Consider the following two classical problems that superficially seem quite unrelated:

1. Given a prime $p$, to what power does 2 divide the class number of $\mathbb{Z}[\sqrt{-p}]$?

2. What primes $p$ occur as area of a right angled triangle with rational length sides?

The first question obviously leads to a subdivision of the primes into infinitely many subset and, with a little extra work, so does the second. Classical results establish that the first few subdivisions agree between the two. We will look at the next step and point out some of the similarities between the two questions.