1) A charge, $+Q$, is placed inside a balloon and the balloon is inflated. As the radius of the balloon r increases the number of field lines going through the surface of the balloon:

a. increases proportional to r^2
b. increases proportional to r
c. stays the same
d. decreases as $1/r$

2) The electric flux Φ_E is equivalent dimensionally to which of the following?

a. $N \times m^2/C$
b. N/C
c. $N \times m^2/C^2$
d. N/C^2

3) A closed surface contains the following point charges: 6 C, 4 C, –2 C, –4 C. The electric flux coming out of the surface is:

a. 16 C/ϵ_0
b. -16 C/ϵ_0
c. 4 C/ϵ_0
d. -4 C/ϵ_0

4) A spherical surface surrounds a point charge it its center. If the charge is doubled and if the radius of the surface is also doubled, what happens to the electric flux Φ_E out of the surface and the magnitude $|\vec{E}|$ of the electric field at the surface as a result of these doublings?

a. Φ_E and E do not change
b. Φ_E increases and E remains the same
c. Φ_E increases and E decreases
d. Φ_E increases and E increases