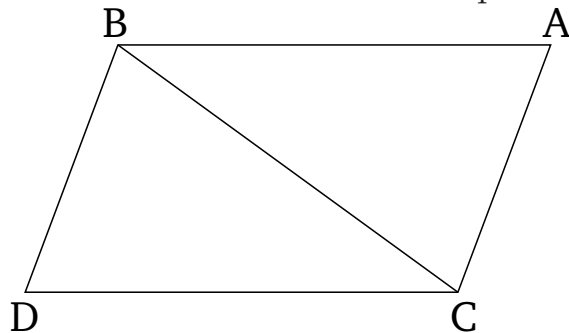


Book 1

Proposition 33

Straight-lines joining equal and parallel (straight-lines) on the same sides are themselves also equal and parallel.



Let AB and CD be equal and parallel (straight-lines), and let the straight-lines AC and BD join them on the same sides. I say that AC and BD are also equal and parallel.

Let BC have been joined. And since AB is parallel to CD , and BC has fallen across them, the alternate angles ABC and BCD are equal to one another [Prop. 1.29]. And since AB is equal to CD , and BC is common, the two (straight-lines) AB , BC are equal to the two (straight-lines) DC , CB . And the angle ABC is equal to the angle BCD . Thus, the base AC is equal to the base BD , and triangle ABC is equal to triangle DCB , and the remaining angles will be equal to the corresponding remaining angles subtended by the equal sides [Prop. 1.4]. Thus, angle ACB is equal to CBD . Also, since the straight-line BC , (in) falling across the two straight-lines AC and BD , has made the alternate angles (ACB and CBD) equal to one another, AC is

thus parallel to BD [Prop. 1.27]. And (AC) was also shown (to be) equal to (BD) .

Thus, straight-lines joining equal and parallel (straight-lines) on the same sides are themselves also equal and parallel. (Which is) the very thing it was required to show.