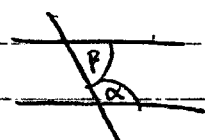


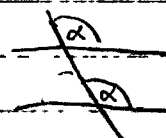
9/16/19

Last Time:

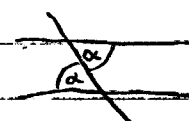


$$\alpha + \beta = \pi$$

Equivalently

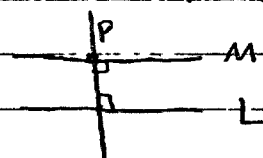


or



"alternate angles"

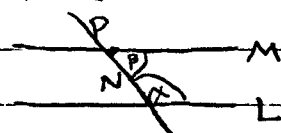
Last time: Proved existence in "Playfair's Axiom" but not uniqueness.



Claim: M is parallel to L  
used " $\alpha + \beta = \pi$ "  $\Rightarrow$  L & M parallel

Draw any line N through P, intersecting L.

Remains to show the line M through P, & parallel to L is unique.

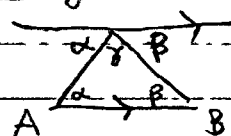


Suppose given M parallel to L through P.

Then must have  $\alpha + \beta = \pi$ , i.e.  $\beta = \pi - \alpha$

- there's only one possibility for M (line, through P, making angle  $\pi - \alpha$  w/ N)

Angle sum of a triangle



Claim:  $\alpha + \beta + \gamma = \pi$  by alternate angles.  $\blacksquare$

$\rightarrow$  doesn't work on spherical geometry

- Worked on worksheet for the rest of class, which we handed in.