

**BACCALAURÉAT GÉNÉRAL**  
**ÉPREUVE SPÉCIFIQUE DES SECTIONS EUROPÉENNES**  
**MATHÉMATIQUES – ANGLAIS**

**Corrigé du sujet 16**

**I. Explain what the text deals with and comment on it.**

1999 was a terrible year for NASA. In fact, the Mars Polar Lander disappeared in December. It cost 165 million dollars and was supposed to land a few hours before disappearing.

The Mars Climate Orbiter vanished in September (only 3 months before). It cost 125 million dollars. It was supposed to study the climate on Mars but it disappeared because the scientists didn't work with the same measurement units.

The difference between imperial measurements (for example feet per second) and metric measurements (metres per second) can lead to important mistakes.

**II. Exercise.**

1.

a.  $f$  is a quadratic function. The shape of the trajectory is a parabola.

b. We look for the positive solution of :  $f(x) = 0$

c. easy

2.

a.  $50 \text{ km.h}^{-1} = \frac{50 \times 1,000}{3,600} \text{ m.s}^{-1} \approx 13.89 \text{ m.s}^{-1}$

b.  $50 \text{ ft.s}^{-1} = 50 \times 0.3048 \text{ m.s}^{-1} = 15.24 \text{ m.s}^{-1}$

c. We just have to compare  $\frac{v^2}{6.94}$  replacing  $v$  by the two precedentes values

d.  $33.47 - 27.80 = 5.67$  so there are 5.67 metres between the two drop points. This result allows us to understand how it was possible for the craft to pass 90 km far from the expected point.