

## Exercise in the subject course – In & Out project

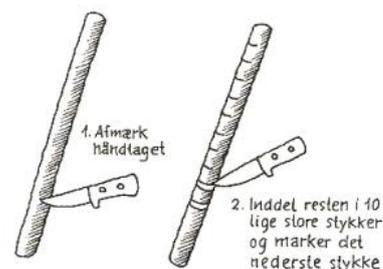
*Mathematic by Mikael Skånstrøm*

### A. How high is the tree?

#### B1 Description

“The caretaker on the school has to cut down some trees, but he’s afraid that some of them can damage the buildings when they fall”.

The participants are working in pairs or groups to find the height of a tree by using a ‘swedish measuring stick’.



#### B2 Subjects aims

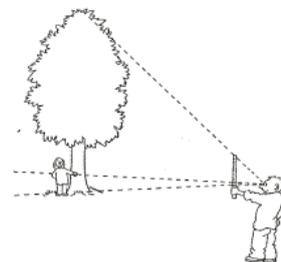
The aim is to see and understand the ratios between similar triangles

#### B3 Preparations

The participants have to make a measuring stick. The measuring sticks and a (folding) ruler.

#### B4 Time

Two lessons



#### B5 Implementation

- 1 - Move away from the subject - so far that the lowest mark on the stick is in line with the bottom of the subject and the top of the stick is in line with the top of the subject.
- 2 - An other member of the group places a mark on the subject, where the lowest mark on the stick is in line.
- 3 - The height of the marked place is now  $1/10$  of the full height of the subject.
- 4 - Measure the height from the ground to the marked place - or find it by using an already known height, e.g. your own height.
- 5- Multiply the measured height with 10, and you will find the height of the full subject.

Back in the classroom the participants can make drawings of the situation and use other kind of calculations, e.g using trigonometric functions and comparing them to each other.

## **B6 Conclusion**

Working with triangles is an important mathematical discipline on many levels. In this exercise, the participants are working with the mathematical topic 'ratio', which can be a problem for many. The task can be a part of working with trigonometri in a more theoretical way.