The Common Core State Standards, launched in 2010 and now adopted by forty-four states, include a set of standards for mathematical practice which may seem second nature to mathematicians. We will talk about how these provide a unique opportunity for mathematicians and educators to design professional development around the standards, i.e. to create mathematical experiences in which the standards arise naturally. In particular, we will discuss an example of a four-day seminar on geometric transformation and complex arithmetic for 7-12 grade in-service teachers which was designed and led by a team of middle and high school teachers and university mathematicians from the Focus on Math Math-Science Partnership in Boston. (Received September 22, 2011)