

EXAMEN : Baccalauréat général - Série S-SVT ou S-SI	Session 2013
ÉPREUVE : Evaluation spécifique de Langue en section européenne	
PHYSIQUE-CHIMIE en langue ANGLAISE	
Thème : « Mécanique : lois de Newton et de Kepler »	Sujet n°8

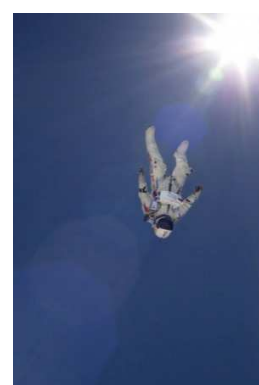
Skydiver Felix Baumgartner breaks sound barrier

On the 14th of October 2012, Felix Baumgartner broke three records: the highest manned balloon flight, the first human to break the sound barrier without the assistance of a vehicle, and the highest skydive.



The timeline for the mission was split into eight stages:

1. Launch of balloon with Baumgartner in capsule (picture 1)
2. Balloon ascension to maximum altitude 39045 metres (128,100 feet or 24 miles).
3. Baumgartner de-pressurises the capsule, opens the door and jumps off (picture 2).
4. At approximately 30,000 metres (98,000 feet), Baumgartner reaches more than the speed of sound (Mach 1.24 = 1342,8 km/h (834,4 mph after approximately 00:40 of free fall) (picture 3).
5. After 3:30 of free fall, air resistance slows Baumgartner as the atmosphere becomes denser.
6. Parachute deployed at approximately 2500 metres (8,200 feet).
7. Controlled parachute descent (5:00) until landing (picture 4).
8. Mission control remotely detaches the balloon from the capsule to be recovered on Earth.



Adapted from Wikipedia (http://en.wikipedia.org/wiki/Red_Bull_Stratos)

Mach 1 = speed of sound 1224 km/h at 15°C

remotely = à distance



1. Present and comment on these documents.
2. Do not forget to focus on at least one physics topic as for example the laws involving forces and gravity. You can for example describe the ascension, the free fall and also the parachute descent.
3. What do you know about the others physics factors involved in Baumgartner's journey such as acceleration, supersonic speed, pressure, temperature ?