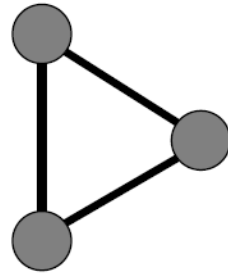
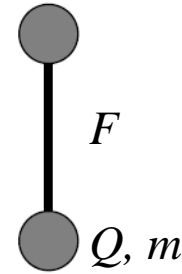


# EE Qual 13, Engineering Phys.

## Shan Wang

You are given a large collection of identical balls and strings. All the balls have the same electric charge,  $Q$ , and mass,  $m$ . The lengths of the strings are initially fixed at  $l$ . When two balls are placed at the ends of one string, the tensile force in the string is  $F$ . Next, three balls and three strings are placed at the vertexes and edges of an equilateral triangle.



- What is the tensile force in each string in the latter case? [2 pt]
- If the strings are ideally elastic with a spring constant of  $k$  and an original length of  $l$ . What is the new size of the triangle at equilibrium? [3 pt]
- There can be many resonance modes for the triangle in (b). Find the frequency of one of the any resonance modes. [5 pt]