1135-05-2883 **Sarah Peluse*** (speluse@stanford.edu). *Finding three-term progressions in subsets.*

How big can a subset of $\{1, 2, \ldots, N\}$ or an abelian group be if it does not contain any three-term progression $x, x+y, x+2y$ with $y \neq 0$? How big can a subset of the alternating group be if it does not contain any three-term progression x, xy, xy^2 with y not equal to the identity permutation? How big can a subset of $\{1, 2, \ldots, N\}$ or $\mathbb{F}_q$ be if it does not contain any three-term progression $x, x + y^{1060}, x + y^{31} + y^{26} + y^{23} + y^{14} + y^{10}$ with $y \neq 0$? In this talk, I will discuss the relationship between these three questions, the techniques used in trying to answer them, and the different challenges encountered when we consider longer progressions. (Received September 26, 2017)