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Name \_\_\_\_\_ Date \_\_\_\_\_

**Thermodynamics**

On pg. 171

**Conduction & the study of heat transfer:**

Hot objects transfer heat to cold objects.  
Heat moves from hot to cold.

Conduction does not occur with all objects or good conductors.

Conduction = heat transfer by good conductors.

25°C Hot metal → 25°C Hot metal

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↓ Conduction

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**Thermal energy (heat) is transferred in three ways: Conduction, Convection, Radiation.**

**Conduction:** Conduction transfers heat through object's moving.

25°C Hot metal → 25°C Hot metal  
↓ Conduction

All states of matter (solid, liquid, gas) transfer heat. Solids have more & faster heat transfer than liquids because they transfer more energy.

Heat transfer increases with both objects are at different temperatures. The more temperature difference between objects, the more heat transfer.

**Convection:** Convection transfers heat through moving air or liquids.

Hot liquid (air) rises due to convection, moving convection currents. These currents transfer heat throughout the liquid or gas.

Cold air sinks due to convection currents. Heat transfer occurs in gases (25°C air) as it's heated becomes warmer.

Clouds move because of convection currents. Wind is a form of convection current. Wind is a form of convection current.

**Radiation:** Radiation transfers heat through electromagnetic waves = photons.

Radiation transfers heat from the sun to Earth. Convection transfers heat from Earth to space.

Radiation requires no contact. It can pass through a vacuum.

Radiation can penetrate non-conductive materials like plastic.

Allowing an earth to cool off in the sun. Objects in the center of the sun radiate heat toward the surface of the earth.

Dark objects absorb more radiation than light objects. Dark objects absorb more radiation than light objects.

High degree of reflection. Low degree of reflection (black).

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Name \_\_\_\_\_

**Sun, Moon, or Earth?**

Directions: Read each statement. Decide if the statement applies to the Sun, Moon, or Earth. (Some may apply to more than one object.)

**Moon:**

1. Is Earth's satellite.
2. Is the center of our Solar System.
3. Has known as a star.

**Sun:**

4. Has living creatures.
5. Is a ball of gas.
6. Has a rocky surface and almost no atmosphere.

**Earth:**

7. Has known as a star.
8. Has large amounts of liquid water.
9. Is the center of the three.
10. Is the smallest of the three.
11. Is about 230,000 miles from Earth.
12. Its diameter is about 100 times the diameter of Earth.
13. Is about 10 million miles away from Earth.
14. Is about 100 times the diameter of Earth.
15. Rotates once every 24 hours.
16. Rotates around the Sun once every year.
17. Rotates around the Earth once every month.
18. Has no life.
19. Has a geologically active surface.

**Sun & Moon:**

20. Has no life.

**Earth:**

21. Has a geologically active surface.

★ ★ ★ ★

**CONDUCTORS**

We use metals to make objects that need to conduct heat well. For example metal cookware will transfer heat well to the food made healthy.







