Unit 3: Matter and Energy

Unit 3A – Chapter 4: Photosynthesis and Cellular Respiration

1. **Chemical Energy** (meaning & how it is found in cells)

2. **ATP Cycle** (how ATP forms & breaks down) (also: how ATP releases energy)

3. **Photosynthesis**

   a. **Overall Equation** for Photosynthesis

   b. **Wavelengths** (how they relate to energy)

   c. **Pigments**

      i. How pigments give objects color

4. **Cellular Respiration**

   a. **Aerobic vs. Anaerobic** (definitions)

   b. **Overall Equation** of Cellular Respiration (including how much ATP is made)

5. **Fermentation** (importance)
Unit 3B – Chapter 13: Principles of Ecology

1. **Energy flow** (meaning & how it works)
2. **Chemical cycling** (meaning & how it works)
3. Understand how to read a **food web** or **food chain** and relate it to matter and energy transfers
4. **Trophic levels** (meaning)
   a. Name the levels
   b. Understand the roles of each level in the food web
   c. Understand what each level does (what they eat/what processes they are known for/what level carries the most energy)
5. **Energy pyramids** (types of & what they show a biologist)
6. **10% rule** (meaning & how it works)
7. **Water cycle** (overall process and the steps of it)
8. **Carbon cycle** (overall process and the steps of it)
9. **Nitrogen cycle** (overall process and the steps of it)
   a. Understand the importance of nitrogen fixation and who accomplishes this important step