

1. What are some factors that affect the amount of air resistance a falling object experiences?

size, shape
volume, $v_{initial}$

2. Compare the force of gravity to the force of air resistance for this 100. kg skydiver as well as his acceleration.

Diagram A

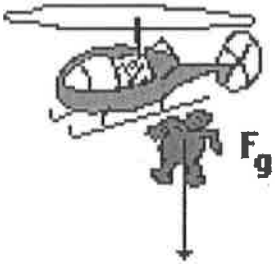


Diagram B

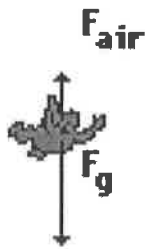


Diagram C

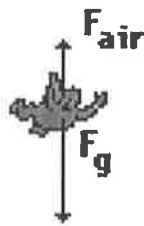
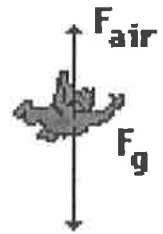
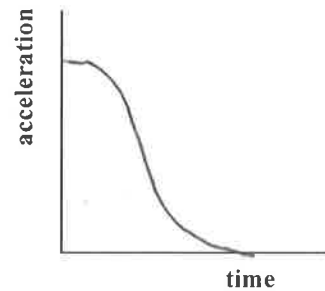
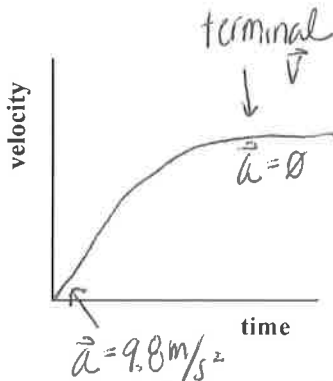


Diagram D



\vec{a} decreases until it reaches $0 \frac{m}{s^2}$, at which point the skydiver reaches terminal velocity and velocity then remains constant ($\Sigma F = 0N$)

3. Sketch how the magnitude of the skydiver's velocity and acceleration vary with time as he falls.



4. What happens when the force of air resistance equals the force of gravity?

$\Sigma F = 0N$ $\vec{a} = 0 \frac{m}{s^2}$ $\vec{v} = \text{constant}$

Terminal velocity:

highest speed reached by the falling object

5. What is the force of air resistance acting on a 60 kg skydiver at terminal velocity?

$\vec{a} = 10 \frac{m}{s^2}$ $F_{Air} = 600N$ $F_g = -600N$

6. Which experiences a greater force of air resistance: an elephant or a feather? Explain.

$Mg = \text{elephant}$ larger mass
 $mg = \text{feather}$ = larger force

