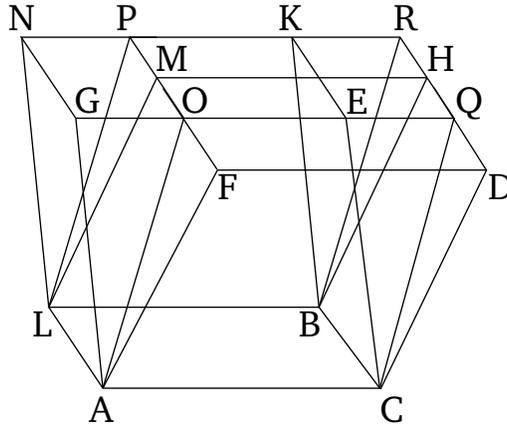


# Book 11

## Proposition 30

Parallelepiped solids which are on the same base, and (have) the same height, and in which the (ends of the straight-lines) standing up are not on the same straight-lines, are equal to one another.



Let the parallelepiped solids  $CM$  and  $CN$  be on the same base,  $AB$ , and (have) the same height, and let the (ends of the straight-lines) standing up in them,  $AF$ ,  $AG$ ,  $LM$ ,  $LN$ ,  $CD$ ,  $CE$ ,  $BH$ , and  $BK$ , not be on the same straight-lines. I say that the solid  $CM$  is equal to the solid  $CN$ .

For let  $NK$  and  $DH$  have been produced, and let them have joined one another at  $R$ . And, further, let  $FM$  and  $GE$  have been produced to  $P$  and  $Q$  (respectively). And let  $AO$ ,  $LP$ ,  $CQ$ , and  $BR$  have been joined. So, solid  $CM$ , whose base (is) parallelogram  $ACBL$ , and opposite (face)  $FDHM$ , is equal to solid  $CP$ , whose base (is) parallelogram  $ACBL$ , and opposite (face)  $OQRP$ . For they are on the same base,  $ACBL$ , and (have) the same height, and the (ends of the straight-lines) stand-

ing up in them,  $AF$ ,  $AO$ ,  $LM$ ,  $LP$ ,  $CD$ ,  $CQ$ ,  $BH$ , and  $BR$ , are on the same straight-lines,  $FP$  and  $DR$  [Prop. 11.29]. But, solid  $CP$ , whose base is parallelogram  $ACBL$ , and opposite (face)  $OQRP$ , is equal to solid  $CN$ , whose base (is) parallelogram  $ACBL$ , and opposite (face)  $GEKN$ . For, again, they are on the same base,  $ACBL$ , and (have) the same height, and the (ends of the straight-lines) standing up in them,  $AG$ ,  $AO$ ,  $CE$ ,  $CQ$ ,  $LN$ ,  $LP$ ,  $BK$ , and  $BR$ , are on the same straight-lines,  $GQ$  and  $NR$  [Prop. 11.29]. Hence, solid  $CM$  is also equal to solid  $CN$ .

Thus, parallelepiped solids (which are) on the same base, and (have) the same height, and in which the (ends of the straight-lines) standing up are not on the same straight-lines, are equal to one another. (Which is) the very thing it was required to show.