EXAMEN : BACCALAURÉAT GÉNÉRAL	SESSION 2011
ÉPREUVE : Évaluation spécifique de langue en section européenne	
PHYSIQUE-CHIMIE en langue ANGLAISE	**SUJET N°14**

Friction versus gravity in a battle to the ground.

When you jump out of a plane, two major forces are competing for attention: friction (or drag) between you and the air whizzing past, and gravity pulling you down. When freefalling, you will experience acceleration because the force of friction is initially much weaker than the force of gravity. Eventually, the downward force of gravity will equal the upward force of drag and you will stop accelerating and fall at a constant speed – usually around 193 kmph. This is known as terminal velocity: the point at which no force is acting upon your body.

While gravity is a constant force, the force of friction changes with velocity and surface area. For example, stick your hand out the window of a stationary vehicle and you'll not experience friction. However, stick your hand out the window of a moving vehicle and you'll experience a large force of friction. Upon opening the parachute, the frictional force is greater than the force of gravity because the canopy has increased your cross-sectional area – this is what slows you down. As your acceleration drops so, too, does the force of friction until it is equal to the force of gravity and again you descend at a constant rate.

From How It Works Annual 2010

Questions:

1. Present and comment this document.
2. Do not forget to focus on at least one physics and/or chemistry topic as for example the laws involving forces and gravity.
3. Do you know any other applications in which these laws are used?