

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

SUJET 2

Thème : Geometry

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

Hippocrates of Chios was an ancient Greek mathematician, geometer, and astronomer, who lived 470 – 410 BC.

He was born on the isle of Chios (KOS), where he originally was a merchant. After some misadventures (he was robbed by either pirates or fraudulent customs officials) he went to Athens, possibly for litigation. There he grew into a leading mathematician.

On Chios, Hippocrates may have been a pupil of the mathematician and astronomer Oenopides of Chios. In his mathematical work there probably was some Pythagorean influence too, perhaps via contacts between Chios and the neighbouring island of Samos, a center of Pythagorean thinking: Hippocrates has been described as a “para-Pythagorean”, a philosophical “fellow traveller”. The *reductio ad absurdum* argument (or proof by contradiction) has been traced to him.

From “wikipedia”

litigation = *litige, procès*

1. Read the first lines of the text ending with “Oenopides of Chios”.
Explain what the text deals with and comment it.

2. Exercise:

- a) Draw a right-angled triangle ABC in B. Plot the midpoint of [AC] and draw Γ the semi-circumcircle to ABC with $B \in \Gamma$.

Draw C_1 the semi-circle with diameter AB, outside of the triangle ABC. The shape L_{AB} between C_1 and Γ is called a Hippocrate lune.

- b) Using the same method, draw L_{BC} on side [BC], you have now the Hippocrate lunes, C_2 as the semi-circle with diameter AC.

- c) Work out the formula of the area limited by M, C_1 and C_2 . We assume that the area of a circle with diameter AB is $\pi \frac{AB^2}{4}$.

- d) Prove the statement: “The sum of the areas of the lunes L_{BC} and L_{AB} is equal to the area of the triangle.”