**Physics 202 … Practice Problems … Electrostatics … PART A**

# Electric field created by an electrical point charge

1. A point charge of 6.40 x 10-12 C is located on the x-axis at 3.60 cm. What is the electric field, due to this point charge, at the origin?
2. A point charge of 6.40 x 10-12 C is located on the x-axis at 3.60 cm. What is the electric field, due to this point charge, at the point on the x-axis where x = 2.40 cm?

1. A point charge of -8.10 x 10-12 C is located on the y-axis at 0.540 cm. What is the electric field, due to this point charge, at the origin?
2. A point charge of -8.10 x 10-12 C is located on the y-axis at 0.540 cm. What is the electric field, due to this point charge, at the point on the y-axis where y = -0.240 cm?

1. A point charge of 6.40 x 10-12 C is located on the x-axis at 3.60 cm. What is the electric field, due to this point charge, at the point on the y-axis where y = 2.40 cm?
2. A point charge of -8.10 x 10-12 C is located on the y-axis at 0.540 cm. What is the electric field, due to this point charge, at the point on the x-axis where x = -0.240 cm?

# Electrical force between two electrical point charges

1. A point charge of 3.25 x 10-9 C is located on the x-axis at 2.13 mm. A second charge is located on the x-axis at 1.12 mm. If the second charge is 5.34 x 10-9 C, what is the magnitude of the electrical force between the two charges?
2. A point charge of 3.25 x 10-9 C is located on the x-axis at 2.13 mm. A second charge is located on the y-axis at 1.12 mm. If the second charge is – 5.34 x 10-9 C, what is the magnitude of the electrical force between the two charges?

1. A point charge of 3.25 x 10-9 C is located on the x-axis at 2.13 mm. A second charge is located on the x-axis at 1.12 mm. If the second charge is 5.34 x 10-9 C, what is the electrical force that acts on the 3.25 x 10-9 C charge?
2. A point charge of 3.25 x 10-9 C is located on the x-axis at 2.13 mm. A second charge is located on the y-axis at

1.12 mm. If the second charge is – 5.34 x 10-9 C, what is the electrical force that acts on this second charge?

# Electrical charge in an external electric field

1. A particle with an electrical charge of 4.65 nC is placed in an external electric field of 24.3 N/C in the positive y-direction. What is the electrical force on the particle due to the external field?
2. A particle with an electrical charge of -32.5 C is placed in an external electric field. The particle feels an electrical force of 3.23 x 10-4 N in the negative x-direction. What is the magnitude and direction of the external field?

1. A particle with an electrical charge of 4.65 nC and a mass of 6.74 x 10-15 kg is placed in an external electric field. The particle is observed to accelerate to the left at 3.21 x 105 m/s2. What is the magnitude and direction of the external electric field?
2. A particle with an electrical charge of -2.14 C and a mass of 5.01 x 10-15 kg is placed in an external electric field. The particle is observed to accelerate at 8.41 x 106 m/s2 in the positive z-direction. What is the magnitude and direction of the external electric field?

# Electric dipole moment

1. An electric dipole consists of a +5.60 nC charge and a -5.60 nC charge separated by a distance of 4.30 x 10-6 m. What is the magnitude of the electric dipole moment?
2. An electric dipole consists of a +2.25 nC charge and a -2.25 nC charge separated by a distance of 1.50 x 10-6 m. What is the magnitude of the electric dipole moment?

1. An electric dipole consists of a +5.60 nC charge and a -5.60 nC charge separated by a distance of 4.30 x 10-6 m. The positive charge is located to the right of the negative charge. What is the electric dipole moment?
2. An electric dipole consists of a +2.25 nC charge and a -2.25 nC charge separated by a distance of 1.50 x 10-6 m. The negative charge is located above (y-direction) the positive charge. What is the electric dipole moment?

# Electric dipole moment in an external electric field

1. An electric dipole moment of 4.30 x 10-21 Cm î is placed in an external electric field of 2.84 x 106 N/C î. What is the torque that acts on this electric dipole moment?
2. An electric dipole moment of 4.30 x 10-21 Cm î is placed in an external electric field of 2.84 x 106 N/C ĵ. What is the torque that acts on this electric dipole moment?
3. An electric dipole moment of 4.30 x 10-21 Cm î is placed in an external electric field of (1.24 x 106 N/C) î – (1.86 x 106 N/C) ĵ. What is the torque that acts on this electric dipole moment?

1. An electric dipole moment of 4.30 x 10-21 Cm î is placed in an external electric field of 2.84 x 106 N/C î. What is the potential energy of this electric dipole moment?
2. An electric dipole moment of 4.30 x 10-21 Cm î is placed in an external electric field of 2.84 x 106 N/C ĵ. What is the potential energy of this electric dipole moment?
3. An electric dipole moment of 4.30 x 10-21 Cm î is placed in an external electric field of (1.24 x 106 N/C) î – (1.86 x 106 N/C) ĵ. What is the potential energy of this electric dipole moment?