Rockets: Up, Up, and Away!
Pre/Post Assessment

1. Your engineering team is studying Newton's Three Laws of Motion in preparation for building a bottle rocket. Your team has challenged you to match the 3 Laws with their correct descriptions.

_____ For every action, there is an equal and opposite reaction.	**A. Newton's 1st Law**
_____Objects at rest remain at rest, and objects in motion remain in motion unless acted upon by an unbalanced force.	**B. Newton's 2nd Law**
_____Force equals mass times acceleration (F = ma)	**C. Newton's 3rd Law**

2. A bottle rocket is sitting motionless on the launch pad. Your teacher starts pumping air into the bottle rocket creating a force that causes the rocket to begin moving. Circle the Law of motion that would best describe this event?

   A. Newton's 1st Law of Motion

   B. Newton's 2nd Law of Motion

   C. Newton's 3rd Law of Motion

3. Your class just watched the launch of the space shuttle. The thrust force of the rocket engines downward on the launch pad moves the rocket upward into space. Circle the Law of Motion that would best describe this event?

   A. Newton's 1st Law of Motion

   B. Newton's 2nd Law of Motion

   C. Newton's 3rd Law of Motion

4. Your team needs to figure out how much force would produce a certain acceleration based on the mass of your bottle rocket. Circle the Law of Motion that would help you solve this problem?

   A. Newton's 1st Law of Motion

   B. Newton's 2nd Law of Motion

   C. Newton's 3rd Law of Motion

5. You and your team have just completed your bottle rocket's design. You are concerned about the rocket flying straight and remaining stable in flight and understand that the correct placement of the center of gravity (CG) and center of pressure(CP) is important for rocket stability. On the rocket diagram below, place "CG" and "CP on the rocket that would show the correct placement.