

## Book 9

### Proposition 22

If any multitude whatsoever of odd numbers is added together, and the multitude of them is even, then the whole will be even.



For let any even multitude whatsoever of odd numbers,  $AB$ ,  $BC$ ,  $CD$ ,  $DE$ , lie together. I say that the whole,  $AE$ , is even.

For since everyone of  $AB$ ,  $BC$ ,  $CD$ ,  $DE$  is odd then, a unit being subtracted from each, everyone of the remainders will be (made) even [Def. 7.7]. And hence the sum of them will be even [Prop. 9.21]. And the multitude of the units is even. Thus, the whole  $AE$  is also even [Prop. 9.21]. (Which is) the very thing it was required to show.