Electric Fields #2

1. A force of 2.4 N is exerted on a +1.8 μC charge in a downward direction. What is the magnitude and direction of the electric field at this point?

2. An electron in an electric field experiences a force of 8.0×10^{-16} N upwards. What is the magnitude and direction of the electric field at this point?

3. What is the magnitude of the force on an electron in an electric field of 600 N/C?

4. What is the acceleration of an electron in a 2200 N/C electric field?

5. What is the electric field strength at a point in space where a proton (m = 1.67×10^{-27} kg) experiences an acceleration of 7.6×10^4 m/s?

6. An electron (m = 9.1×10^{-31} kg) is accelerated in the uniform field E (E = 2.0×10^4 N/C) between two parallel charged plates. The separation of the plates is 1.5 cm. The electron is accelerated from rest near the negative plate and passes through a tiny hole in the positive plate (see diagram).
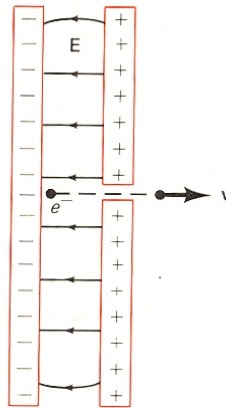
With what speed does it leave the hole?

Answers:
1. 1.3×10^6 N/C downwards
2. 5000 N/C downwards
3. 9.6×10^{-17} N
4. 3.87×10^{14} m/s²
5. 7.93×10^{-4} N/C
6. 1.03×10^7 m/s