Given a polygon $ABCD$ and an angle $\angle E$:
To construct a $\square$ such that $\text{Area}(\square) = \text{Area}(ABCD)$.
Note: For now we are only going to do 4 sides.

**Construction:**
1: Connect $DB$. [post. 1]  
2: Construct $\square FKHG$ such that $\angle K = \angle E$ and $\text{Area}(\square FKHG) = \text{Area}(\triangle ADB)$. [1.42]  
3: Given our constructed $GH$ and $\angle E$, construct a $\square GHML$. [1.44]  
4: Connect FL, KM [post. 1]  

**Claim:** Polygon $FKLM$ is the desired polygon.
Proof:
First we want to show points $K, H, M$ are colinear (i.e. lie on the same straight line).
Since $FK \parallel GH$, $\angle KHG + \angle FKH = \downarrow\uparrow$ [c.n. 1]
$\angle K = \angle GHM = \downarrow\uparrow$ [c.n. 2]
∴ Points $K, H, M$ are on the same straight line [1.14]

Similarly we can prove points $F, G$ and $L$ are on the same straight line.
Now we want to show $FKML$ is a parallelogram.
By construction, $FK \parallel GH \parallel LM$ [c.n. 1, 1.30]
∴ $KM \parallel FL$ [1.33]
Hence $FKML$ is a parallelogram.

Since $\text{Area}(\square FGHK) = \text{Area}(\triangle ADB)$ and $\text{Area}(\square GHML) = \text{Area}(\triangle CDB)$;
$\text{Area}(\square FLMK) = \text{Area}(ABCD)$ [c.n. 2].
Q.F.D.

Discussion:
This proposition can be extended to polygons with more than 4 sides. To divide a convex polygon with more than 4 sides into triangles, we can take any non-adjacent vertices and cut through the polygon by drawing a line between those points. From the definition of “convex”, any such line will be entirely contained inside the polygon. Doing this repeatedly lets us divide any convex polygon into triangles, which we can then use to construct a parallelogram of equal area.

This proposition lets us measure and compare areas of polygons. By choosing $\angle E$ to be a right angle, we can take an arbitrary polygon and turn it into a rectangle of equal area.