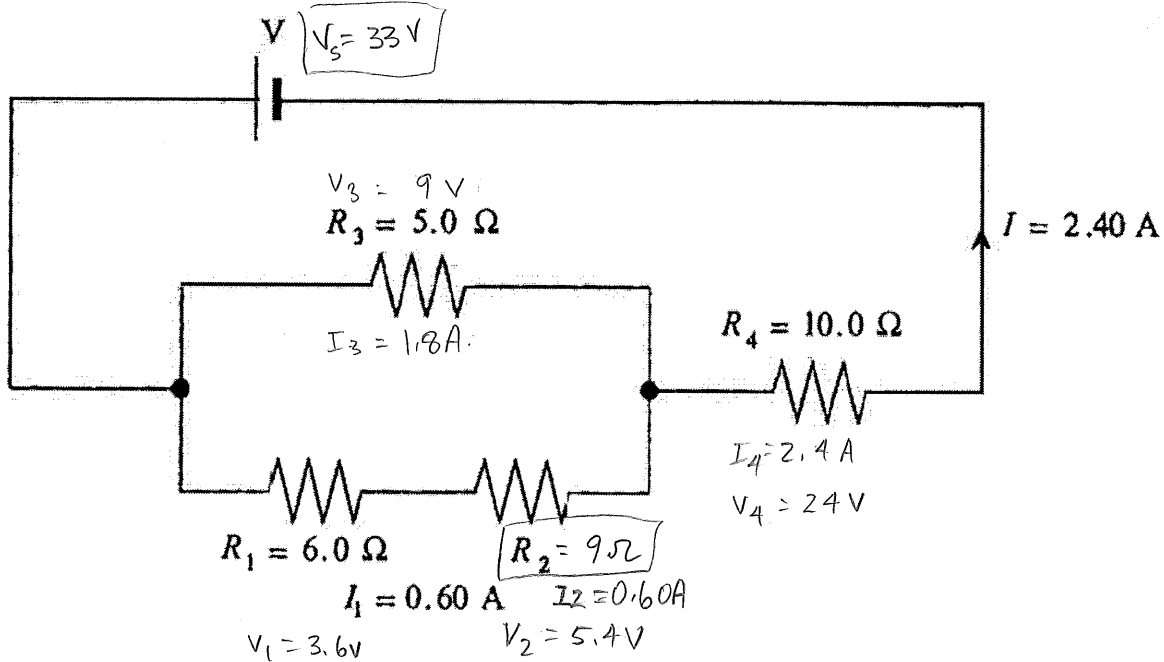
5.) Which of the following combinations of three identical resistors has the least equivalent resistance?



6.) In the following circuit, what is the current through the 6.0 Ω resistors?



7.) a) Find the value of resistor R_2 , and the source voltage.



8.) In # 1 calculate the power used in the circuit.

$$P = VI / P = (21)(5) / P = 105 \text{ W}$$

9.) In # 6 calculate the power used in the 2.0 Ω resistor.

$$P = VI / P = (2.8)(1.4) / P = 3.92 \text{ W}$$

10.) In # 7 find the power used in the 10. Ω resistor.

$$P = VI / P = (24)(2.4) / P = 57.6 \text{ W}$$

Answers: 1.) C 2.) D 3.) A 4.) A 5.) D 6.) 0.70 A

7.) $V_{\text{source}} = 33 \text{ V}$, $R_2 = 9.0 \Omega$ 8.) 105 W 9.) ~~0.98 W~~ 10.) 57.6 W

3.29 W