BACCALAURÉAT GÉNÉRAL
ÉPREUVE SPÉCIFIQUE DES SECTIONS EUROPÉENNES
MATHÉMATIQUES – ANGLAIS

SUJET 5

Angles and distances.
Geometry

Ce sujet comporte deux pages. L'usage de tout modèle de calculatrice, avec ou sans mode examen, est autorisé.

Not so long ago people didn't measure in meters and centimeters. In fact, quite a different approach was taken. Some measurements were based on body parts, which is why the height of horses is still measured in hands and, in some countries, the height of people is given in feet and inches. In ancient Egypt, things were measured in a unit called "cubits". This unit was equal to the sum of the length of the pharaoh's forearm and the width of his hand. The result was carved into a granite block and some copies of wooden or stone were given to the builders. This worked fine, but only as long as the pharaoh lived. Lengths were likely to change as pharaohs came and went, which was annoying if you were half-way through building something. There were also a dozen "cubits" known to have been used in the ancient world. Over the centuries, many measuring systems were used around the world and these could vary within countries. In Great Britain, it wasn't until the 13th century that people tried to standardize measurement in the country, when it was ruled that an inch was the length of three barleycorns*. Over time, Britain adopted the imperial system of inches, feet, yards and miles. During the modern times, with the improvement of technologies, new "units" of measurement have been developed.

Extract from the book " From Zero to Infinity and beyond, cool maths stuff you need to know "
written by Dr Mike Goldsmith

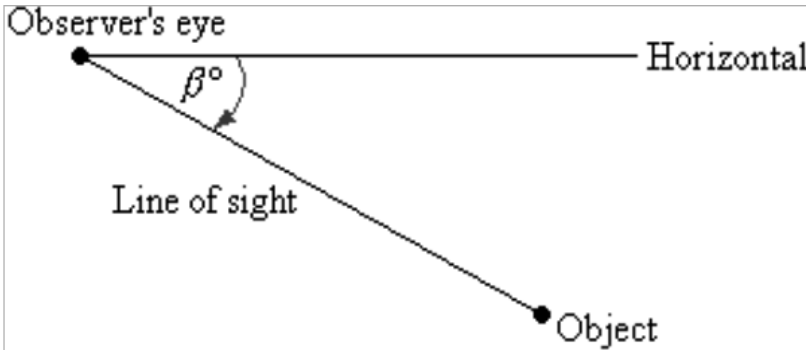
*Barleycorn : unit representing the length of a grain of a kind cereal.

Vous devez restituer le sujet à la fin de l'épreuve

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

II. Exercise.

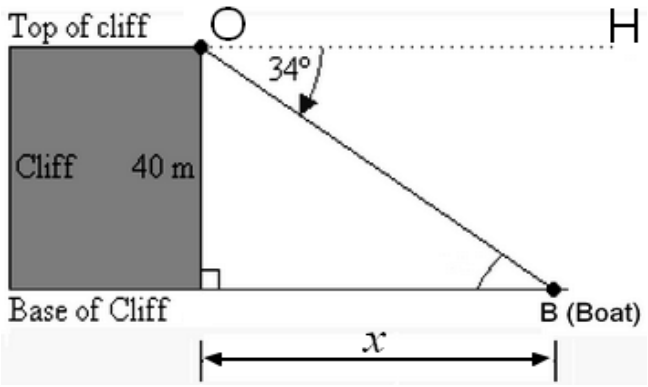
If an object is below the level of an observer, then the angle between the horizontal and the observer's line of sight is called the angle of depression.



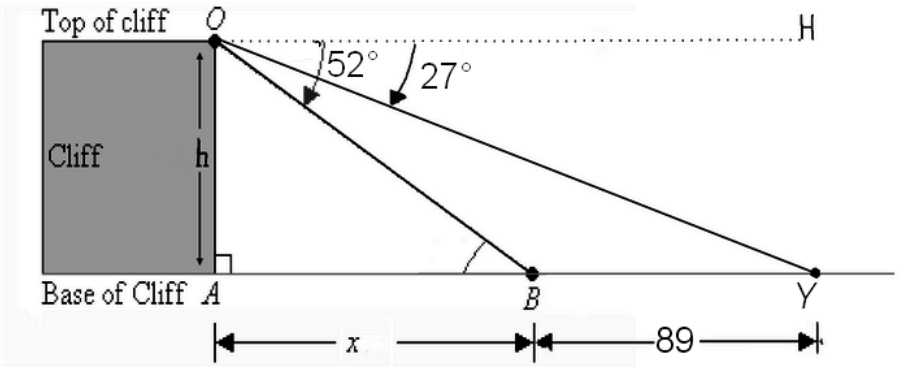
1. From the top of a vertical 40 m high cliff, the angle of depression of a boat on the sea is 34º.

a. How far is the boat from the top of the cliff?

b. How far is the boat from the base of the cliff?



2. A yacht Y and a boat B can be seen from the top of another vertical cliff, h meters high. See figure below.



a. Explain why : h = x.tan(52).

b. In the same manner, we can find h=(x+89).tan(27), calculate the height of the cliff.

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