Our goal is to study Pascal-Sierpinski gaskets, which are certain fractal sets defined in terms of divisibility of entries in Pascal’s triangle. The principal tool is a “carry rule” for the addition of the base-$q$ representation of coordinates of points in the unit square. In the case that $q = p$ is prime, we connect the carry rule to the power of $p$ appearing in the prime factorization of binomial coefficients. We use the carry rule to define a family of fractal subsets $B_{qr}$ of the unit square, and we show that when $q = p$ is prime, $B_{qr}$ coincides with the Pascal-Sierpinski gasket corresponding to $N = p^r$. We go on to describe $B_{qr}$ as the limit of an iterated function system of “partial similarities”, and we determine its Hausdorff dimension. We consider also the corresponding fractal sets in higher-dimensional Euclidean space.