Static Electricity

2.

Electric Fields and Electric Forces

1. Three charges are located along the same axis as shown. Their charges are:

$QB = -8.0 \times 10^{-9} C$ $QC = +10. \times 10^{-8} C$ $-7 m$ $QC = -400 \text{ m}^{-1} C$ $FCA =$	$Q_A = +5.0 \times 10^{-8} C$ $Q_B = -8.0 \times 10^{-8} C$		B	ç
charge A: $F_{BA} = $ $F_{CA} = $ $F_{CB} = $ $F_{CB} = $ $F_{CB} = $ $F_{CB} = $ $F_{BC} = $ $F_{CB} = $ $F_{CA} = $ $F_{CA} = $ $F_{CA} = $ $F_{CB} = $	-2	-7an	2	14
Charge B: $F_{AB} = $, $F_{CB} = $, $F_{BC} = $, $F_{CB} = $, $F_{CA} = $, $F_{CB} = $		nd direction of the individ	ual forces exerted betw	veen the various
Charge C: $F_{AC} = $, $F_{BC} = $, $F_{CB} = $	Charge A : F _{BA} =		FCA =	<i>_</i>
b. Determine the net force on each charge. $\Sigma F_{A} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \underline{\qquad} \underline{\qquad} \Sigma F_{C} = \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} \Sigma F_{C} = \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad} \underline{\qquad}$	Charge B : F _{AB} =		FCB =	
$\Sigma F_{A} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \Sigma F_{C} = \underline{\qquad} \Sigma F_$	Charge C: F _{AC} =	/	FBC =	/
$\Sigma F_{A} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \Sigma F_{C} = \underline{\qquad} \Sigma F_$				
$\Sigma F_{A} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \Sigma F_{B} = \underline{\qquad} \Sigma F_{C} = \underline{\qquad} \Sigma F_$	b. Determine the net force on e	each charge.		
Three charges are located along the same axis as shown. Their charges are: $Q_A = -1.35 \ \mu C$ $Q_B = +2.35 \ \mu C$ $Q_C = -4.92 \ \mu C$ A A A A A A A A A A A A A		0	=	/
Three charges are located along the same axis as shown. Their charges are: $Q_A = -1.35 \ \mu C$ $Q_B = +2.35 \ \mu C$ $Q_C = -4.92 \ \mu C$ A A A A A A A A A A A A A				
$Q_{B} = +2.35 \ \mu C$ $Q_{C} = -4.92 \ \mu C$ A A B C A C A C A C A C A C	Three charges are located along		Their charges are:	
$f_{Mm} = 102 \mu c$ $f_{Mm} = 10 m$	$Q_{B} = +2.35 \mu C$	A	B	c
Charge A: FBA =	$Q_{\rm C} = -4.92 \ \mu C$	+()++++++	 10 cm	·····)···· 19 مىر
Charge A: FBA =		nd direction of the individ	ual forces exerted betv	veen the various
Charge B: $F_{AB} = $, $F_{CB} = $,			FCA =	
		/	-DC	/
	o. Determine the net force on e	each charge.		
o. Determine the net force on each charge.	<u></u> <i>E</i> FA =	,ΣFΒ		/
b. Determine the net force on each charge. $\Sigma F_A = $, $\Sigma F_B = $,	$\Sigma F_C =$			

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3. Charge A and charge B are fixed along the x-axis. Their locations and charges are shown below.

$Q_A = -22 \mu C$	A	B
$Q_B = -16 \mu C$		-
	0 cm	22 m

Determine the location at which a third charge (+15 μ C) must be placed in order for the net force on the third charge to be 0 N.

4. Charge A and charge B are fixed along the x-axis. Their locations and charges are shown below.

$Q_A = -12 \mu C$	A	B
$Q_{B} = +37 \mu C$		++++++++++++++++++
	lm	22 m

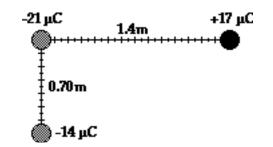
Determine the location along the x-axis at which a third charge (+23 μ C) must be placed in order for the net force on the third charge to be 0 N. **PSAYW**

5. Charge A and charge B are fixed along the x-axis. Their locations and charges are shown below.

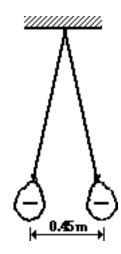
$Q_A = +14 \mu C$	۵	B
$Q_B = -21 \mu C$	<u></u>	-
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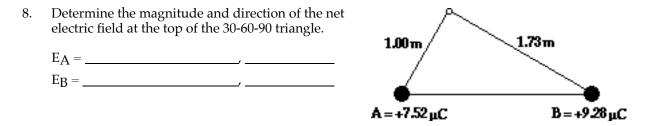
Determine the location along the x-axis at which the electric field is 0 N/C. PSAYW

6. Consider the configuration of three charges shown at the right. Determine the magnitude and direction of the resultant electric force upon the charge at the origin (upper left corner of triangle).



7. Two 1.4-gram balloons are charged in exactly the same manner with exactly the same type and amount of charge. They are suspended from the same point on the ceiling and hang from 1.7-m long strings in the manner shown at the right. Use this information to determine the charge on each balloon.





9. Three charges - A, B, and C - are placed at the corners of an equilateral triangle. The length of each side is 1.0 m. Determine the magnitude and direction of the net electric field at the midpoint location along the bottom side of the triangle. (First determine the E field created by each of the three sources; then add the E field vectors together.)

