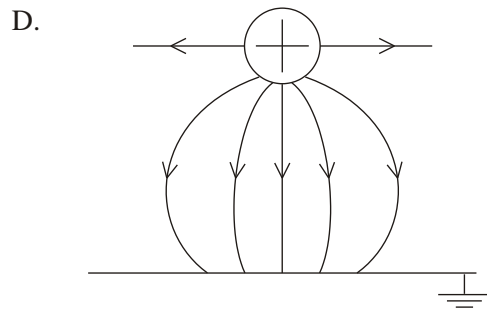
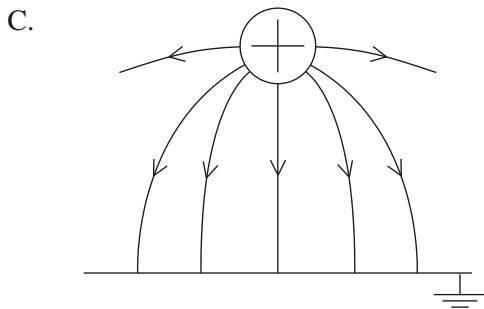
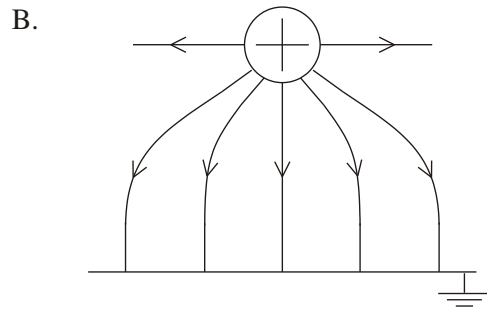
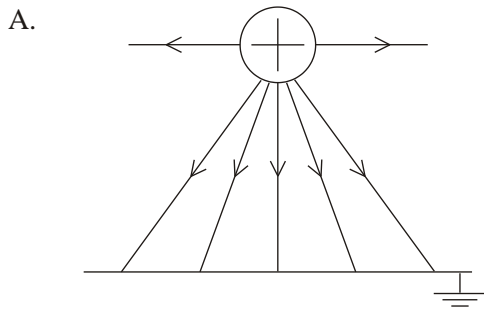


NAME: .....

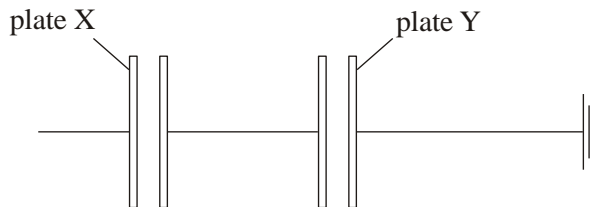
**PHYSICS**  
**ELECTROSTATICS II**

1. Which diagram below best represents the electric field pattern between a positively charged conducting sphere and an earthed metal plate?

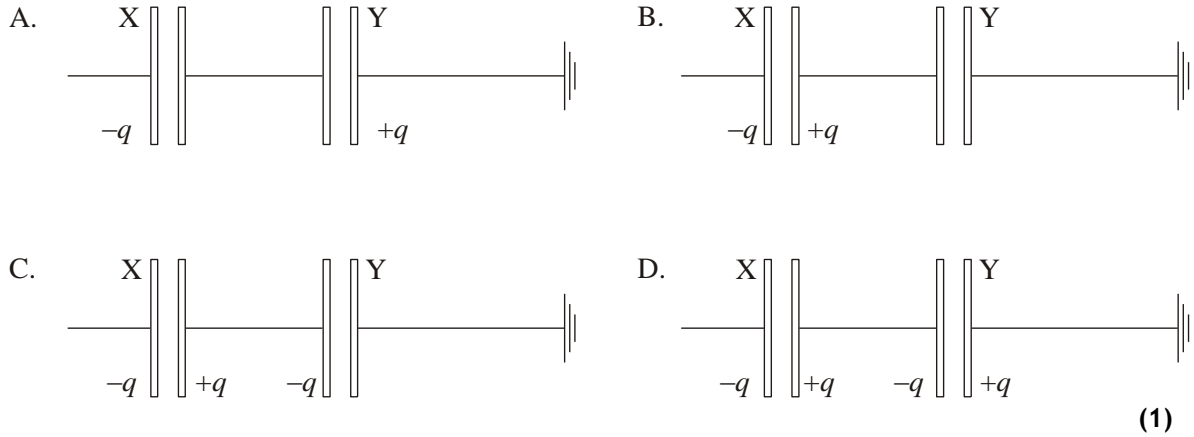


(1)

2. Two pairs of uncharged parallel plates are placed in a vacuum and are connected as shown.



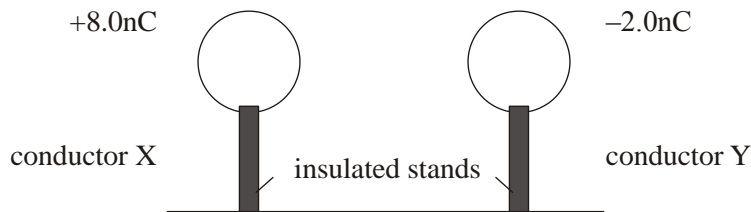
A negative charge of magnitude  $q$  is placed on plate X. Plate Y is connected to earth. Which **one** of the following diagrams shows the distribution of charge on the plates?



3. Which of the following is the correct value of the electronvolt, measured in SI Units?

- A.  $1.6 \times 10^{-19} \text{ N}$
- B.  $1.6 \times 10^{-19} \text{ J}$
- C.  $9.1 \times 10^{-31} \text{ N}$
- D.  $9.1 \times 10^{-31} \text{ J}$

4. Two identical spherical conductors X and Y are mounted on insulated stands. X carries a charge of  $+8.0 \text{ nC}$  and Y carries a charge of  $-2.0 \text{ nC}$ .



The two conductors are brought into contact and are then separated. Which of the following gives the charge on each conductor?

	Charge on X	Charge on Y
A.	0.0 nC	0.0 nC
B.	+8.0 nC	-2.0 nC
C.	+5.0 nC	+5.0 nC

D.	+3.0 nC	+3.0 nC
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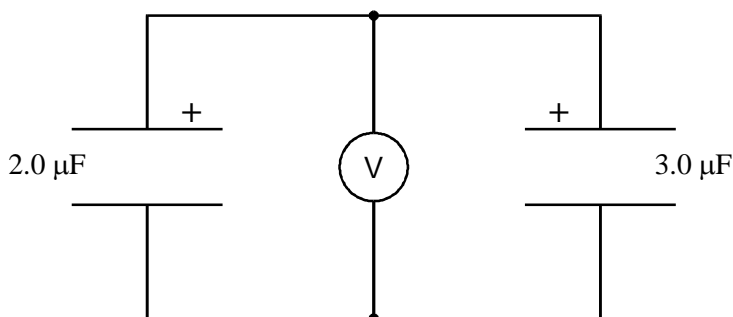
5. A  $2.0 \mu\text{F}$  capacitor is charged to a potential difference (p.d.) of 50 V and a  $3.0 \mu\text{F}$  capacitor is charged to a p.d. of 100 V.

Calculate the charge on the plates of each capacitor.  
Write your answers in the table below.

Capacitor	$2.0 \mu\text{F}$	$3.0 \mu\text{F}$
P.d.	50 V	100 V
Charge		

(2)

The capacitors are then joined together **in parallel** with their positive plates connected together.



What is the equivalent capacitance of this combination?

.....

Equivalent capacitance = .....  $\mu\text{F}$  (1)

[Total 3m]

6. A  $3.0 \text{ mF}$  and a  $5.0 \text{ mF}$  capacitor are connected in series with a 12 V battery.

a. Find the equivalent capacitance.

[3m]

b. Find the charge on each capacitor.

[3m]

c. Find the potential drop (or voltage) across each capacitor. 3m

[3m]  
[Total 9m]

7. This  $8.0 \mu\text{F}$   $6.0 \mu\text{F}$  and  $5.0 \mu\text{F}$  capacitors are connected in series. Calculate the total capacitance for this arrangement.

[3m]