1. (3 points) Identify each of the following as a hypothesis, law, theory, or model.
   a. **LAW** A statement made based on the observation that in all our measurements that have been made, energy seems to never be lost but only converted in form.
   b. **THEORY** The reasoning behind why it is anticipated that nothing can ever travel faster than the speed of light.
   c. **MODEL** A description of the particles of a gas being similar to billiard balls and their interactions.

2. (5 points) Identify each of the following as either a physical property or a chemical property.
   a. **CHEMICAL** the element silver tarnishes forming the compound silver sulfide.
   b. **PHYSICAL** the density of gold is 19.3 g/cm³.
   c. **PHYSICAL** ethyl ether is a liquid at room temperature.
   d. **PHYSICAL** pounding lead with a hammer will flatten it out.
   e. **CHEMICAL** Sodium reacts violently with chlorine to form table salt.

3. (5 points) Identify each of the following as either a physical change or a chemical change.
   a. **CHEMICAL** gasoline in a car is burned in the engine
   b. **PHYSICAL** a block of solid benzene is converted to liquid benzene
   c. **PHYSICAL** the brown color made by an inkjet printer is made by mixing the cyan, magenta, and yellow inks.
   d. **CHEMICAL** an apple rots
   e. **CHEMICAL** an egg is scrambled

"I got this to either way: someone passed the issue as to whether you were just beating up an egg or actually cooking an egg."
4. (5 points) Identify each of the following mixtures as either homogeneous or heterogeneous.
   
a. **HETERO** a strawberry
   
b. **HETERO** orange juice with pulp
   
c. **HOMO** the air in the room
   
d. **HOMO** a salt water solution
   
e. **HETERO** a wood-grained table top

5. (3 points) The HIV virus causes AIDS. Several expensive drugs are available to treat HIV and, used either separately or in combination, they have resulted in a huge drop in AIDS deaths. An expensive new drug is available that shows promise in treating HIV/AIDS patients and is especially promising in preventing passage of the HIV virus from a pregnant woman to her fetus. What is the desirability quotient (high or low) for each of the following situations for this new drug? Briefly explain your rationale.

   a. a man who thinks he may be infected with HIV
   
   **BENEFITS** - POTENTIALLY MORE BENEFICIAL TREATMENT
   
   **RISKS** - NOTHING SAID ABOUT SIDE EFFECTS FOR MEN
   
   **D Q** may be low if this drug is no better than the other expensive drugs already available

   b. a pregnant woman who is HIV positive
   
   **BENEFITS** - COULD BE HIGH IF THE DRUG PREVENTS TRANSMISSION OF HIV TO THE FETUS. Caring for an HIV-infected child from birth is a large responsibility.
   
   **RISKS** - Nothing is said about side effects. If they are small, the D Q is high

   c. an unborn child whose mother has AIDS?
   
   **BENEFITS** - COULD POTENTIALLY PREVENT THE CHILD FROM GETTING HIV
   
   **RISKS** - SMALL, THOUGH SIDE EFFECTS NOT LISTED
   
   **D Q** is high