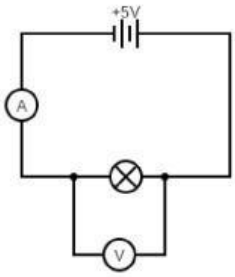
Circuit calculations - basic

Question 1

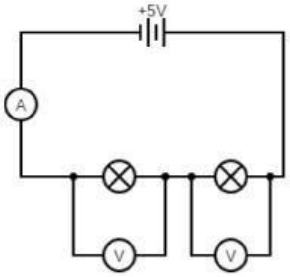


The ammeter reads 10A.

1.1. What is the reading on the voltmeter?

1.2. What is the resistance of the light bulb?

Question 2

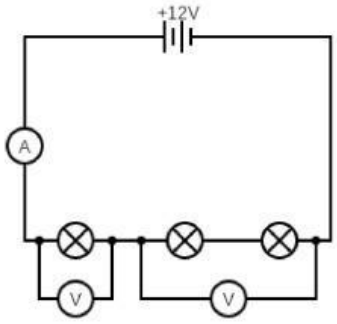


The ammeter reads 1A. All light bulbs are identical.

2.1. What is the reading on each voltmeter?

2.2. What is the resistance of each light bulb?

Question 3



The ammeter reads 3A. All of the lightbulbs are identical.

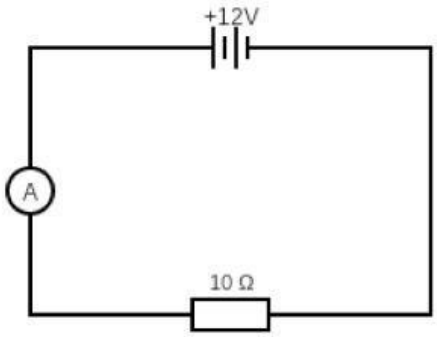
3.1. What is the reading on the first (left) voltmeter?

3.2. What is the reading on the second (right) voltmeter?

3.3. What is the resistance of each lightbulb?

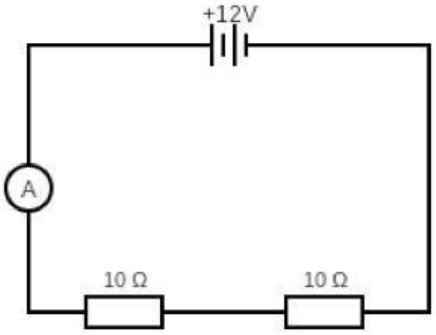
3.4. What is the total resistance of the circuit?

Question 4



4.1 What is the reading on the ammeter?

Question 5

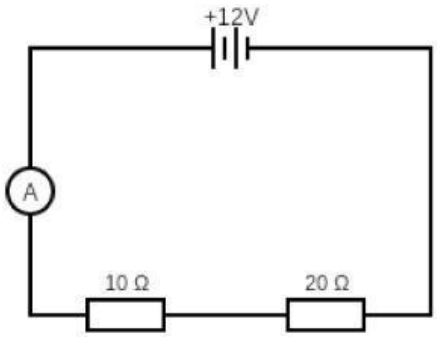


5.1. What is the total resistance of the circuit?

5.2. What is the reading on the ammeter?

5.3. What is the voltage through each resistor? Prove this using Ohm's Law.

Question 6

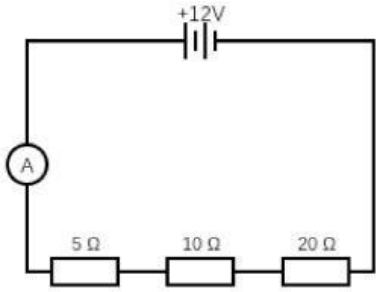


6.1. What is the total resistance of the circuit?

6.2. What is the reading on the ammeter?

6.3. What is the voltage across each of the resistors?

Question 7

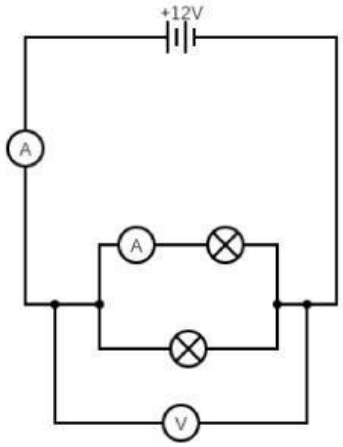


7.1. What is the total resistance of the circuit?

7.2. What is the reading on the ammeter?

7.3. What is the voltage across each resistor?

Question 8



In the above diagram, the main ammeter (left) shows a reading of 10A. Both lightbulbs are identical.

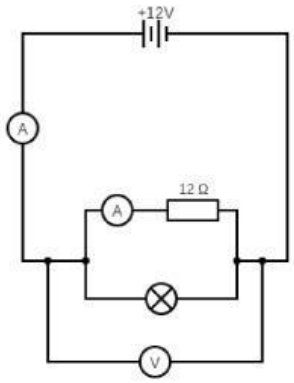
8.1. What is the reading on the voltmeter?

8.2. What is the reading on the other ammeter (parallel)?

8.3. What is the resistance of the lightbulbs?

8.4. What is the total resistance of the circuit?

Question 9



The main ammeter (left) reads 6A.

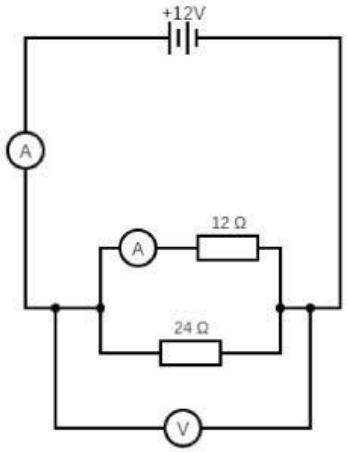
9.1. What is the reading on the voltmeter?

9.2. What is the reading on the second ammeter? (hint: use Ohm's Law)

9.3. What is the current passing through the lightbulb?

9.4. What is the resistance of the lightbulb?

Question 10



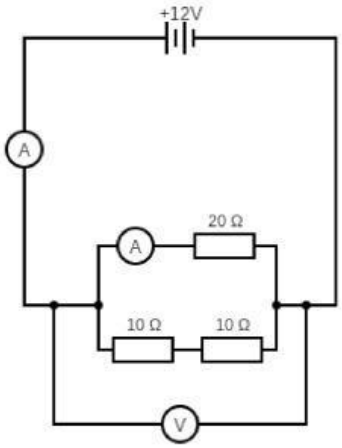
10.1. What is the effective resistance of the circuit?

10.2. What is the total current in the circuit?

10.3. What is the voltage over the parallel branches?

10.4. What is the current passing through the parallel ammeter?

Question 11

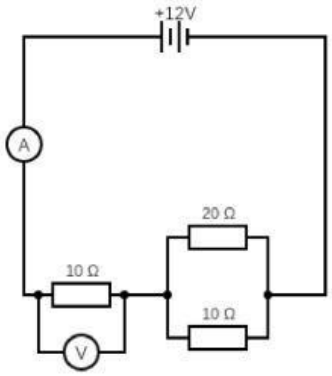


11.1. What is the total resistance of the bottom parallel branch?

11.2. What is the total resistance of the circuit?

11.3. What is the current passing through the 20Ω resistor?

Question 12



12.1. What is the effective resistance of the parallel branch?

12.2. What is the total resistance of the circuit?

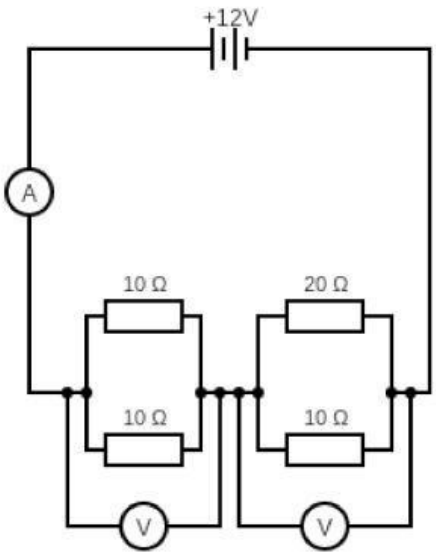
12.3. What is the current of the whole circuit?

12.4. What is the voltage on the voltmeter?

12.5. What is the voltage across the parallel branches?

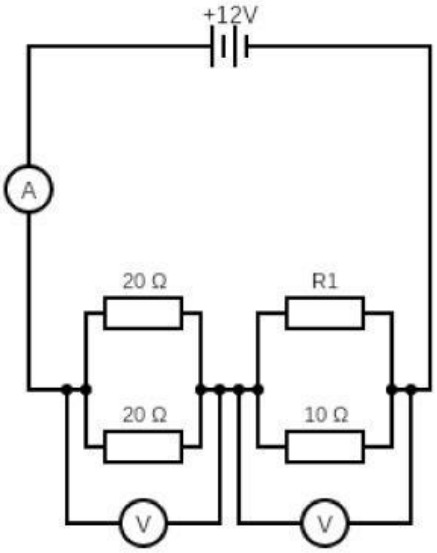
12.6. What is the current through each resistor?

Challenge Question



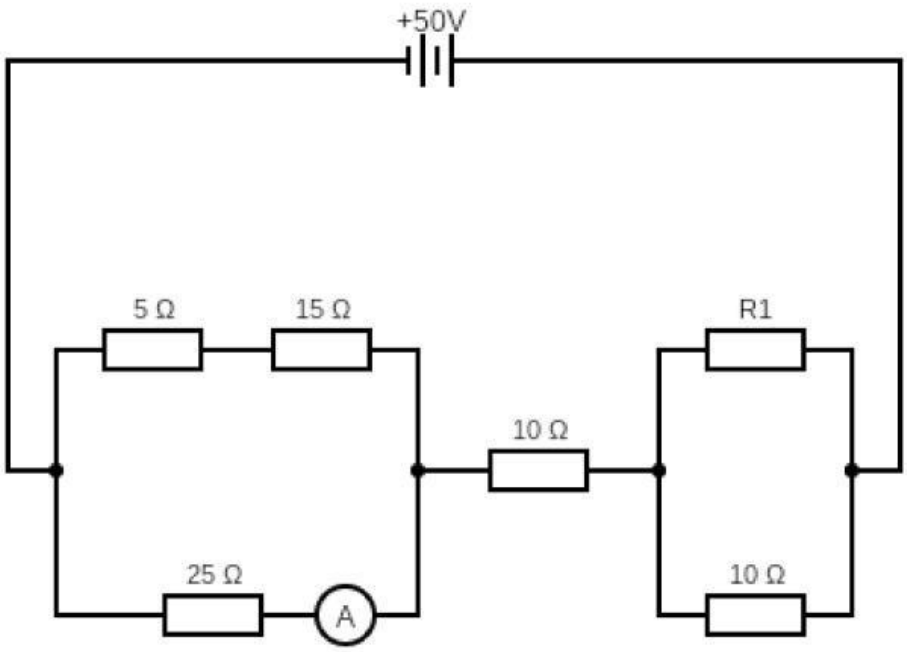
Calculate the current passing through the 20Ω resistor

Challenge question 2



In the above circuit, the ammeter reads a value of 0,7A. Calculate the value of R1

Ultimate challenge question



For the above circuit, the ammeter shows a reading of 0,82A. Calculate the value of the unknown resistor.