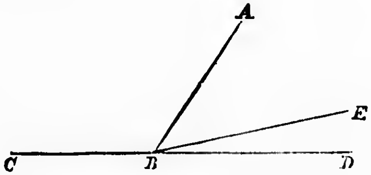
Proposition XIV. Theorem.

If, at a point in a straight line, two other straight lines, upon the opposite sides of it, make the adjacent angles together equal to two right angles, these two straight lines must be in one and the same straight line.



At the pt. *B* in the st. line *AB* let the st. lines *BC, BD*, on opposite sides of *AB*, make ∠ s *ABC, ABD* together = two rt. angles.

Then BD must be in the same st. line with BC.

For if not, let *BE* be in the same st. line with *BC*.

Then ∠ s *ABC, ABE* together = two rt. ∠ s. I. 13.

And ∠ s *ABC, ABD* together = two rt. ∠ s. Hyp.

∴ sum of ∠ s *ABC, ABE* = sum of ∠ s *ABC, ABD*.

Take away from each of these equals the ∠ *ABC*;

then ∠ *ABE* = ∠ *ABD*, Ax. 3.

that is, the less = the greater; which is impossible,

∴ *BE* is not in the same st. line with *BC*.

Similarly it may be shewn that no other line but *BD* is in the same st. line with *BC*.

∴ *BD* is in the same st. line with *BC*.

Q. E. D.

Ex. Shew the necessity of the words *the opposite sides* in the enunciation.