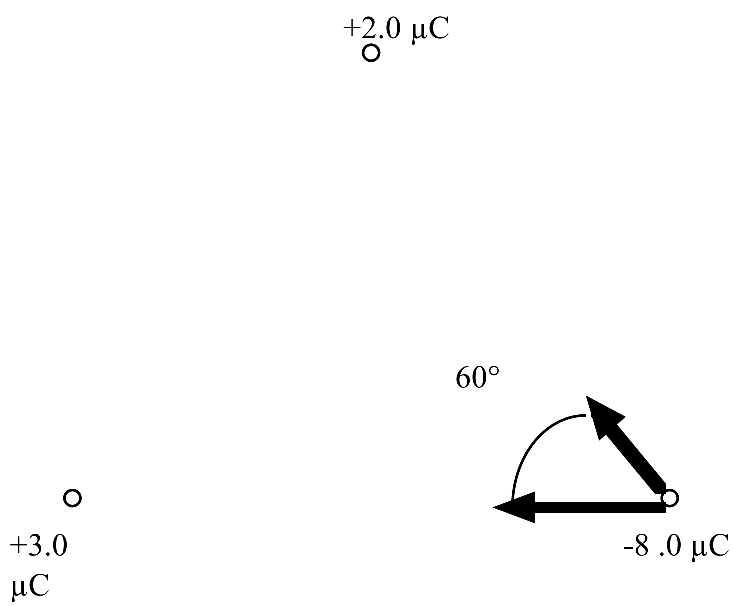
hhh.schaums.24.24_24.31

24.24 This is a vector addition problem. The negative charge will repel the other negative charge but the positive charges will attract the negative charge in the corner towards the center f the square. Be careful in determining what “r” is.



24.25.

24.26 set “r” for the distance between the +5.0 μC charge and the third charge (just call it q, it will cancel out anyway) to x. That makes the distance between the +7.0 μC charge and q equal to (100-x). Since the forces must cancel each other set them equal to each other.

$$\frac{kq(5\mu C)}{x^2} = \frac{kq(7\mu C)}{(100-x)^2}$$

This is a pretty common problem in physics books.

24.27 (a) Just use coulombs law

(b) When the balls are touched together the charge equalizes itself by distributing the *net* charge (-9 nC) n stands for *nano* (10^{-9}) between the two balls (so now they each have a charge of -4.5 nC. Which means they now repel each other. Now just apply coulomb's law again with the new charges and the new separation.

24.28 (a) F = Eq

(b) Now that you have solved for E, you can use it to determine the force the - 2.0 μC charge will experience.

24.29 $E = \frac{kQ}{r^2}$

I use upper case Q to represent the charge that is creating the field (of course both charges in the coulomb law create a field).