

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

**SUJET 13 – Dido's legend**

**Thème : Geometry**

**Ce sujet comporte 1 page. L'usage de la calculatrice est autorisé.**

Dido was, according to ancient Greek and Roman sources, the founder and first queen of Carthage (in modern-day Tunisia). She is primarily known from the account given by the Roman poet Virgil in his epic, *Aeneid*. In some sources she is also known as Elissa.

5 After her husband was murdered by her own brother, she fled the country with some of her servants by boat. She arrived in Numibia and asked King Jarbas for a place where to settle. Unfortunately, the king wasn't very welcoming and she had to negotiate for a long time to reach an agreement. In the end, she could choose any location for a piece of land. However, its size shouldn't exceed the size of the hide of an ox<sup>1</sup>.

10 Dido was a smart woman and cut the hide into very thin strips, tied them together so as to get a very long rope. Then, she asked her servants to put the rope on the ground to draw a semi-circle along the sea. Thus, she could have quite a large land and founded the city of Carthage inside this semi-circle around 850 B.C..

<https://en.wikipedia.org/wiki/Dido>

Adapted from <http://matoumatheux.ac-rennes.fr/classe/ens/isoperimetre2.htm>

<sup>1</sup>. the hide of an ox = une peau de boeuf

1. Read the second paragraph of the text (from "After her husband" to "hide of an ox").
2. What's the text about?

**Exercise**

We can consider that the hide of an ox is 210 cm long and 200 cm large. To build a rope of  $k$  cm long Dido needed a strip of  $k$  cm long and 1.25 cm large.

- a) How long is the rope that Dido could get?  
Give the answer in meters.
- b) Calculate the radius of the semi-circle drawn by Dido's servants (the perimeter of the semi-circle is the length of the rope).
- c) Deduce the area of Dido's land.
- d) One of Dido's servants would have preferred a square-like land. Draw roughly what the land would look like and then calculate the area he would have got in this case. Comment your result.

