Physics 200 (Stapleton) Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ch. 5.1: Drag and Terminal Velocity

**Drag** Force (friction when moving through a fluid) → Fd =

10. Draw a *Free Body Diagram* (diagram showing forces) showing all of the forces acting on a falling skydiver.

11. For a skydiver at terminal velocity (falling at constant velocity),

∑F= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12. Derive an equation for the terminal velocity of a falling object.

13. Under what circumstances is a skydiver’s acceleration…

…positive?

…negative?

…zero?

14. The table below describes the experience of a skydiver who steps out of a stationary helicopter. Create a reasonable acceleration graph portraying this sequence of events. Note the skydiver’s velocities at various points.

|  |  |
| --- | --- |
| Sequence | Event |
| 1 | Skydiver steps off of helicopter |
| 2 | Skydiver reaches a **terminal velocity of -40m/s** |
| 3 | Skydiver pulls chute cord. Parachute deploys. |
| 4 | Skydiver reaches a new **terminal velocity of -4m/s** |
| 5 | Skydiver feet touch down |
| 6 | Skydiver comes to rest |

