

Name \_\_\_\_\_

**SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.**

1) What would be the effect of an open circuit in a series portion of a series-parallel circuit?

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2) What would current (amperes) do if the voltage were doubled in a circuit?

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3) What is Kirchhoff's voltage law?

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4) What does Kirchhoff's current law state?

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5) Why are parallel circuits (instead of series circuits) used in most automotive applications?

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6) Why is the total resistance of a parallel circuit less than the smallest resistance?

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7) What would current (amperes) do if the resistance in the circuit were doubled?

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8) What would be the effect of an open circuit in one leg of a parallel portion of a series-parallel circuit?

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9) What would current (amperes) do if the resistance in the circuit were doubled?

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## Answer Key

Testname: AAEE\_SHORT3

- 1) If an open circuit were to occur in the series portion of a series-parallel circuit, it would stop the flow of current through the rest of the circuit or the parallel leg where the open occurred.  
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- 2) If the voltage was doubled, the current flow in amperes would also double assuming that the resistance in the circuit remains the same.  
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- 3) Kirchhoff's Voltage Law states, "The voltage around any closed circuit is equal to the sum (total) of the voltage drops across the resistances."  
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- 4) Kirchhoff's Current Law states, "The current flowing into any junction of an electrical circuit is equal to the current flowing out of that junction."  
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- 5) Parallel circuits are used in most automotive circuits because if an open circuit occurs in one part, the other components will continue to work.  
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- 6) The total resistance of a parallel circuit is less than the resistance of the smallest resistance leg because the current splits, creating multiple paths for the current to flow back to the power source, thereby effectively reducing the overall resistance of the circuit.  
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- 7) If the resistance is doubled in a circuit, the current in amperes would decrease to one-half.  
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- 8) If an open circuit were to occur in the parallel portion of a series-parallel circuit, it would stop the flow of current through the parallel leg where the open occurred  
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- 9) The formula for determining voltage drop is  $E = I \times R$  where the letter E represents the voltage drop, the letter I represents the current in amperes through the resistance (load), and the letter R represents the resistance of the load.  
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