There are many different ways that one can define fractal dimension. The three of interest in this talk will be Hausdorff dimension, lower box dimension, and upper box dimension. It is well known that these notions of dimension can all be different for general sets, but they coincide for many classes of fractal sets such as self-similar sets. This raises the question of what conditions one needs to assume about an iterated function system (IFS) to be sure that all dimensions will coincide for the resulting fractal? We will survey some results and open problems related to this broad question in three specific settings, namely affine IFSs, bi-Lipschitz IFSs, and infinite conformal IFSs. This talk is based on a joint project with Simon Baker, De-Jun Feng, Chun-Kit Lai and Ying Xiong, and another paper with Alex Rutar.