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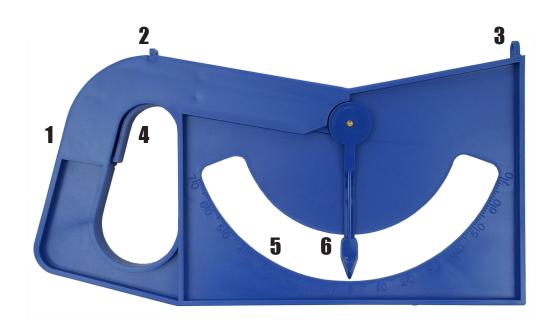Nixa, Missouri 65714

# Clinometer
# #CLINOMETER

## Introduction

A clinometer, also sometimes referred to as an inclinometer or a declinometer, is a device that can be used to quickly measure an object's slope or its height. Depending on the location of the observer in relation to the object being measured, it can measure incline when looking upwards or decline when looking downwards. An object's height can be found when you can reliably and accurately measure the distance between you and its base. This works best with tall, skinny objects such as trees.

Clinometers are useful in many surveying applications such land and cave surveying, prospecting, and forestry.

The instructions found on the following page will show you how to use your clinometer to find the angle of inclination from the bottom of a hill, the angle of decline from the top a hill, and the height of trees and other similar objects.

## Components

1. Handle

2. Rear sight

3. Front sight

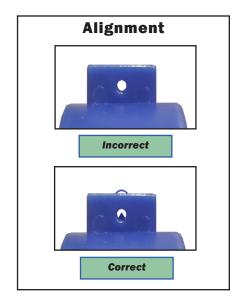4. Trigger

5. Protractor

6. Pointer

# How to Use

Your clinometer can be used to quickly gauge the slope of a hill or the height of a tall object, such as a tree. Follow the simple instructions below in order to use your clinometer:

## Finding the Angle of Incline
1.  Stand at the base of a slope, align you sights, and aim at its peak.
2.  Squeeze the trigger and release when the pointer points straight down.
3.  Read and record the angle of incline displayed on your clinometer's protractor.

## Finding the Angle of Decline
1.  Stand at the peak of a slope, align you sights, and aim at its base.
2.  Squeeze the trigger and release when the pointer points straight down.
3.  Read and record the angle of decline displayed on your clinometer's protractor.

**Alignment**

*Incorrect*

*Correct*

## Finding the Height of a Tree
1.  Mark a spot on the ground at a random distance away from the tree that you are trying to measure. Measure the distance from this spot to the base of the tree (**d**). **(Note:** Take your measurements using the same unit of measure. We recommend using meters.**)**
2.  Align your sights so that your clinometer is aiming at the top of the tree, squeeze its trigger, and record the angle of vision displayed on your clinometer's protractor (**θ**).
3.  Use the first equation shown below to calculate the height of the tree above your eye-level (**x**). **(Note:** You will need a calculator with a **tangent** function button. Make sure it is set to **degrees,** not **radians.)**
4.  Calculate the total height of the tree by adding your height (**t**) to tree's height above your eye-level.

$$x = d \tan\theta$$

$$h = x + t$$

- θ = Angle of Vision (Degrees)
- d = Distance to Tree (m)
- x = Tree Height Above Eye-Level (m)
- t = Eye-Level (m)
- h = Height of Tree (m)