

# Surveying I.

**Setting out straight lines, angles, points in given elevation.**

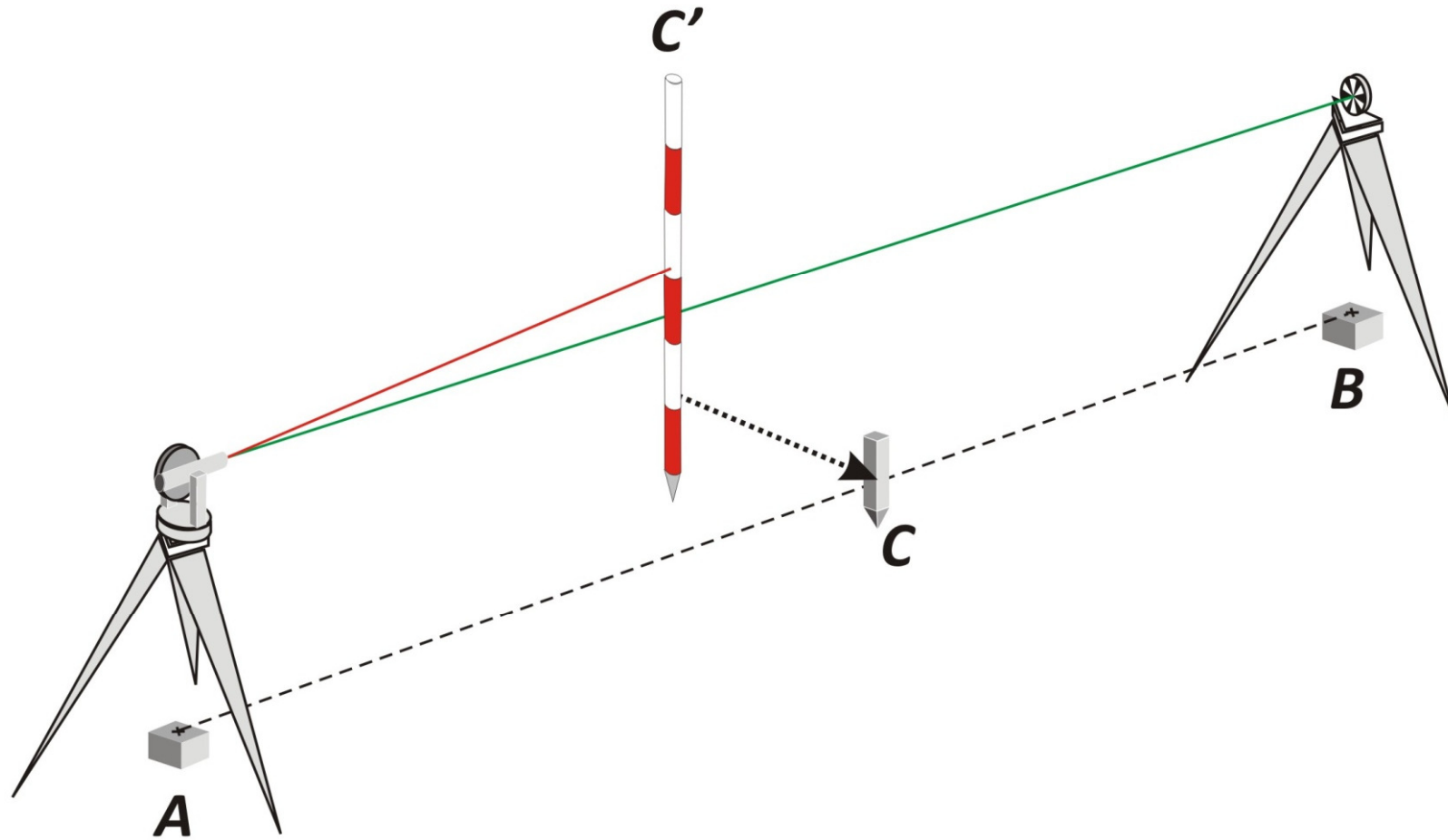
## Setting out points with geometric criteria:

- straight lines: the points must be on a straight line, which is defined by two marked points;
- horizontal angles: one side of the angle is already set out, the other side should be set out;

## Koordinátákkal adott pontok kitűzése:

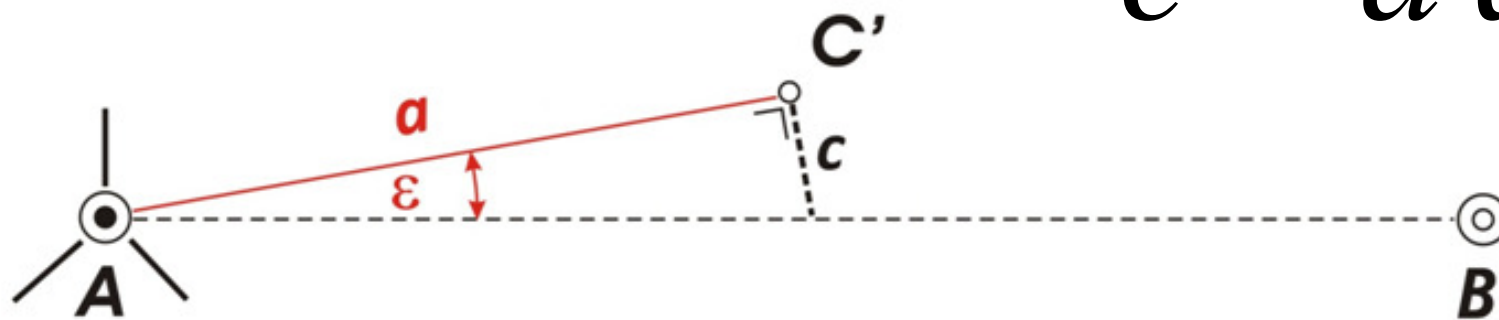
- setting out points with defined horizontal coordinates in a local or national coordinate system;
- setting out points with defined elevation (local or national reference system)

# Setting out straight lines



**Alignment from the endpoint**

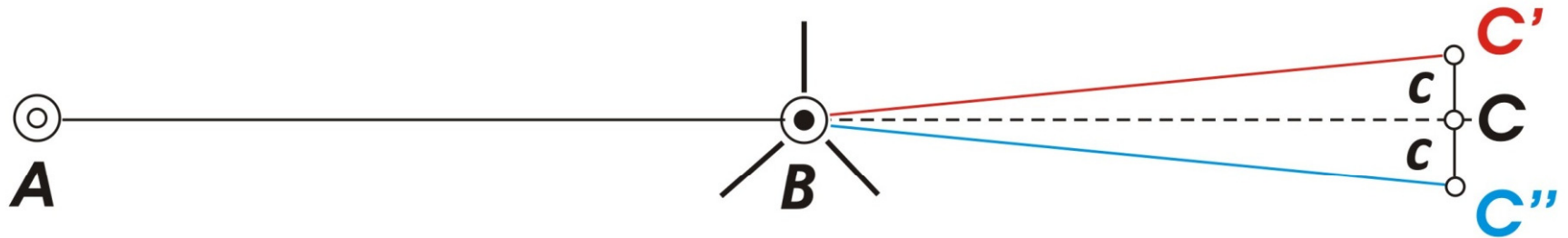
# Alignment (AC' distance is observable)



$$c = a \tan \epsilon$$

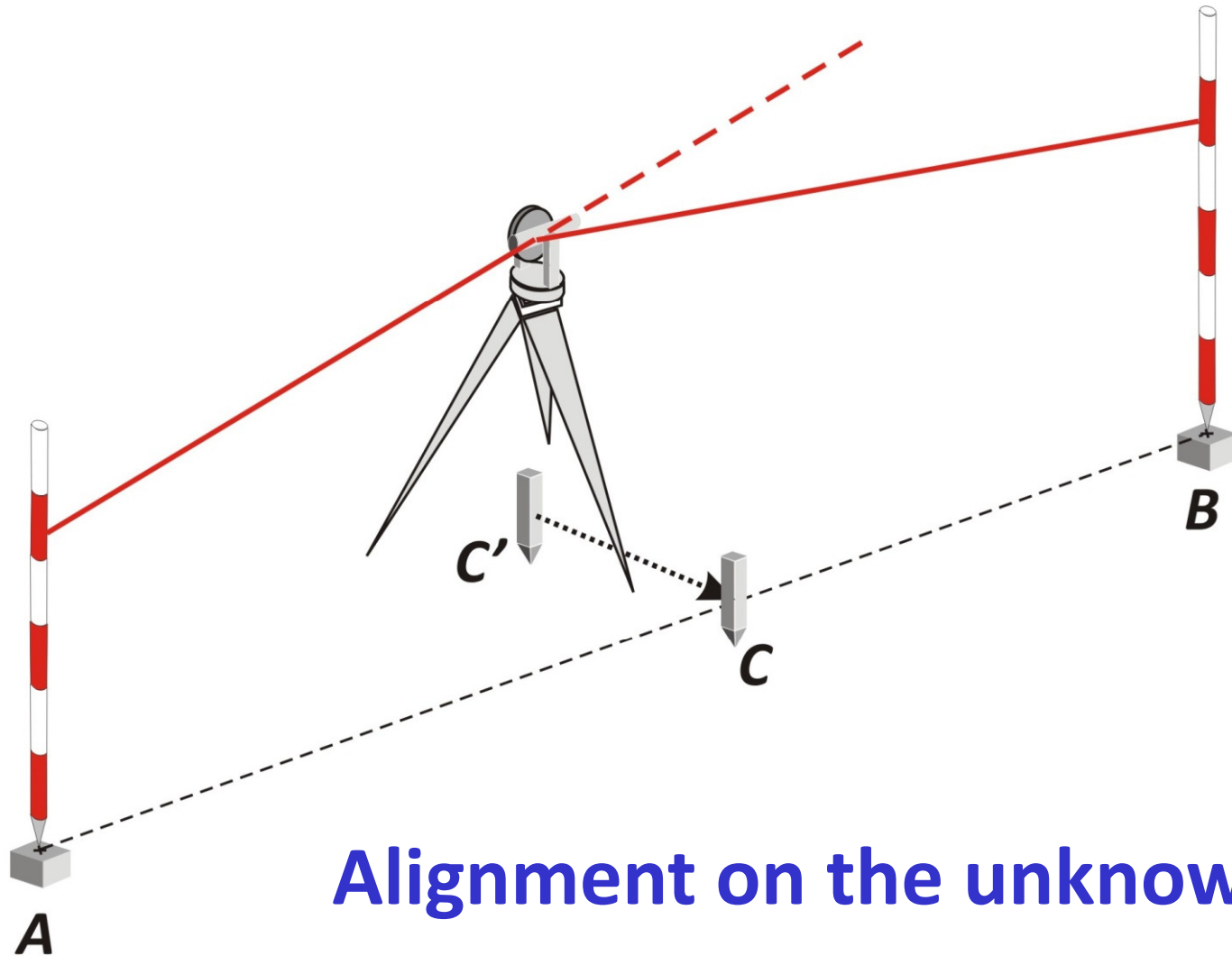
# Alignment (C is located on the extension of AB line)

Set out the extension of the line in Face Left!



Set out the extension of the line in Face Right!

# Setting out straight lines



**Alignment on the unknown point**

# Setting out straight lines (AC' and BC' distance is observable)

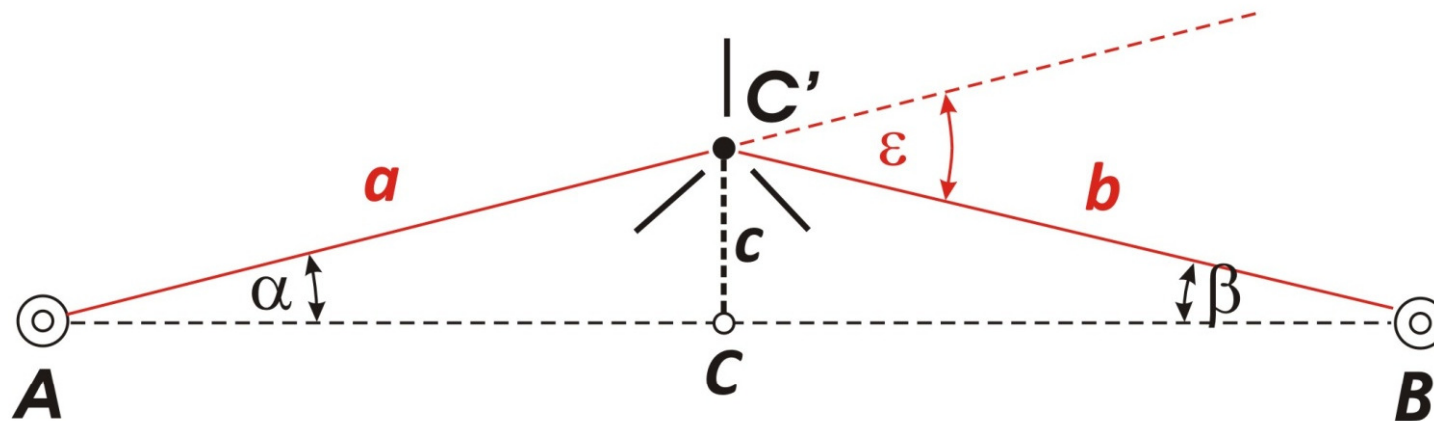
$$c = \alpha \cdot a$$

$$c = \beta \cdot b$$

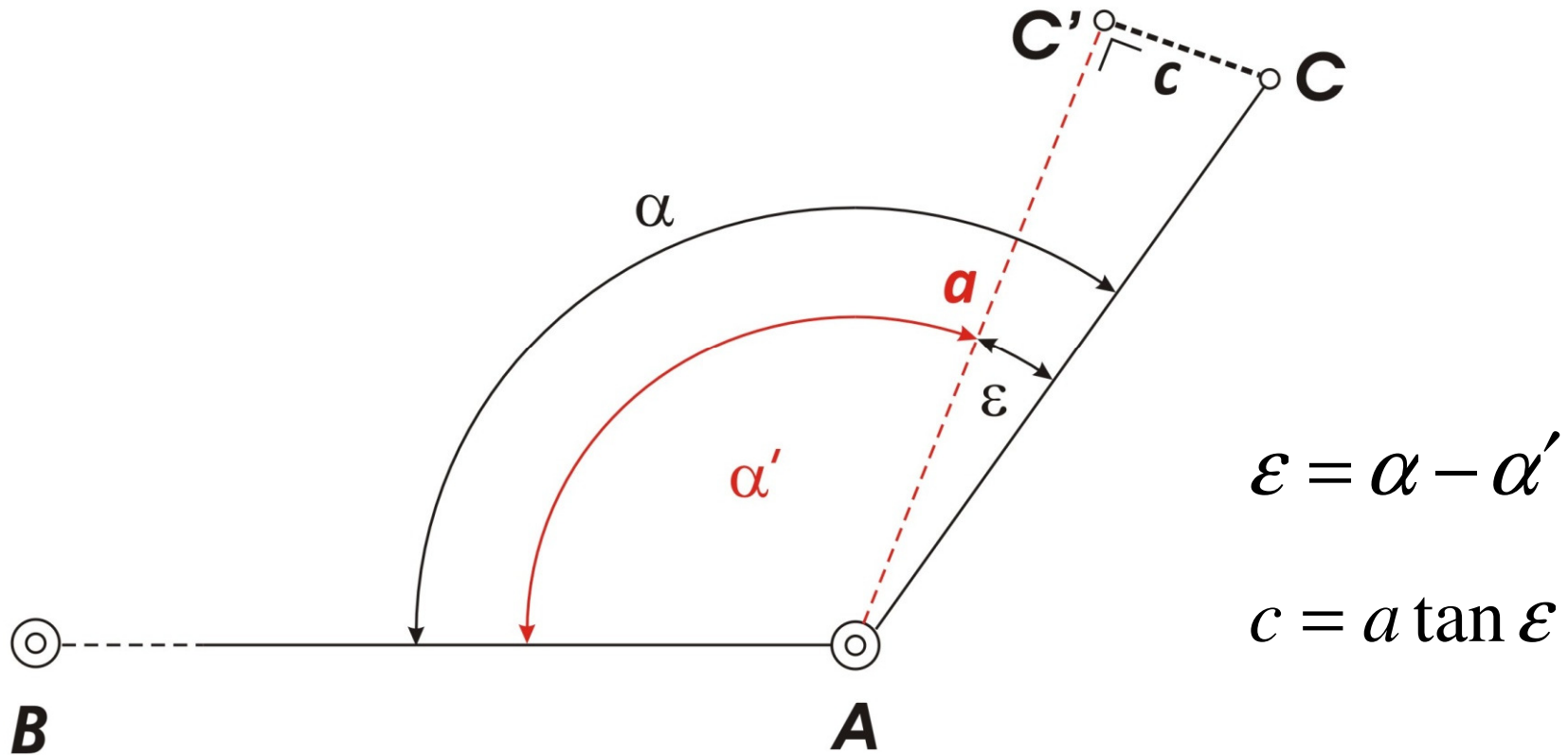
$$\varepsilon = \alpha + \beta$$



$$c = \frac{ab}{a+b} \cdot \frac{\varepsilon''}{\rho''}$$



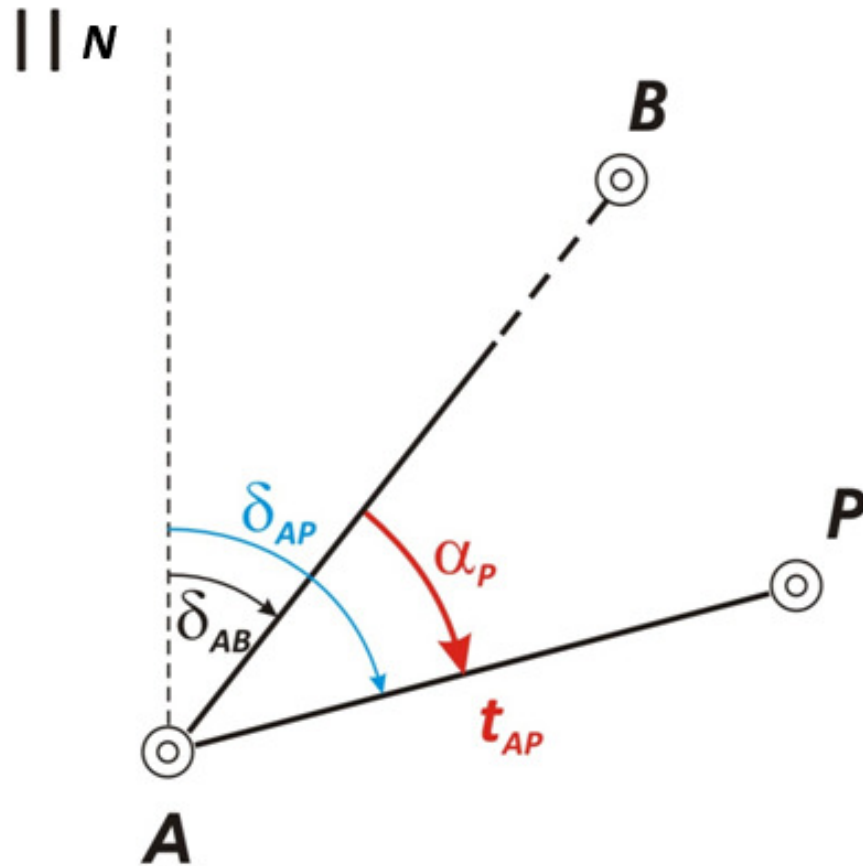
# Setting out horizontal angles



**Compute  $\varepsilon$  and measure the distance  $a$ .**  
**The linear correction  $c$  can be computed using  $\varepsilon$  and  $a$ .**



# Setting out with polar coordinates (radiation)



Given:  $A$ ,  $B$  and  $P$

2nd fundamental task of surveying:

$$\delta_{AB}, \delta_{AP}, t_{AP}$$

$$\alpha_P = \delta_{AP} - \delta_{AB}$$

# Setting out points with given elevation

