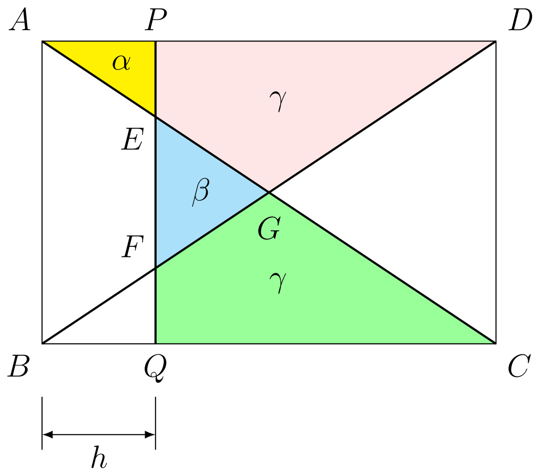

The area is invariant under the linear mapping that shears a rectangle into a parallelogram, so we might as well restrict the analysis to a rectangle, as shown above.

Let's write and a and b for the rectangle's width and height, h for the length of BQ, and α, β, γ for the areas of the yellow, blue, and green regions. The area of the pink region is also γ.

The length of PE is $\frac{b}{a}h$, and therefore

$$\alpha = \frac{b}{2a}h^2. \qquad \text{(eq1)}$$

The triangles ABG and EFG are similar, therefore their areas are proportional to the squares of their heights. The area of ABG is $ab/4$, and therefore

$$\beta = \frac{ab}{4}\left(\frac{\frac{a}{2}-h}{\frac{a}{2}}\right)^2. \qquad \text{(eq2)}$$

The area of the green (or pink) region is

$$\gamma = \frac{1}{4}ab - \alpha. \qquad \text{(eq3)}$$

We solve this set of three equations for a, b, and γ. We get

$$\gamma = \alpha + \beta \pm 2\sqrt{2\alpha\beta},$$

which happens not to depend on h. We plug in $\alpha = 2$, $\beta = 9$ and obtain $\gamma = -1$ and $\gamma = 23$. So the answer is 23.