

# Free airplane cargo drop essay sample

[Engineering](#), [Aviation](#)



**Data Table: One (Values of horizontal distances and time)**

This table provides the calculated horizontal distances (x) in (ft) and the time (t) in seconds. The time increment is 0.5 seconds. Horizontal distances are obtained using the formula  $x = v_0 t$ . The initial horizontal distance is taken as 0.

**Chart 1: Horizontal Distance against time Graph of x against t**

This chart shows the relationship that exists between the horizontal distances (x) and the time (t). From the graph, it is evident that there is a positive linear relationship between the horizontal distances and the time. This indicates that the velocity is constant. Consequently, the horizontal acceleration does not change.

Figure 1: Graph of x against t

**Data Table: 2(Values of Vertical distances and time)**

This table provides the values of the time (t) and the corresponding vertical distances (y). The initial vertical position of the plane is 300 ft. This value has been incorporated in the formula  $y = y_0 + \frac{1}{2} a_y t^2$  to obtain the other respective vertical distances with respect to the changing time intervals. The inclusion of acceleration due to gravity is because it contributes to the fall of the supplies. Since the drop is causing a reduction in the vertical, a minus sign is included to ensure that the height decreases from 300 until it reaches the ground (0).

**Chart 2: Vertical Distance against time. Graph of y against t**

This chart indicates the relationship of the supplies fall against time (t). The graph is a curve. This indicates that the velocity changes with the increase in time. From the graph, the time that the supplies hit the ground can be established.

Figure 2: Graph of y against t

**Data Table: 3 (Values of Vertical and Horizontal distances and time)**

This table outlines the combined horizontal and vertical distances at 0.5 time increments. From the data, it can be established that, at a certain time a substantial horizontal distance will be covered when supplies hit the ground. Additionally, the initial horizontal distance is zero while the initial vertical distance is 300. The increase in the horizontal distance corresponds with a decrease in the vertical distance. This graph provides an indication of the projectile motion of the supplies from the plane until they reach the ground.

**Chart 3: Vertical and Horizontal Distance against time. Graph of x, y against t**

This chart is used to find a quick estimate of the horizontal position of the supplies when they hit the ground. At a time between 1 and 1.5 seconds, the horizontal distance will be the same as the vertical distance.

Figure 3: Graph of Vertical and Horizontal Distances against Time

## **Goal Seek time value**

The goal-seek time value was established as 4. 3166. The essence of this value is to get the exact time when the supplies will hit the ground. No more distances will be covered beyond this time.