Proposition XI.7

If two straight lines are parallel and points are taken at random on each of them, then the straight line joining the points is in the same plane with the parallel straight lines.

Proof. We proceed by contradiction. Let $AB, CD$ be two parallel straight lines. Let $E, F$ be two points taken from line
$AB, CD$ respectively. Suppose for a contradiction, the straight line joining $E, F$ is not in the same plane $AB, CD$ lives in. Let the line be in a more elevated plane as $EGF$.

Let $EF$ be the intersection of plane $ABCD$ and plane induced by $EGF$. Then, $EF, EGF$ will enclosed an area, which is impossible. Therefore, the straight line joining $E, F$ must be in the same plane through $AB, CD$. $\square$