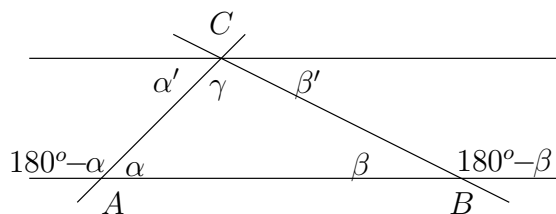


Assignment 2

Oral questions

- 2.4/12
- Complete the following proof of the theorem stating that the sum of the angles of a triangle ABC is 180° . We draw parallel line to AB through C and use the notation introduced in the picture.



Applying Euclid's fifth postulate to the line AC and the angles $180^\circ - \alpha$ and α' yields $180^\circ - \alpha + \alpha' \geq 180^\circ$. As a consequence we must have $\alpha' \geq \alpha$. Similarly, applying Euclid's fifth postulate to the line BC and the angles $180^\circ - \beta$ and β' yields $180^\circ - \beta + \beta' \geq 180^\circ$, and so $\beta' \geq \beta$. Hence we obtain

$$\alpha + \beta + \gamma \leq \alpha' + \beta' + \gamma \leq 180^\circ.$$

Use Euclid's fifth postulate directly in two more situations to show that $\alpha + \beta + \gamma$ is also greater than equal to 180° .

Questions to be answered in writing

- 2.2/4
- 2.3/6