Physics Year 11 Week 3

Free Fall

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Free fall is defined as the motion of an object undergoing an acceleration of '***g***'.

Acceleration is a **vector quantity** — and '***g***' acts **vertically downwards.**

The magnitude of '***g***' is usually taken as **9.81 ms^{-2}**

The **only force** acting on an object in free fall is its **weight.**

Objects can have an initial velocity in any direction and still undergo **free fall** as long as the **force** providing the initial velocity is **no longer acting.**

***All** Objects in Free Fall **Accelerate** at the **Same** Rate*

Replace a** with **g** in the **Equations of Motion

- g = gravitational field strength
- Measured in newtons per kilogram

Terminal Velocity

O to A

$W > F$

(acceleration)

A to B

$W = F$

(terminal velocity)

B to C

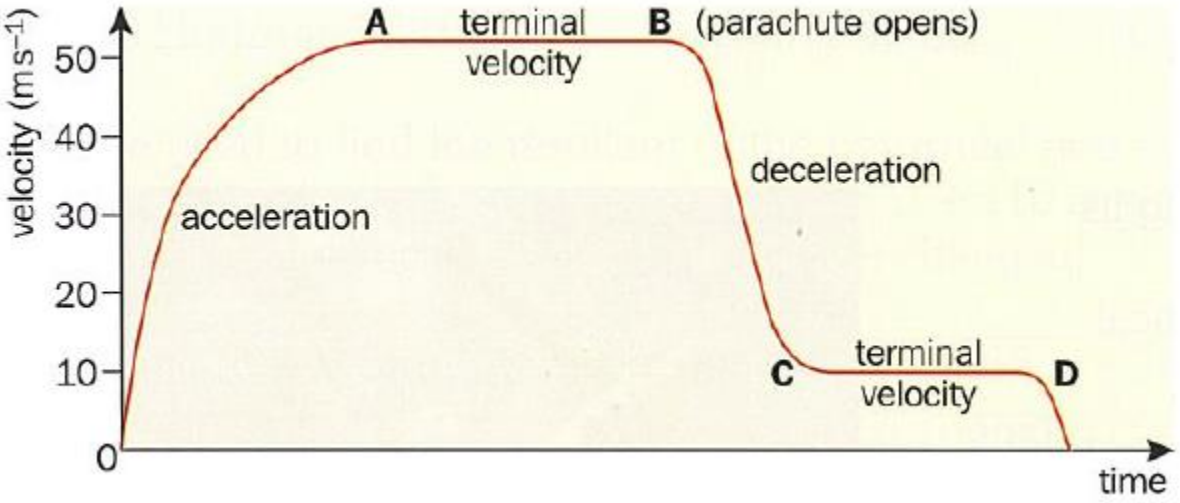
$W < F$

(deceleration)

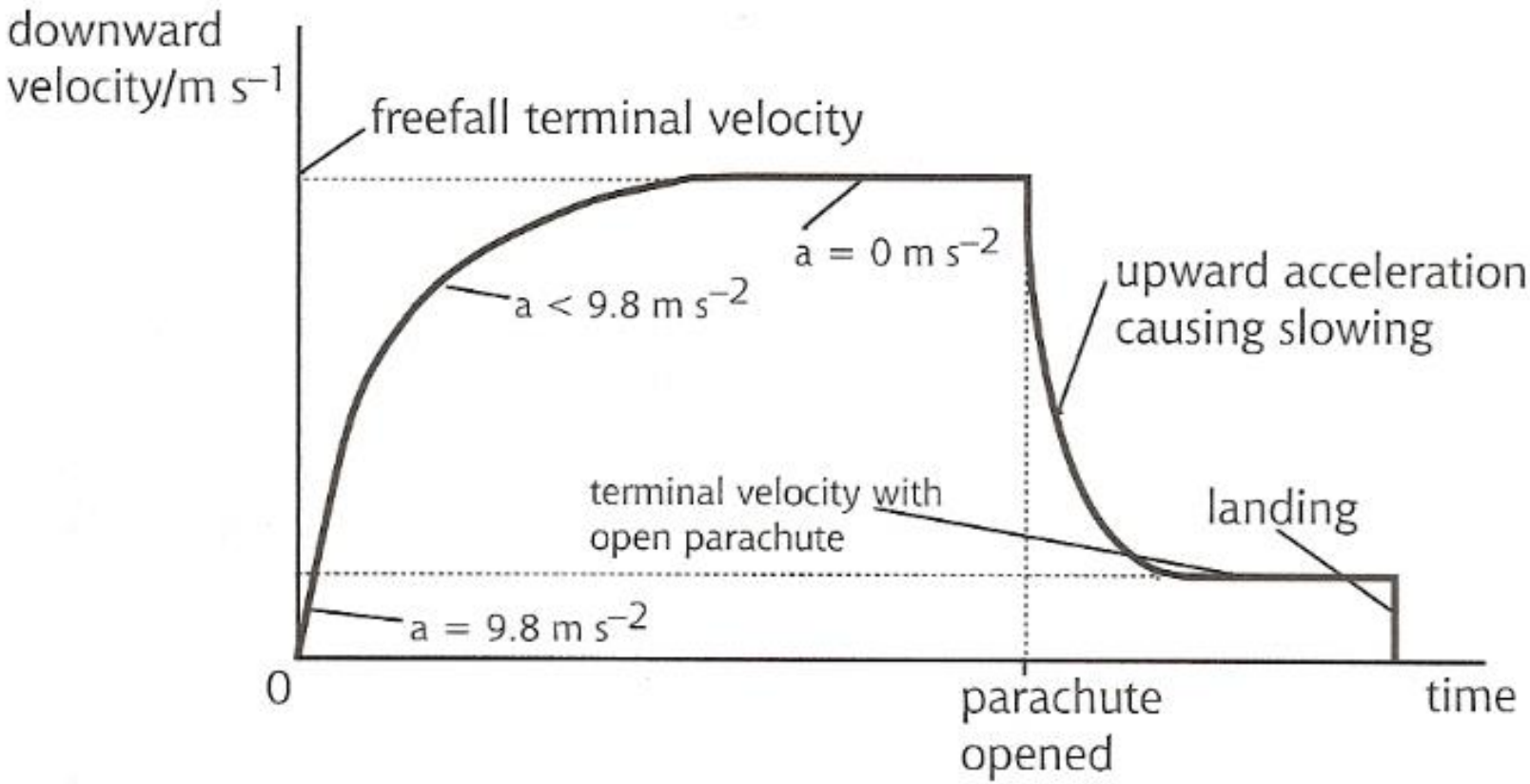
C to D

$W = F$

(terminal velocity)



VT Graph of a Parachute



The Old "Sheep Jumping Out of a Plane" Trick

1) Gains Speed

2) Still Gaining Speed

3) Losing Speed

4) Steady Speed

5) No Speed