Chapter 5- Genetics: The Science of Heredity

Section 1: Mendel’s Work
Topic: Mendel’s Work

• EQ: What could Mendel conclude from his experiments?

• Text Pages: 154-156

• Vocab: heredity, trait, genetics, fertilization, purebred, filial
Questions for CN

• Read the textbook pages. Answer the questions AND define the key terms.
• What is “genetics”?  
  – Define heredity, traits, genetics
• What did Mendel do to find out about heredity?  
  – Define fertilization
• How and why did Mendel cross Pea Plants?  
  – Define purebred
• What was significant about F1 offspring?  
  – Define filial
• What happened with the F2 offspring?
• What happened with the other traits Mendel experimented with?
• What were the results of a cross?
• Summarize
What is “genetics”?

• The study of passing physical characteristics, called traits, from parents to offspring.

• Heredity - passing of physical characteristics from parents to offspring
  – Gregor Mendel was curious about different physical characteristics, called traits, in pea plants
  – Mendel’s work was the foundation of the scientific study of heredity → genetics
Mendel’s Experiments

• **Fertilization** - when egg and sperm join to form a new organism

• Mendel cross-pollinated pea plants to learn about heredity by studying different combinations of fertilizations
  
  – Pea plants self-pollinate: pollen (sperm) from a flower lands on the pistil (where “egg” cells are) of the same plant
  
  – Mendel developed a method to prevent self-pollination
    
    • He removed all the sex-cell producing organs (the pistils and stamens)
    
    • He then cross-pollinated between different plants so the offspring had two different parents with different traits
      
      – instead of self-pollinating from the same plant.
    
    • Why wouldn’t we want self-pollination in a study like this?
Crossing Pea Plants

• Mendel crossed 2 pea plants that had different height.
  – Crossed a purebred tall with a purebred short in the “P” (parent) generation
    • They were purebred because they were offspring of many different generations that all had the same trait
  – Offspring from the P cross (the F1 generation) all only had one trait (in this case they were all tall)
  – F2 Generation-- Allowed F1 plants (all tall, etc) to self-pollinate and the F2 gen. offspring had about ¼ with the “lost” trait (being short) reappearing
Choose your own “creative” thing to do to demonstrate you learning of this lesson

Ideas:
- Short story with two descriptive illustrations
- Comic Strip
- Game