## Problems of the Week 1

Always show your work to receive credit (NO WORK=NO CREDIT)

1. Four equal charges $q$ are placed at the corners of a square. At the center of the square, there exists a charge of opposite sign and magnitude Q . What is the value of charge Q , such that the force on each of the four charges $q$ is zero?
A. $Q=0.71 q$
B. $Q=0.96 q$
C. $Q=1.35 q$
D. $Q=1.73 q$
E. $Q=2.0 q$
2. Two protons and one electron are located on the vertices of an equilateral triangle. Describe in words and with a figure the locations where a fourth charge be placed so that the force on it is equal to zero? Does the sign of the fourth charge matter?
