**Squaring a Rectangle**  
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**Goal:** to construct a square with the same area as a given rectangle

**Problem**

Given a rectangle with sides $a$ and $b$, construct a square with the same area.

**Solution**

*Given rectangle with sides $a$ and $b*  
*Area = ab*  
*We want to construct a square with the same area*
Construct an arc using length $b$ as radius such that it intersects the extended segment $a$ at point $E$.

Construct midpoint of $AE$ at $O$ and then construct circle center $O$ radius $OA$. 
Extend line through segment BE to intersect circle O at points F and G

Construct square using BF as a side. Now BF is the geometric mean of a and b by construction, that is: $BF = \sqrt{ab}$

So the square BFHI is the same area as the rectangle ABCD.

Area $DABC = 22.90$ cm$^2$

Area $BFHI = 22.90$ cm$^2$