3.1

* Plants are adapted to living on land
  + Plants are a diverse group of organisms
    - Wide variety
  + Plants share common characteristics
    - Multicellular
    - Plant cells have a nucleus and is surrounded by a cell wall
    - Plants are producers – capture energy from the sun
    - Plant life cycles are divided into two stages (generations)
  + Plant parts have special functions
    - **Roots** – below ground
    - **Stems and** **leaves** – above ground
  + Transporting water and other materials
    - **Vascular system** – made up of long, tubelike cells that transport materials
  + All plants make sugar through photosynthesis
  + All plants control gas exchange with the environment
    - **Transpiration** – the movement of water vapor out of a plant and into the air
  + Plants grow throughout their lifetimes
    - Soft stem plants
    - Woody stem plants

3.2

* Most mosses and ferns live in moist environments
  + Plant species adapted to life on land
  + Mosses and Ferns
    - Mosses are nonvascular plants
    - Mosses reproduce with spores
    - Ferns are vascular plants
    - Ferns also reproduce with spores

3.3

* Seeds and pollen are reproductive adaptations
  + Seeds are an important adaptation
    - **Seed** – a young plant that is enclosed in a protective coating with enough nutrients to enable the plant to grow
    - **Embryo** – the immature form of an organism that has the potential to grow and develop
    - **Germination** – the beginning of growth of a new plant from a spore or a seed
  + Some plants reproduce with seeds
    - \*\*Venn Diagram pg. C99 book 2
  + Pine trees reproduce with pollen and seeds
    - **Pollen** – a small multicellular structure that holds a sperm cell
  + Gymnosperms are seed plants
    - Gymnosperm – group of seed plants have existed for more than 250 million years
      * Conifers, cycads, gnetophytes, ginkgoes

3.4

* Many plants reproduce with flowers and fruit
  + **Angiosperms** are seed plants that produce flowers and fruit
    - **Flower** – the reproductive structure of an angiosperm
    - **Fruit** –after the egg is fertilized, the seed will form and the ovary wall will thicken
  + All flowers have similar structure
    - **Sepal** – leafy structures that enclose the flower before it opens
    - **Petals** – leafy structures arranged in a circle around the pistil
    - **Stamen** – the male reproductive structure of a flower
    - **Pistil** – the female reproductive structure of the flower
  + Animals spread both pollen and seeds
  + Humans depend on plants for survival
    - Oxygen and food
    - Energy resources and soil health
    - Other products – clothing, medicine, etc.