Some interesting geometric facts about eclipsing binaries (see if you can prove these):

The probability of a binary being properly oriented in space for us to observe it as an eclipsing system becomes progressively smaller as the distance between the two stars increases. It turns out that no visual binary nor astrometric binary has ever been seen to eclipse, that is, all known eclipsing binaries are composite spectrum binaries. It is also true that the probability that a system will be seen as a partially eclipsing system rather than a totally eclipsing system is greater if the two stars are about the same size, rather than of widely different sizes. If two stars are exactly the same size, the probability that they will be observed as a totally eclipsing system is virtually zero while if one star is much, much larger than the other star, the probability they will be be seen as a partially eclipsing system rather than a totally eclipsing system is virtually zero.