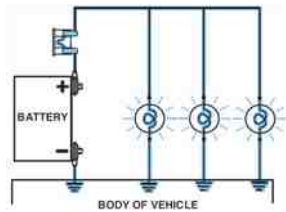


**FIGURE 6-1** A typical parallel circuit used in vehicles includes many of the interior and exterior lights.




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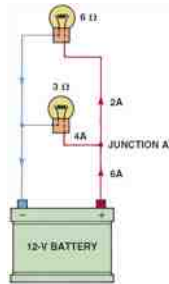
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**FIGURE 6-2** The amount of current flowing into junction point A equals the total amount of current flowing out of the junction.




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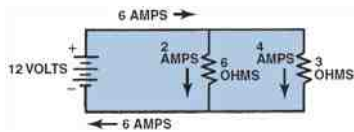
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**FIGURE 6-3** The current in a parallel circuit splits (divides) according to the resistance in each branch. Each branch has 12 volts applied to the resistors.




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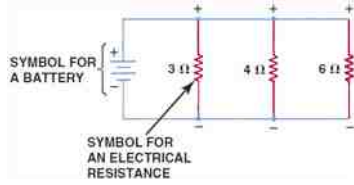
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**FIGURE 6-4** In a typical parallel circuit, each resistance has power and ground and each leg operates independently of the other legs of the circuit.




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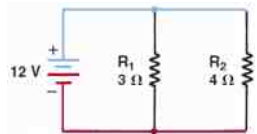
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**FIGURE 6-5** A schematic showing two resistors in parallel connected to a 12 volt battery.




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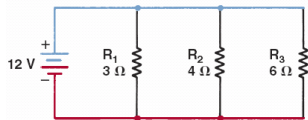
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**FIGURE 6-6** A parallel circuit with three resistors connected to a 12 volt battery.




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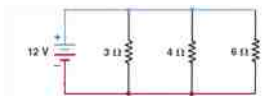
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FIGURE 6-7 Using an electronic calculator to determine the total resistance of a parallel circuit.



TO SOLVE THIS PARALLEL CIRCUIT PROBLEM FOR  $R_T$  (TOTAL RESISTANCE), PUSH THE EXACT BUTTONS ON AN ELECTRONIC CALCULATOR

NOTE: BE CERTAIN TO PUSH THE  $=$  BUTTON. FAILURE TO DO SO WILL RESULT IN INCORRECT ANSWERS WHEN USING MOST CALCULATORS.

$R_T = 1 \div 3 \text{ M} +$   
 $1 \div 4 \text{ M} +$   
 $1 \div 6 \text{ M} +$   
 $\text{M}_{RC} =$   
 (ANSWER = 1.3333)

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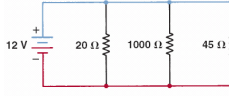
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FIGURE 6-8 Another example of how to use an electronic calculator to determine the total resistance of a parallel circuit. The answer is 13.45 ohms. Notice that the effective resistance of this circuit is less than the resistance of the lowest branch (20 ohms).



USE AN ELECTRONIC CALCULATOR TO SOLVE:

NOTE: THE TOTAL RESISTANCE ( $R_T$ ) MUST BE LESS THAN THE SMALLEST RESISTANCE (LESS THAN 20  $\Omega$  IN THIS EXAMPLE).

$R_T = 1 \div 20 \text{ M} +$   
 $1 \div 1000 \text{ M} +$   
 $1 \div 45 \text{ M} +$   
 $\text{M}_{RC} =$

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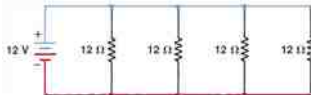
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FIGURE 6-9 A parallel circuit containing four 12 ohm resistors. When a circuit has more than one resistor of equal value, the total resistance can be determined by simply dividing the value of the resistance (12 ohms in this example) by the number of equal-value resistors (4 in this example) to get 3 ohms.



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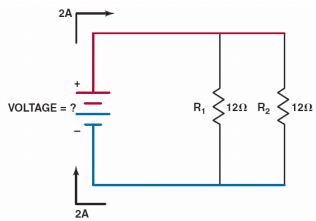
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FIGURE 6-10 Example 1.



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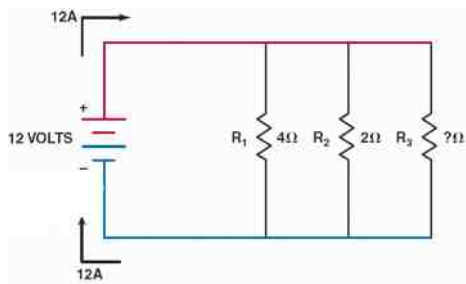
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FIGURE 6-11 Example 2.



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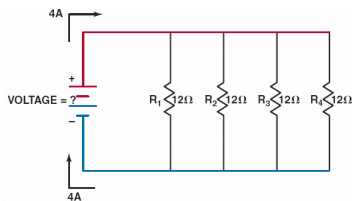
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FIGURE 6-12 Example 3.



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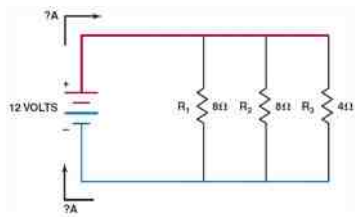
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FIGURE 6-13 Example 4.



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