What is the lowest possible Picard number for a K3 surface which admits a holomorphic involution and a commuting anti-holomorphic involution? What if we ask for our K3 to be a quartic or higher degree surface? These questions are motivated by gauge theory in higher dimensions, and I will briefly mention the connection between the two fields, and briefly explain why the answer to the first question is "1". Most time will be spent on explaining why the answer is "2" for the second question. I will also point out where we used computer aid for our proof. This is joined work with Dino Festi and Wim Nijgh.