

Name: _____ Birthdate: _____

Today's date: _____ Class: _____

1. Draw a picture of an **atom** in as much detail as you can. Label the parts, and for each part, write what you know about that part.

2. Draw a picture of a **molecule** in as much detail as you can. Label the parts, and for each part, write what you know about it.

3. Draw a picture of a strand of **DNA** below in as much detail as you can. Label the parts, and for each part, write what you know about it.

4. Which of the following particles will be attracted to one another?

- a. A negatively charged particle and another negatively charged particle
- b. A positively charged particle and another positively charged particle
- c. A negatively charged particle and a positively charged particle
- d. both (a) and (b) are true

5. Particles are held together by two different kinds of bonds. What is the difference between those two kinds of bonds?

6. Inside your body, what is DNA's *main* function?
- Catches the flu virus if you get sick
 - Contains instructions for how your cells work and develop
 - Helps catch criminals
 - Aids digestion of food
7. Suppose you know that at least four consecutive base pairs are required to hold two DNA strands together in a particular environment. For each of the pairs of strands shown below, indicate whether they will stick together, and explain why.

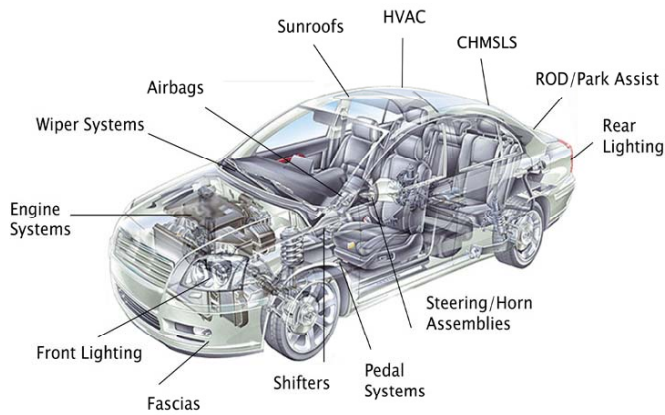
A-T-A-G-C-A-T-C-G-G
C-A-T-C-A-C-C-A-C-T

G-T-A-G-C-G-T-C-G-G
C-A-T-T-A-C-A-G-C-T

8. Self-assembly is a method of building things. How does it differ from other methods of building things, like building a car or a house?

9. In the pictures below, you see two models of a car: a) a drawing of a car; b) a remote-controlled toy car.

a) drawing



b) remote-controlled toy car



If you wanted to teach someone about cars, what would you use the drawing of the car for?

If you wanted to teach someone about cars, what would you use the remote-controlled toy car for?

Do you think that the drawing of the car or the remote-controlled toy car is a better model of a car? Or, do you think they are equally good models? Explain your answer.