

## The staircase in the tower

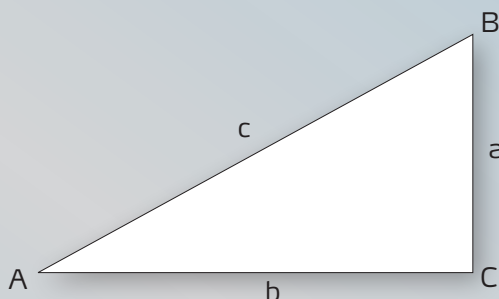
If you want to go up the tower you will have to climb a lot of stairs with various degrees of steepness. If you are going up or down a steep hill, you will see a sign indicating the level of steepness in percentage.



1. Choose different spots on the staircase where you take measurements that enable you to estimate the increase on that particular spot.

The increase(S) can be calculated by using this formula:

$$S = \frac{a}{b} \cdot 100\%$$



Instead of stating the percentage of the steepness on the sign you can just write the degrees of the steepness in proportion to horizontal level.

Measure or calculate the angle of steepness on the stairs you have chosen.

You can do that by drawing a cross-section of the stairs in a suitable scale and then measure the steepness.

The degree of the steepness can also be calculated by using by using this formula:

$$\tan A = \frac{a}{b}$$

$\frac{a}{b}$  can be calculated and then push the button  $\tan^{-1}$  on your pocket calculator.