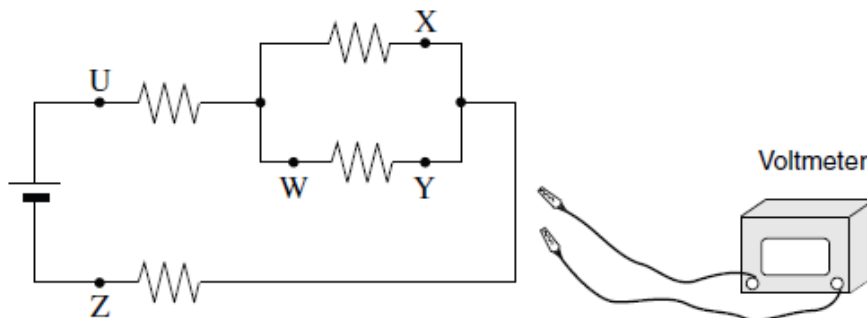


The Official **Circuits SELF TEST** 2020 (*Hand-in*)

1.

A student needs to connect a voltmeter to measure the potential difference across the parallel resistors in the circuit shown below.

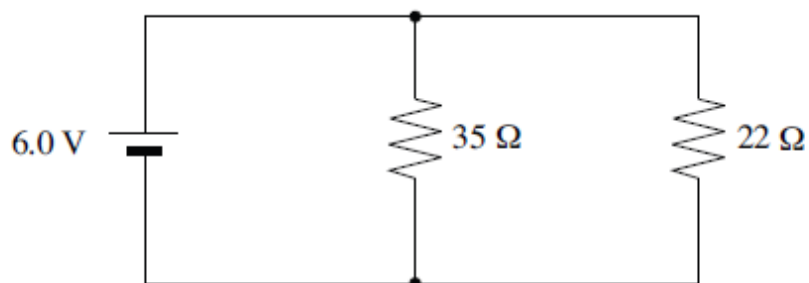


Across which two connection points should the student connect the voltmeter?

- A. U and Z
- B. X and Y
- C. Y and W
- D. W and Z

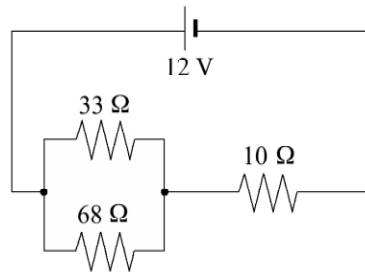
2.

What current would be drawn from the power supply in the circuit shown below?



- A. 0.11 A
- B. 0.17 A
- C. 0.27 A
- D. 0.44 A

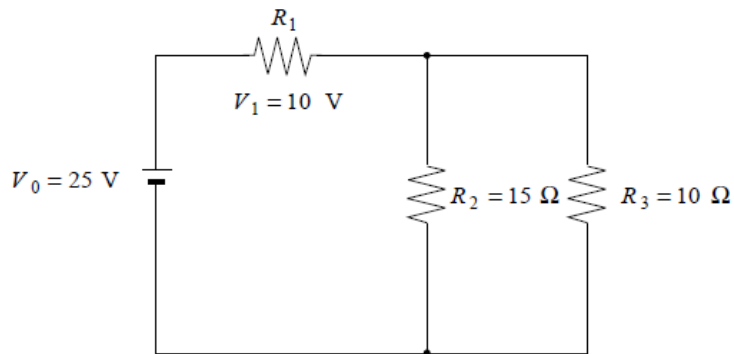
3. What is the current through the $10\ \Omega$ resistor in the circuit shown below?



- A. 0.11 A
 B. 0.37 A
 C. 1.2 A
 D. 1.7 A

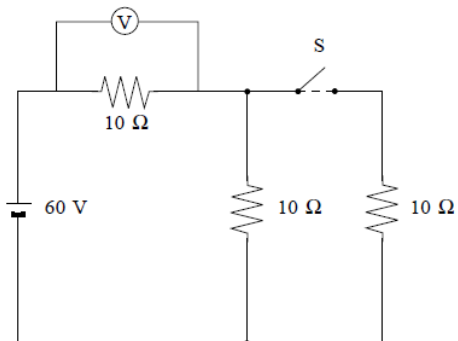
- 4.

In the following circuit, what is the power dissipated by resistor R_1 ?



- A. 10 W
 B. 15 W
 C. 25 W
 D. 42 W

5. In the circuit shown below, voltmeter readings are taken when switch S is closed and open.

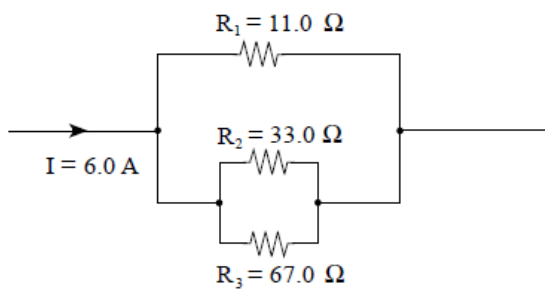


Which of the following is correct?

VOLTMETER READINGS	
SWITCH CLOSED	SWITCH OPEN
A. 20 V	30 V
B. 30 V	30 V
C. 40 V	20 V
D. 40 V	30 V

6.

The diagram below shows part of an electrical circuit.

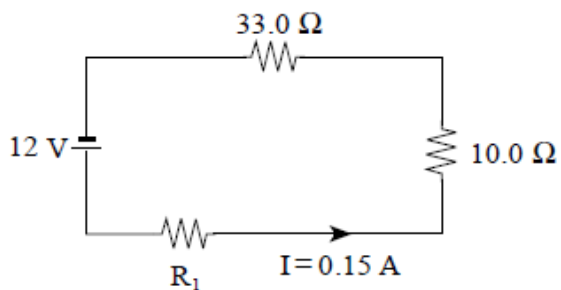


What is the current through resistor R_1 ?

- A. 2.0 A
- B. 3.0 A
- C. 4.0 A
- D. 6.0 A

7.

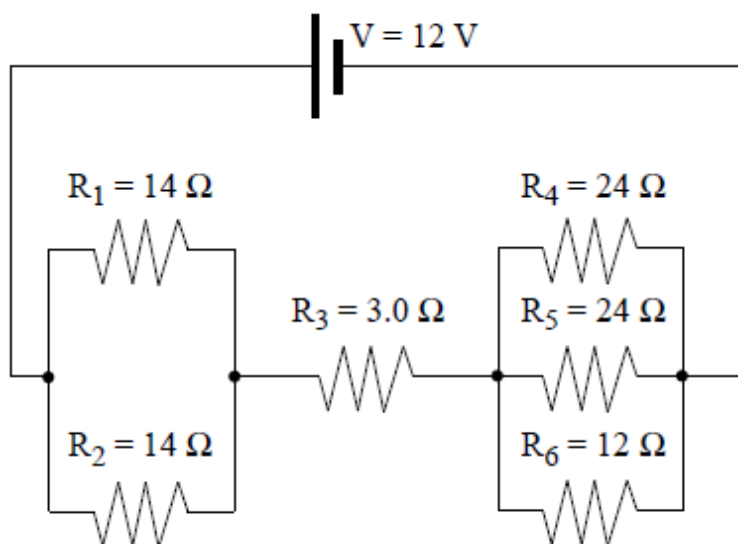
What is the power dissipated in resistor R_1 in the circuit shown in the diagram below?



- A. 0.83 W
- B. 0.97 W
- C. 1.8 W
- D. 2.8 W

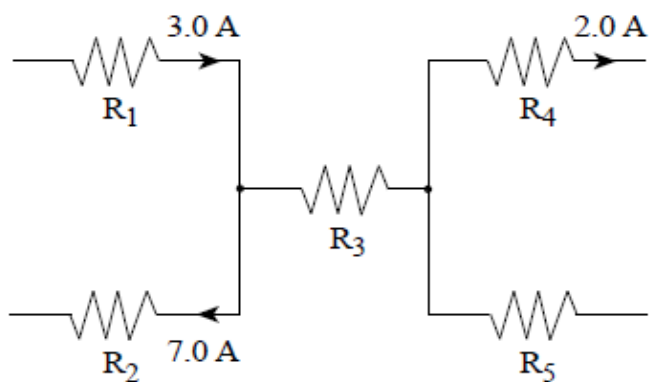
8.

What is the power dissipated by the $3.0\ \Omega$ resistor in the circuit below?



9.

The diagram below shows part of an electrical circuit.

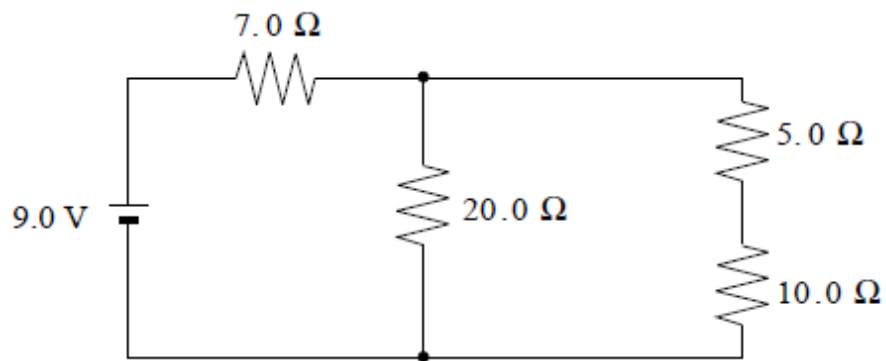


What are the magnitude and direction of the current passing through resistor R_5 ?

- A. $6.0\ \text{A}$ towards the left
- B. $12.0\ \text{A}$ towards the left
- C. $2.0\ \text{A}$ towards the right
- D. $8.0\ \text{A}$ towards the right

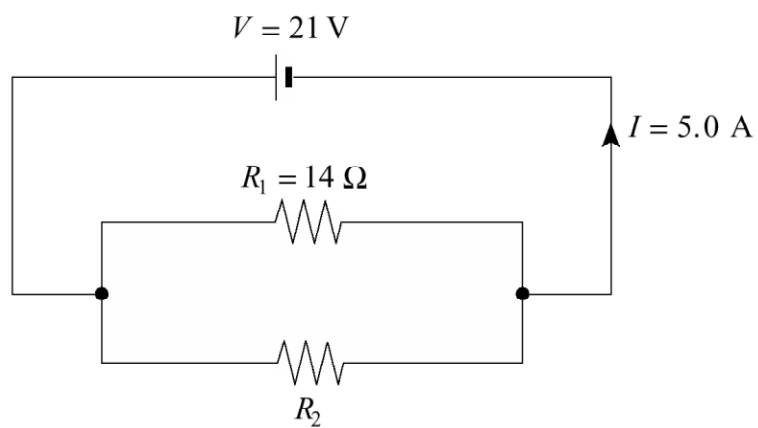
10.

In the circuit shown below, determine the current through the 5.0Ω resistor.



11.

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

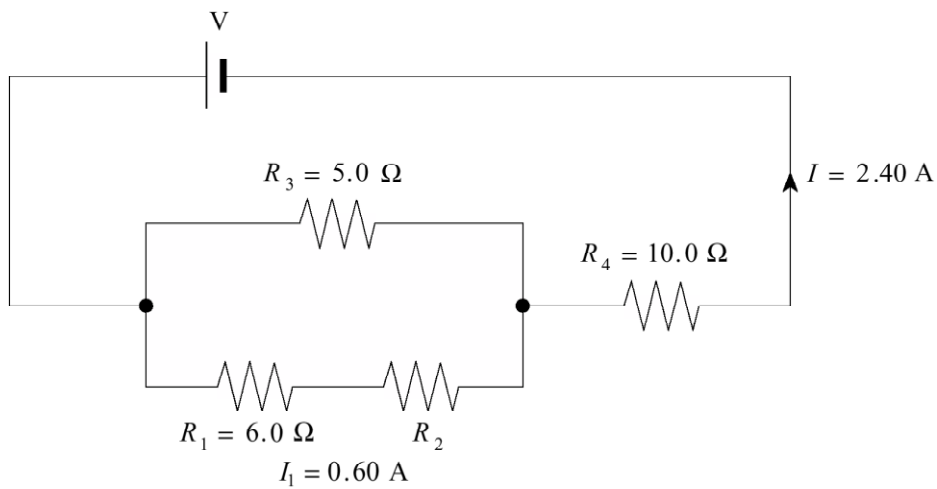


- A. 1.5 A
- B. 2.5 A
- C. 3.5 A
- D. 5.0 A

12.

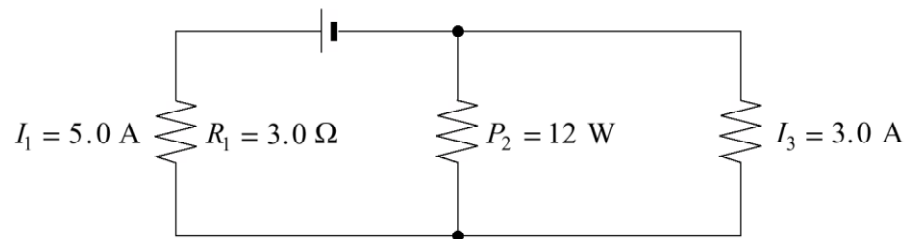
a) Find the value of resistor R_2 .

(5 marks)



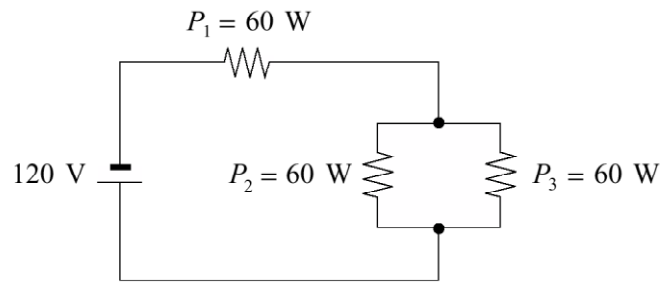
b) Find the potential difference of the power supply V .

13. What is the voltage of the power supply shown in the diagram?



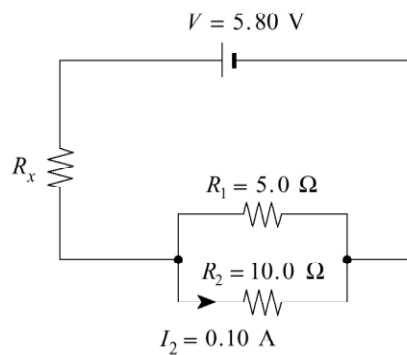
- A. 12 V
- B. 19 V
- C. 21 V
- D. 27 V

14. What is the current leaving the battery in the circuit below?



- A. 1.3 A
- B. 1.5 A
- C. 2.0 A
- D. 4.0 A

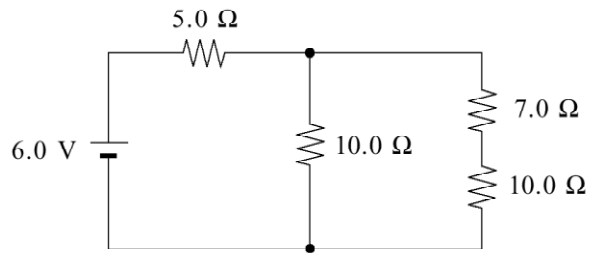
15. What is the power dissipated in the unknown resistor R_x in the circuit below?



- A. 0.30 W
- B. 1.4 W
- C. 1.7 W
- D. 2.0 W

16.

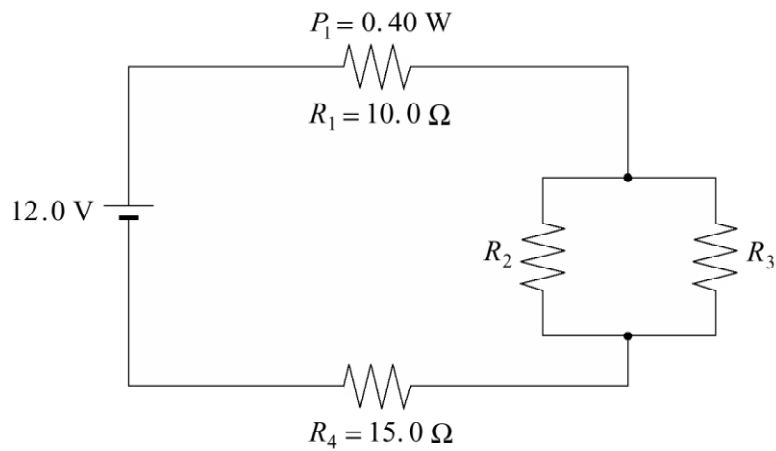
Consider the circuit shown below.



- a) What is the current through the 7.0Ω resistor? **(5 marks)**
- b) How much charge flows through the 7.0Ω resistor in a 30 second interval?

17.

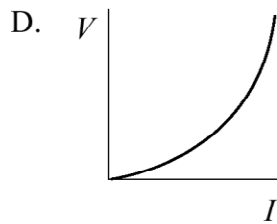
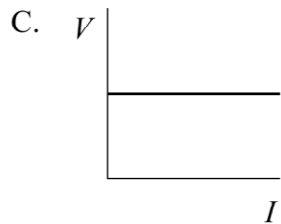
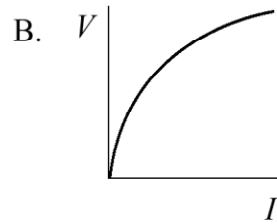
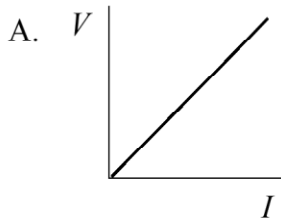
In the circuit below, resistor R_1 dissipates 0.40 W . Resistors R_2 and R_3 are identical.



What is the resistance of R_2 ? **(7 marks)**

18.

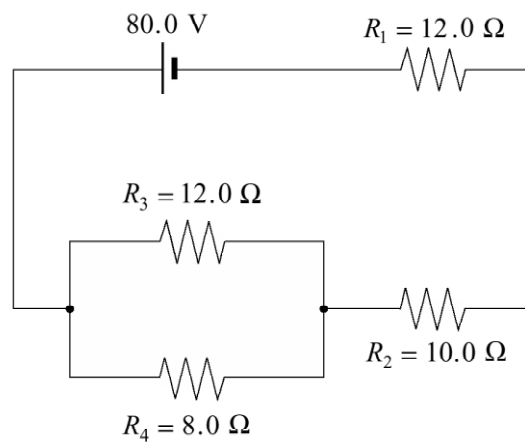
Which of the following graphs illustrates Ohm's law?



19.

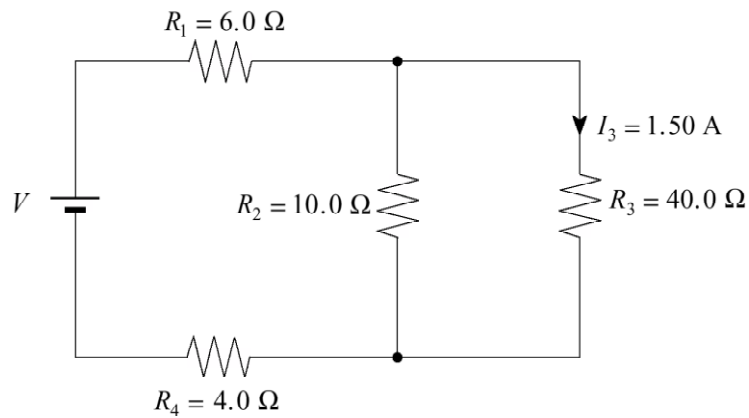
What is the power dissipated in the 8.0Ω resistor in the circuit as shown?

(7 marks)



20.

A current of 1.50 A flows through the $40.0\ \Omega$ resistor.



What is the potential difference of the power supply?

(7 marks)

Answers:

1. C
2. D
3. B
4. C
5. D
6. C
7. A
8. 1.69 W
9. A
10. 0.33 A
11. C
12. a) $9\ \Omega$ b) 33V
13. C
14. B
15. B
16. a) 0.2 A 6.0 Coulombs
17. $70\ \Omega$
18. A
19. 26W
20. 135V