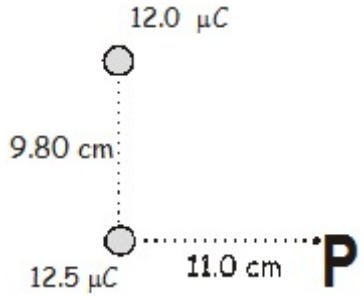
Electrostatics

AP Physics – Mr. Hall

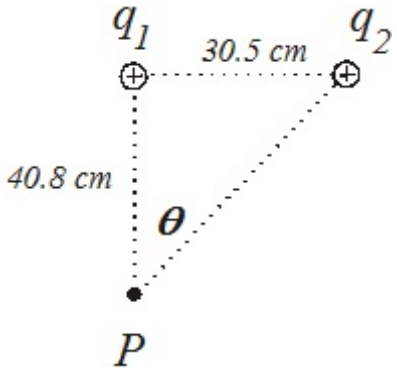
WORKSHEET #5

Name: _____

1. What is the voltage at point P which is close up to the two charges as shown?



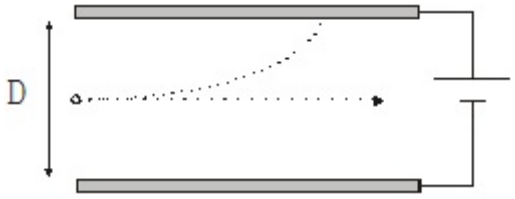
2. Two charges are situated near point P. The angle $\boldsymbol{\theta}$ is 29.0°. $\boldsymbol{q_1}$ = 1.35 μC. The potential difference at point ***P*** is 6.75×10^4 V. Find the charge $\boldsymbol{q_2}$.



3. An electric field has a value of 9.50×10^6 N/C. A positive test charge of 22.5 μC is placed in the field. What force does the charge experience?

4. Through what potential difference would an electron need to accelerate to achieve a velocity of 1.00×10^7 m/s?

5. An electron is fired into the midpoint of a field between two charged plates. The initial velocity of the electron is 3.6×10^6 m/s. The plates are a distance of 1.60 mm apart. The potential difference for the plates is 120.0 V. Determine where the electron will hit on the upper plate.



6. Two masses are set up as shown. The angle θ that m_1 makes with the vertical is 38.0°. m_1 is 552 g, m_2 is 455 g. m_1 is released, swings down and collides with the other mass. At the point of impact, the string holding up m_1 is vertical and it hits the other ball head on. m_1 ends up with a velocity to the right of 0.500 m/s. Find: (a) the potential energy of m_1 relative to the top of the table, (b) the speed of m_2 after the collision, (c) the distance x that the ball travels before it hits the deck, and (d) the kinetic energy of m_2 just before it hits the deck.