

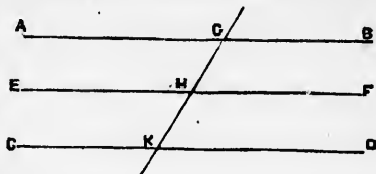
2. Again, because the straight line GK cuts the parallel straight lines EF, CD, the angle GHF is equal to the angle GKD. (*Prop. 29, Book I.*)

3. And it was shown that the angle AGK (or AGH) is equal to the angle GHF. (*Demonstration 1.*)

4. Therefore the angle AGK is equal to the angle GKD, (*Axiom 1*), and they are alternate angles.

5. Therefore the straight line AB is parallel to the straight line CD. (*Prop. 27, Book I.*)

CONCLUSION.—Wherefore, straight lines, &c. (*See Enunciation.*) Which was to be shewn.

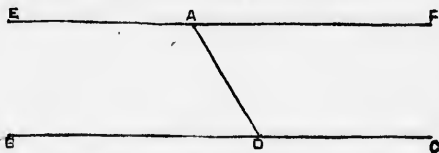


PROPOSITION 31.—PROBLEM.

To draw a straight line through a given point, parallel to a given straight line.

GIVEN.—Let A be the given point, and BC the given straight line.

SOUGHT.—It is required to draw a straight line through the point A, parallel to the straight line, BC.



CONSTRUCTION.—1. In BC take any point D.

2. Join AD.

3. At the point A, in the straight line AD, make the angle DAE equal to the angle ADC. (*Prop. 23, Book I.*)

4. Produce the straight line EA to F, EF shall be parallel to BC.

PROOF.—1. Because the straight line AD meets the two straight lines BC, EF, the alternate angles EAD, ADC, are equal to one another.

2. Therefore EF is parallel to BC. (*Prop. 27, Book I.*)

Co
throu
line,

If a s
to th
ang

HY
sides,

SEQ
to the

2. A
ABC,

CON
to AB.

DEMO
AC me
(*Prop. 2*)

2. Ap
them, t
opposite

3. Bu
BAC.

4. Th
the angle
posite a

5. To

6. Th
CBA, B

7. Bu
angles.

8. Th
to two ri