Abstract: The ‘harmonic measure distribution function’ of a planar region relates the shape of the region to the behaviour of Brownian motion in the region. This function $h(r)$ specifies the probability that a Brownian particle first exits the region through that part of the boundary which lies within distance $r$ of a fixed basepoint. Which functions $h(r)$ can arise in this way? For instance, can we construct a region whose $h(r)$ is a step function? We also look at the connections between convergence of regions and convergence of their distribution functions.