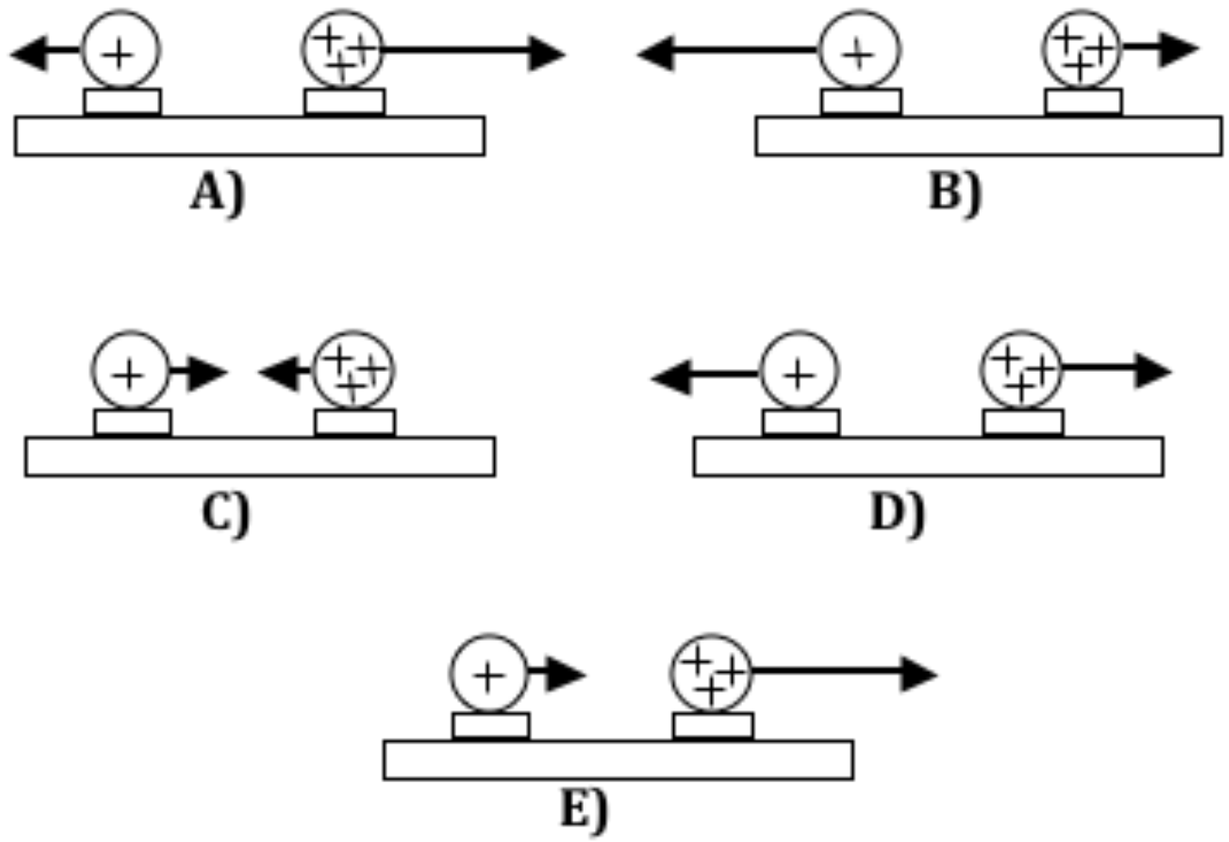
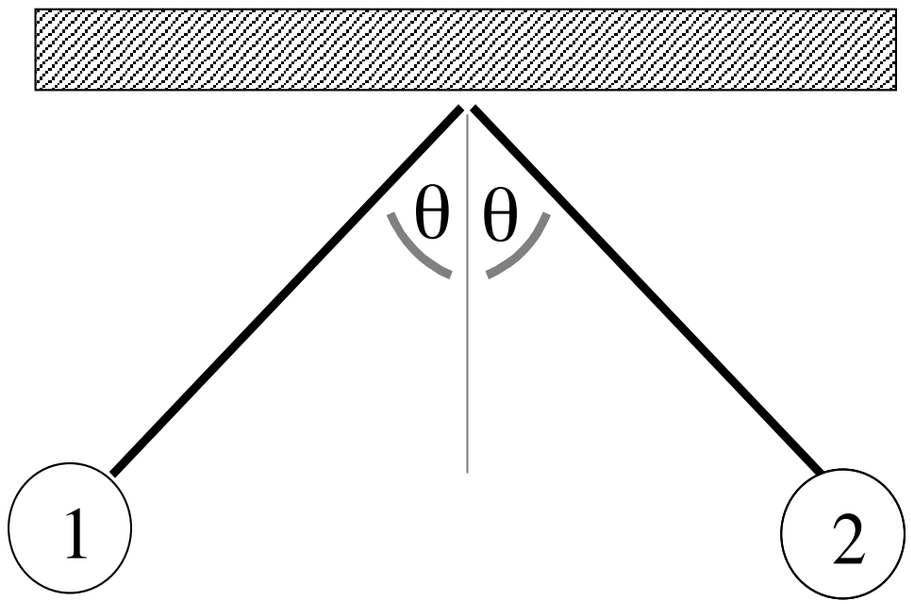
Two uniformly charge spheres are attached to frictionless pucks on an air table. The charge on sphere 2 is three times the charge on sphere 1. Which force diagram correctly shows the magnitude and direction of the electrostatic forces on the two spheres?



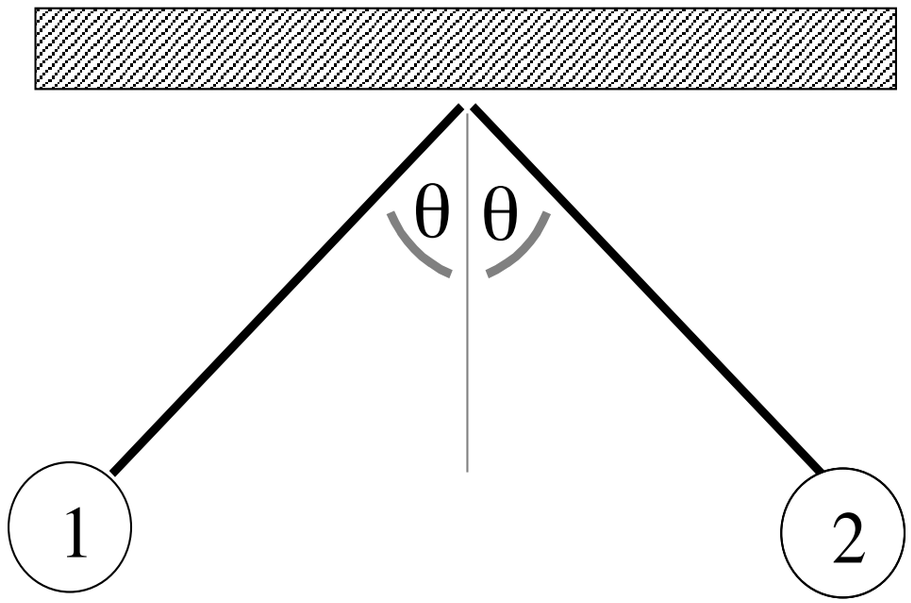
Two equal mass pith balls are charged, and hang on strings as shown:



What can we conclude about the signs of Q_1 and Q_2?

1: One is "+", the other is "-"
2: Both are "+"
3: Both are "-"
4: Both must be the same charge (but we can't tell if they're both "+", or both "-")

Two equal mass pith balls are charged, and hang on strings as shown:



What can you say about the magnitudes of the charges Q1 and Q2 on the two balls?

1: Q_1 must equal Q_2

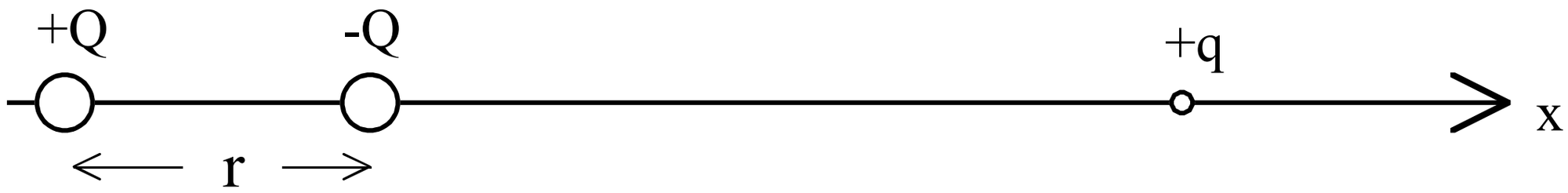
2: Q_1 cannot equal Q_2

3: Can't decide/not enough information.

A hydrogen atom is composed of a nucleus containing a single proton, about which a single electron orbits. The electric force between the two particles is 2.3×10^{39} greater than the gravitational force! If we can adjust the distance between the two particles, can we find a separation at which the electric and gravitational forces are equal?

1. Yes, we must move the particles farther apart.
2. Yes, we must move the particles closer together.
3. no, at any distance

An electric dipole (+Q and -Q separated by a distance "r") is placed along the x-axis as



A positive test charge +q is placed to the right of a dipole. The test charge feels a force that is

1: zero.
2: toward the right.
3: toward the left.