

## Conduction and Radiation

Energy always moves from warmer to cooler objects. But how does it do it? Two ways that energy is transferred are conduction and radiation. **Conduction** is the transfer of heat from molecule to molecule through collisions. When high energy molecules collide with low energy molecules, there is conservation of momentum. The higher energy molecules move away slower, but the lower energy molecules move away faster. Solids and liquids are better conductors than gases because the molecules are closer together. An ice cube melts in your hand as a result of conduction. As the ice cube melts your hand gets cold. The ice cube is absorbing heat from your hand as it melts. Your hand is losing heat so it gets colder. **Radiation** is the transfer of electromagnetic waves (light, radio waves, etc.) through empty space. When the electromagnetic waves traveling through space hit matter they are absorbed. Since energy is conserved, the energy absorbed by the matter is not lost. Rather, it causes the particles to move faster. That is why you get hot if you wear a dark outfit on a sunny day.



**Radiation to the rescue**

Answer the questions below based on the reading above and on your knowledge of physics.

1. What is conduction? \_\_\_\_\_  
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2. What is radiation? \_\_\_\_\_  
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3. In what way are the methods of heat transfer in conduction and radiation almost like opposites? \_\_\_\_\_  
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4. What does conservation of momentum have to do with conduction? \_\_\_\_\_  
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5. How does conservation of energy explain heat transfer by radiation? \_\_\_\_\_  
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6. You step barefoot onto blacktop on a sunny summer day. Describe the energy transfers that occur. \_\_\_\_\_  
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