

# Heat Transfer Notes

## Week 15 complete

## What is heat?

Heat IS energy.  
Energy is the ability  
to cause change...  
Change position  
Change shape  
Change state

## Heat moves: Higher to lower

Heat ALWAYS moves from high heat energy to low heat energy

Example:

From a hot drink cup to your hand

# Heat Moves: 3 ways **C-notes**

Heat is FLOW  
(MOVEMENT) of  
kinetic energy  
Heat moves three  
ways:  
Conduction  
Radiation  
Convection

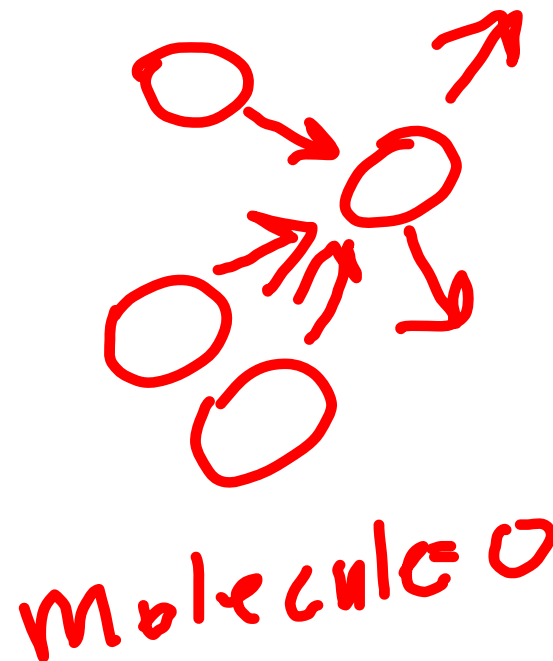
# C-notes

How does each form of heat transfer “work”?

## Conduction

**The molecules bump into the other molecules and makes them move.**

Diagram:



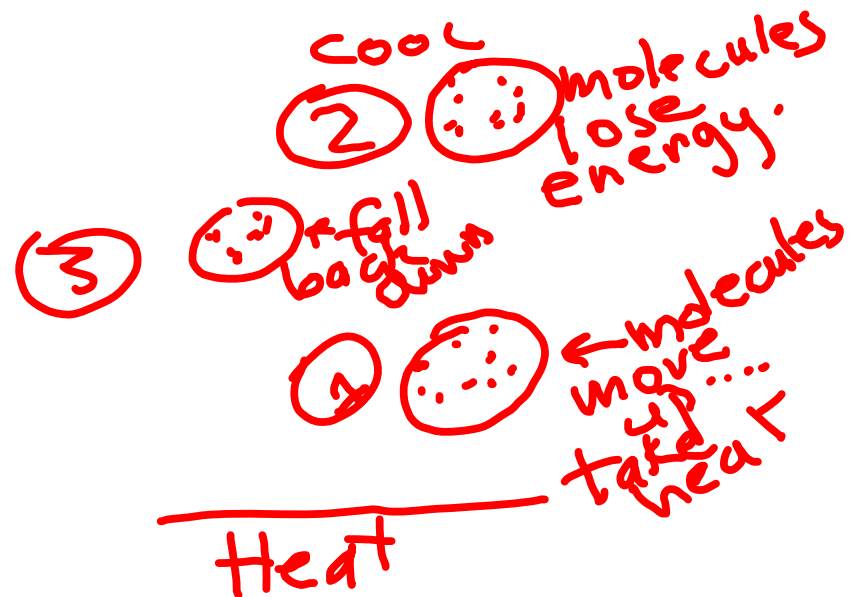
# C-notes

How does each form of heat transfer "work"?

## Convection

The molecules move to another part of the substance taking the kinetic energy with them

Diagram:



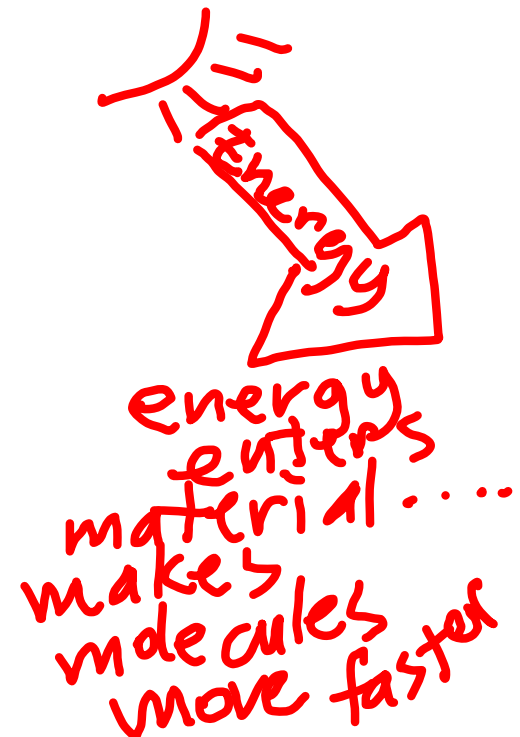
# C-notes

How does each form of heat transfer “work”?

## Radiation

**EM energy goes into a substance (absorbed) and that makes the molecules move faster**

Diagram:



# How does a lava lamp work?

**1. Electrical energy is turned into light and heat (BULB)**

**2. Heat from bulb heats glass**

#4 and #5-  
CONVECTION

**3. Heat from glass heats wax**

**4. Warm wax becomes lighter and floats**

#2 and #3-  
CONDUCTION

**5. As the warm wax floats to the top it loses heat and falls...**

#1 RADIATION  
FROM BULB



# How does the sun heat the atmosphere?

## **#3 CONVECTION**

**Heated air rises and cools off**

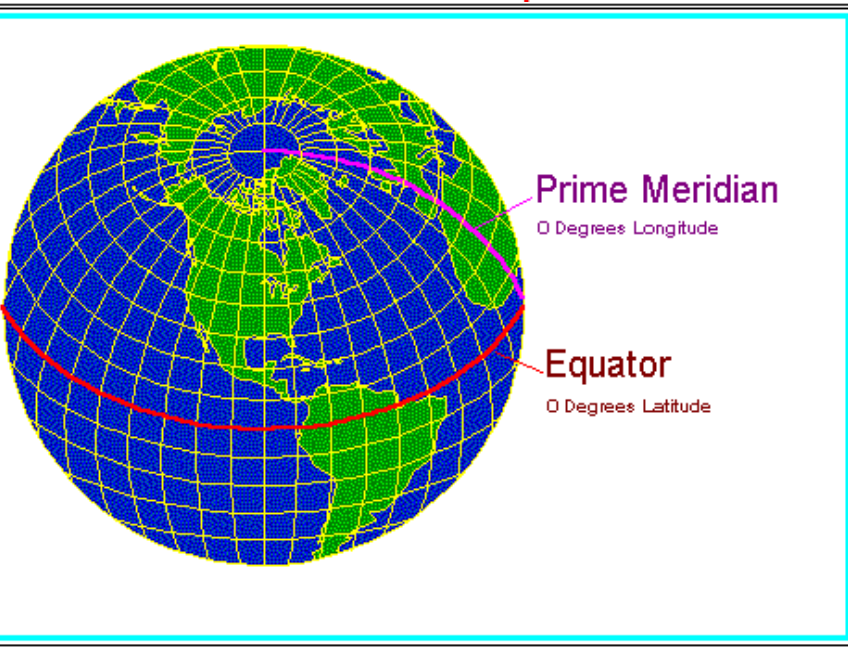
## ***RADIATION***

## **#2 CONDUCTION**

**Air next to surface is heated**

**#1- SURFACE ABSORBS THE SUN'S RADIATION. Surface is heated.**

# Uneven Heating

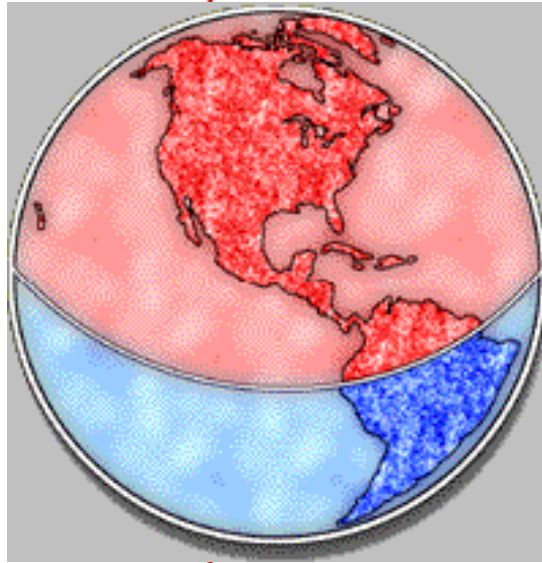
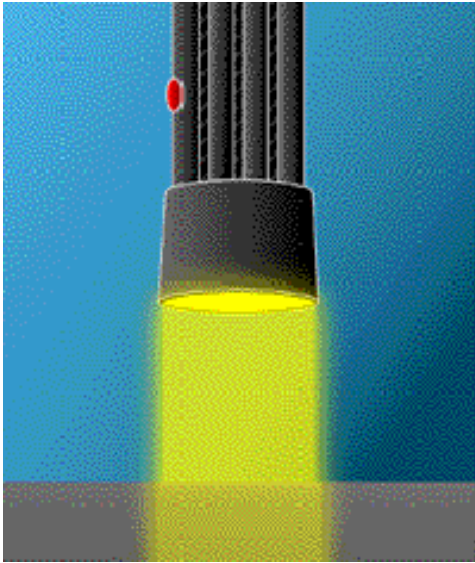


**Latitude:**  
depending on  
the latitude you  
would get rays at  
different angles.

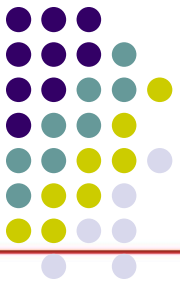
**Example: near  
equator direct  
rays heat more**



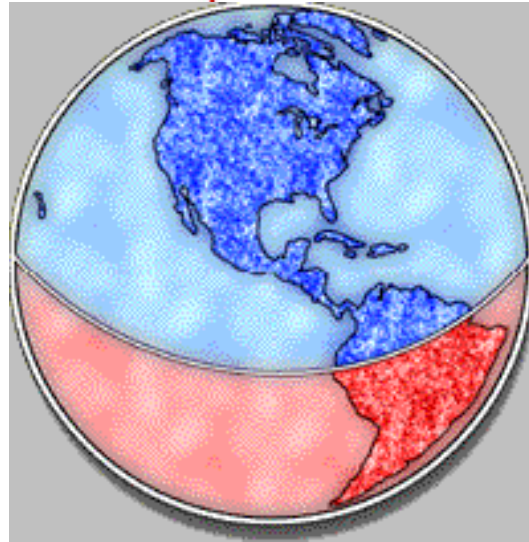
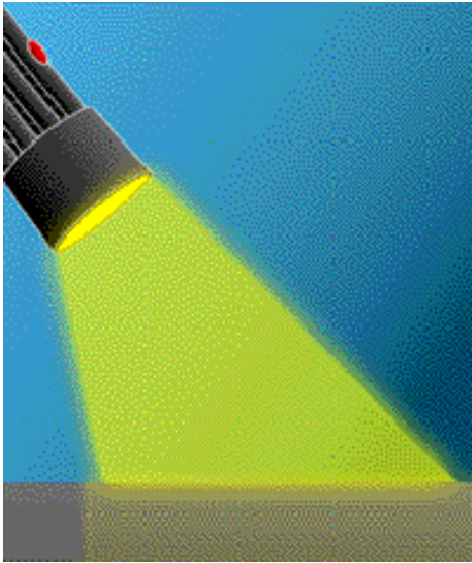
## Uneven Heating



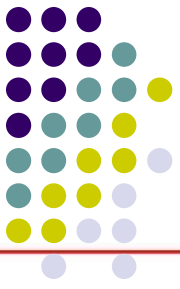
**“Direct Rays” heat the ground and water more.**



## Uneven Heating



**“Indirect Rays” heat the ground and water LESS.**

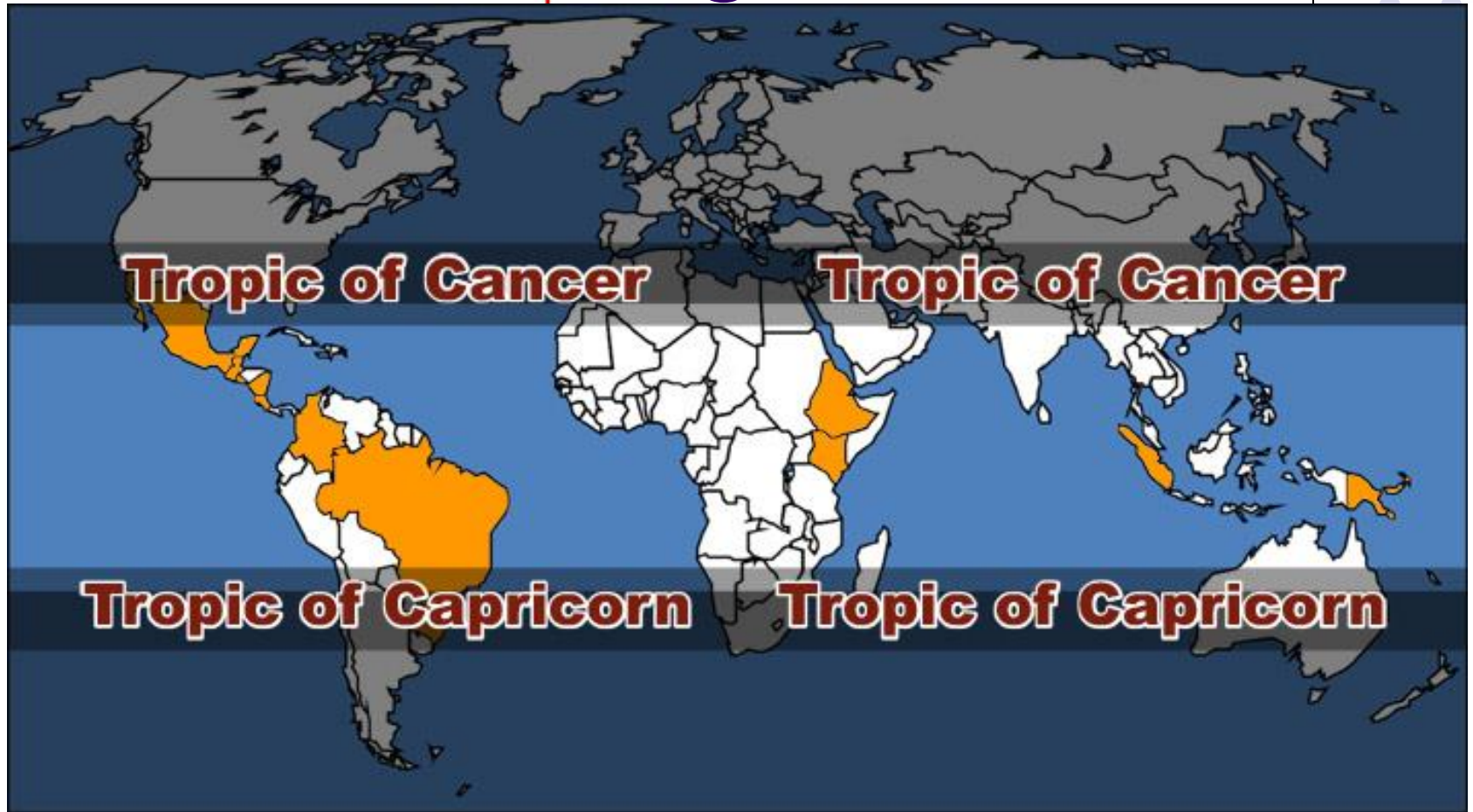


## Uneven Heating

**\*\*Except for  
tropics!!! They  
do not have  
seasons  
because the  
sun's rays are  
always  
“direct”**



## Uneven Heating





# Uneven Heating



**Surface: different materials absorb and reflect heat energy differently**

**Water absorbs heat slower but loses it slower**

**Soil absorbs heat faster but loses heat faster**

