Book I Chapter 3
Lesson 3 – Temperate & Polar Zones

- Seasonal change
- Climate between tropics & polar zone
- Receive less solar energy than tropics
- Temps lower than tropics
- Some areas have mild season changes
- Others freezing temps in winter & hot summers

4 Biomes (all 4 have distinct seasons but differ in temperature & precipitation):

1. Temperate forest
2. Temperate grassland
3. Chaparral
4. Temperate desert

TEMPERATE FORESTS:

- High amounts of rainfall
- Seasonal temp differences
    - Summers warm
    - Winters cold
- Animals: bears, deer, foxes
- Deciduous trees: trees that lose leaves at the end of a growing season
- Evergreens: keep leaves year-round
- Soil usually fertile-high organic content from decaying leaves

TEMPERATE GRASSLAND:

- Receive too little rainfall to grow trees
- Warm summers, cold winters
- Animals: bison (North America), kangaroo (Australia)
- Grasses most common
    - Most fertile soil
    - Plowed to make room for croplands

CHAPARRALS:

- Cool, wet winters-hot, dry summer
- Animals: coyotes, mountain lions
- Vegetation:
    - Evergreen shrubs
        - Short, woody plants
        - Thick, waxy leaves

POLAR ZONES:

- Located at north & south pole
- Coldest average temps of all climate zones
- Winter temps stay below freezing
- Temps during summer remain cool

TUNDRA:

- Long, cold winters with almost 24 hours of darkness
- Short, cool summers with almost 24 hours of daylight
  - Only top meter of soil thaws
  - **PERMAFROST:** permanently frozen layer of soil beneath thawed soil
- Poor drainage-upper soil layer muddy
- Muddy soil is a breeding ground for insects like mosquitoes
- Birds migrate during summer to feed on insects
- Animals: caribou, reindeer, polar bears
- Plants: mosses & lichen

TAIGA (Northern Coniferous Forest):

- Long, cold winters
- Short, warm summers
- Animals: moose, bears, rabbits
- Plants: majority conifers or needle-leaved trees
  - Evergreen, pine, spruce, fir
  - Needles shed heavy snow before damaged
  - Needles acidic-when fall makes soil acidic causing forest floor to be bare because plants can't grow

MICROCLIMATES:

- Climate of small area
- Alpine biome-found on mountains all over world
  - High elevation affects areas climate
  - Increased elevation causes airs ability to transfer heat from ground to atmosphere by conduction to decrease & causes temps to decrease.
  - Temps below freezing in winter & summer avg. temp
  - Plants and animals have had to develop special adaptations to live in severe climate
- Cities are microclimates
  - Temps 1˚-2˚ warmer than surrounding rural area
  - Buildings & pavement material (asphalt) absorb radiation instead of reflecting it
  - Less vegetation to take in sun's rays
  - Absorption & re-radiation of heat by buildings & pavements heats surrounding air & temps