1145-11-2026 **Olivia Beckwith*** (obeckwith@gmail.com), Howard House, Queen's Ave, Bristol, BS8 1SD, United Kingdom. *Indivisibility and divisibility of class numbers of imaginary quadratic fields.*

Questions about the structure of ideal class groups are notoriously difficult and arise in the study of elliptic curves and L-functions. For any prime $\ell > 3$, the strongest lower bounds for the number of negative square-free D down to $-X$ for which the class group of $\mathbb{Q}(\sqrt{D})$ has trivial (or non-trivial) ℓ-torsion are due to Kohnen and Ono (Soundararajan). I will discuss recent refinements of these classic results in which we consider the negative square-free values D such that a finite set of rational primes factor (i.e. split, remain inert, or ramify) in $\mathbb{Q}(\sqrt{D})$ in a given prescribed way. We prove a lower bound for the number of such D down to $-X$ for which the class number of $\mathbb{Q}(\sqrt{D})$ is indivisible (or divisible) by ℓ. This bound is of the same order of magnitude as Kohnen and Ono's (Soundararajan's) results. For the indivisibility case, we rely on a result of Wiles establishing the existence of imaginary quadratic fields with trivial ℓ-torsion in their class groups satisfying almost a given finite set of local conditions, and a result of Zagier which says that class numbers of imaginary quadratic fields are the Fourier coefficients of a harmonic Maass form. (Received September 24, 2018)