Checkout Questions

Lab 9. Falling Objects and Air Resistance: How Does the Surface Area of a Parachute Affect the Force Due to Air Resistance as an Object Falls Toward the Ground?

1. Is there a maximum force due to air resistance that can act on a parachute?

   a. Yes
   b. No

   How do you know?

   What does your answer suggest about the effect of increasing the size of the parachute?

2. The equation for the force of air resistance (more formally, the drag) on a parachute is $\mathbf{F}_D = C_D \rho \mathbf{v}^2 A/2$. In this equation, $\mathbf{F}_D$ is the drag force and $\mathbf{v}$ is the current velocity of the falling parachute and mass system. Is the drag force constant as a function of time?

   a. Yes
   b. No

   Justify your answer using the equation provided and/or data from your investigation.

3. Scientists share a set of values, norms, and commitments that shape what counts as knowing, how to represent or communicate information, and how to interact with other scientists.

   a. I agree with this statement.
   b. I disagree with this statement.

   Explain your answer, using an example from your investigation about air resistance and parachutes.

4. Scientists must use their imagination and creativity to figure out new ways to test ideas and collect or analyze data.

   a. I agree with this statement.
   b. I disagree with this statement.

   Explain your answer, using an example from your investigation about air resistance and parachutes.

5. Why is it useful to identify a system under study and then make a model of it during an investigation? In your answer, be sure to include examples from at least two different investigations.

6. Why is it important to think about the relationship between structure and function when trying to develop an explanation for a natural phenomenon? In your answer, be sure to include examples from at least two different investigations.