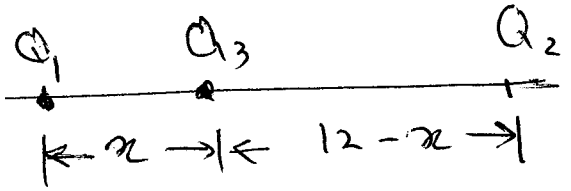
Quiz-06-Nov-2013	Name: solution Id#:	Number: Section: 15

Two point charges, $Q_1 = 1.0\ \mu C$ and $Q_2 = 2.0\ \mu C$, are separated by 12 cm. At what distance from charge Q_1 should a third charge Q_3 be placed, between Q_1 and Q_2, so that it stays stationary?



$$F_{31} = F_{32}$$

$$\frac{k Q_1 Q_3}{x^2} = \frac{k Q_2 Q_3}{(12-x)^2}$$

$$\frac{Q_1}{x^2} = \frac{Q_2}{(12-x)^2}$$

$$\frac{1}{x^2} = \frac{2}{(12-x)^2}$$

$$(12-x)^2 = 2x^2$$

$$12 - x = \sqrt{2}\,x$$

$$x = \frac{12}{1+\sqrt{2}} = 5.0\ cm$$

04 Sep	11 Sep	18 Sep	25 Sep	2 Oct	9 Oct	23 Oct	30 Oct	6 Nov	13 Nov	20 Nov	27 Nov	4 Dec	11 Dec	18 Dec