



SPH3U 6.2 Heat

## 1. Thermal energy and temperature

Thermal energy:	<u>total</u> kinetic <u>and</u> potential energy.
temperature	<u>average</u> kinetic energy <u>only</u> .
heat	transfer of thermal energy.

Same temperature...	2.0 g, iron	1.0 g, iron
2.0 g, iron	same thermal energy.	2.0g has 2x energy.
2.0 g, aluminum	aluminum > iron.	aluminum >> iron.

## 2. Methods of transferring thermal energy

Method	Description	Example
Conduction.	when warmer objects <u>touch</u> cooler objects.	pot on a stove. 
Convection (only in liquid or gas)	inside a fluid, cooler fluids fall down and push warmer fluids up (heat rises)	water in a pot. air on the ocean coast. 
Radiation. (can go through a vacuum).	- thermal energy is transferred as electromagnetic waves (light)	- sun. - everything radiates heat. - humans emit infrared radiation.

## 3. Thermal conductors and thermal insulators

Thermal conductors:	materials that conduct heat well. • metals (pots and pans).
Thermal insulators:	materials that don't conduct heat well. • plastic (pot handles), air, wall insulation (air bubbles). • vacuum is the best! → Thermos

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