This print-out should have 20 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

Read UofMN 22.4-22.5, 23.1-23.3

001 10.0 points

Does more current flow out of a battery than into it? Does more current flow into a light bulb than out of it?

1. more; less

2. less; more

3. Less for both

4. The same for both

5. More for both

002 (part 1 of 2) 10.0 points

A hair dryer draws a current of 11.2 A .

How many minutes does it take for 2.8×10^3 C of charge to pass through the hair dryer? The fundamental charge is 1.602×10^{-19} C .

Answer in units of min.

003 (part 2 of 2) 10.0 points

How many electrons does this amount of charge represent?

Answer in units of electrons.

004 10.0 points

An instrument used to detect the current in a circuit is called

1. an electroscope.

2. a transformer.

3. an ohmmeter.

4. an ammeter.

5. a voltmeter.

6. a motor.

7. a generator.

005 10.0 points

The opposition to the flow of electricity is called

1. resistance.

2. electric current.

3. voltage.

4. amperage.

006 10.0 points

Which of the following copper conductor conditions has the least resistance?

1. Thick, long, and hot

2. Thick, short, and cool

3. Thin, short, and hot

4. Thick, long, and cool

5. Thin, long, and cool

6. Thin, short, and cool

7. Thick, short, and hot

8. Thin, long, and hot

007 10.0 points

An electrician finds that a 0.4 m length of a certain type of wire has a resistance of 0.28 Ω .

What is the total resistance of the 169 m of this wire he plans to use?

Answer in units of Ω.

008 10.0 points

A wire is made of a material with a resistivity of 3.91358×10^{-8} Ω · m . It has length 2.42731 m and diameter 0.94896 mm .

What is the resistance of the wire?

Answer in units of Ω.

009 10.0 points

A length of wire is cut into five equal pieces.

If each piece has a resistance of 0.45 Ω, what was the resistance of the original length of wire?

Answer in units of Ω.

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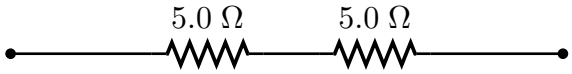
010 (part 1 of 5) 10.0 points

Consider the circuit



What is its equivalent resistance?

Answer in units of Ω.

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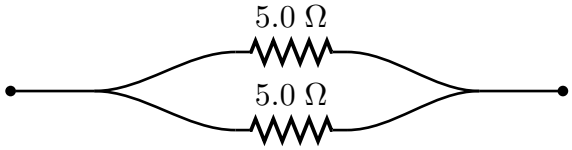
011 (part 2 of 5) 10.0 points



What is the equivalent resistance?

Answer in units of Ω.

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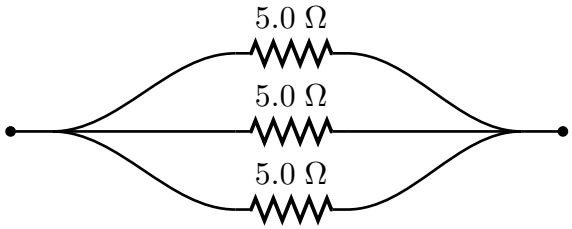
012 (part 3 of 5) 10.0 points



What is the equivalent resistance?

Answer in units of Ω.

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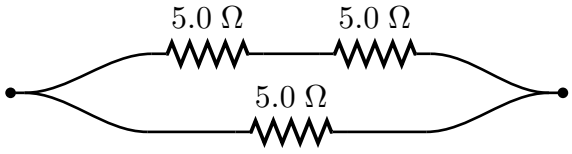
013 (part 4 of 5) 10.0 points



What is the equivalent resistance?

Answer in units of Ω.

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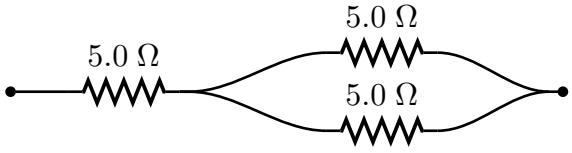
014 (part 5 of 5) 10.0 points

What is the equivalent resistance?



What is the equivalent resistance?

Answer in units of Ω.

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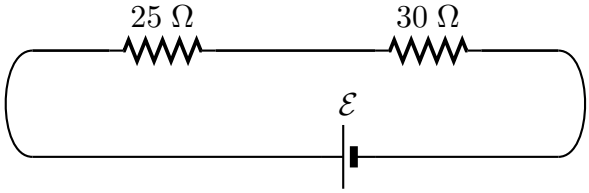
015 (part 1 of 2) 10.0 points

Consider a series combination of 2 resistances.



What is the equivalent resistance?

1. 1.2 Ω

2. 5 Ω

3. 0.83 Ω

4. 55 Ω

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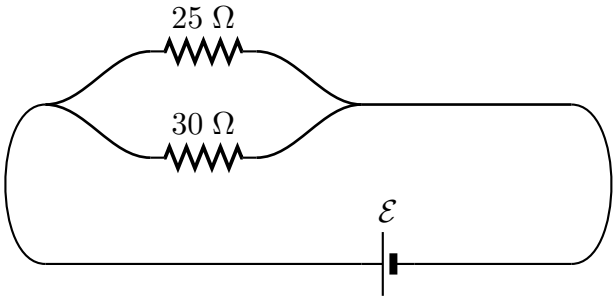
016 (part 2 of 2) 10.0 points

Consider a parallel combination of the same resistors.



What is the equivalent resistance?

1. Less than 25 Ω

2. Between 25 and 30 Ω

3. More information is needed.

4. More than 30 Ω

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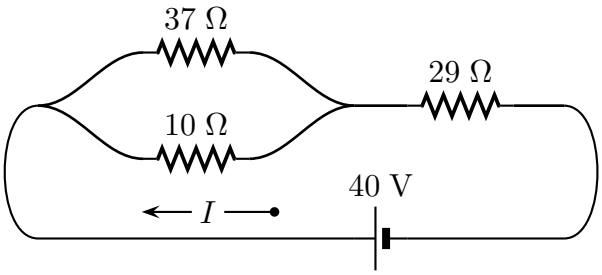
017 10.0 points

Consider the circuit shown in the figure.



Find its equivalent resistance.
Answer in units of Ω.

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018 (part 1 of 2) 10.0 points

You can obtain only four 40 Ω resistors from the stockroom.

How can you achieve a resistance of 100 Ω under these circumstances?

1. 2 in series with 2 in parallel

2. 2 in parallel

3. None of these

4. 2 in series

5. 3 in series

6. 4 in series

7. 1 in series with 3 in parallel

8. 3 in parallel

9. 4 in parallel

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019 (part 2 of 2) 10.0 points

What can you do if you need a 10 Ω resistor?

1. 2 in series

2. 2 in series with 2 in parallel

3. 4 in parallel

4. 1 in series with 3 in parallel

5. None of these

6. 4 in series

7. 3 in parallel

8. 3 in series

9. 2 in parallel

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020 10.0 points

By using only one OR two resistors, R_1 and R_2, a student is able to obtain resistances of 3 Ω, 4 Ω, 12 Ω, and 16 Ω. The values of R_1 and R_2 (in ohms) are:

1. 3, 16

2. 4, 16

3. 2, 12

4. 3, 4

5. 4, 12