

16. Therefore, KF is parallel to ML. (*Prop. 30, Book I.*)
 17. And KM, FL are parallels. (*Construction 2, 3.*)
 18. Wherefore KFLM is a parallelogram. (*Def. 35, Note.*)
 19. And because the triangle ABD is equal to the parallelogram HF, and the triangle DBC equal to the parallelogram GM. (*Construction 2, 3.*)

20. Therefore, the whole rectilineal figure ABCD is equal to the whole parallelogram KFLM. (*Axiom 2.*)

CONCLUSION.—Therefore, the parallelogram KFLM has been described equal to the given rectilineal figure ABCD, having the angle FKM equal to the given angle D. Which was to be done.

COROLLARY.—From this it is manifest how to a given straight line to apply a parallelogram which shall have an angle equal to a given rectilineal angle, and shall be equal to a given rectilineal figure, viz., by applying to the given straight line a parallelogram equal to the first triangle ABD, and having an angle equal to the given angle. (*Prop. 44, Book I.*)

PROPOSITION 46.—PROBLEM.

To describe a square upon a given straight line.

GIVEN.—Let AB be the given straight line.

SOUGHT.—It is required to describe a square upon AB.

CONSTRUCTION.—1. From the point A draw AC at right angles to AB. (*Prop 11, Book I.*)

2. And make AD equal to AB. (*Prop. 3, Book I.*)

3. Through the point D, draw DE parallel to AB. (*Prop. 31, Book I.*)

4. Through the point B, draw BE parallel to AD. (*Proposition 31, Book I.*) ADEB is a parallelogram. (*Def. 35, Note.*)

PROOF.—1. Because ADEB is a parallelogram (*Construction 3, 4*), therefore, AB is equal to DE, and AD equal to BE. (*Prop. 34, Book I.*)

2. But BA is equal to AD. (*Construction 2.*)

3. Therefore, the four straight lines BA, AD, DE, EB are equal to one another. (*Axiom 1.*)

4. And the parallelogram ADEB is, therefore, equilateral.

5. Because the straight line AD meets the parallels AB,

