

Physics 30 Corrections and Missing Answers for Unit B Review Version 9

4. 1. The negative ebonite rod will induce a charge separation in the pith ball
 2. The pith balls will pick up negative charge by contact
 3. the pith balls will now repel away from the rod (because both are negatively charged)

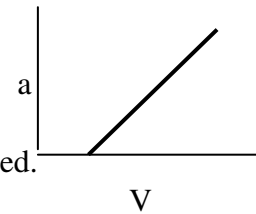
5. $1.9 \times 10^{20} e$

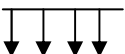
20. A. Rub the glass rod with silk and touch the rod to the electroscope. The positively charged glass rod will pull electrons off the electroscope and leave it positively charged.
 B. Rub the rubber rod with fur and hold it near one side of the top of the electroscope. Ground the opposite side of the electroscope top with your finger and then remove the ground connection and then remove the rod. The negative rod will induce a charge separation in the electroscope and grounding will allow electrons to leave through the ground. This lack of electrons will leave the electroscope positively charged when the ground is removed.


26. b) slope = $\sim 8.8 \times 10^3 \text{ N/C}$ c) $\sim 2.8 \times 10^{-9} \text{ C}$

27.

- Top plate is positive, bottom plate is negative
- See at right:
- $\sim 280 \text{ V}$ balancing voltage, where the particle would be suspended.
- Negative $\sim 1.1 \times 10^{-18} \text{ C}$



32. A)  C) $1.28 \times 10^{-17} \text{ J (or N.m)}$

33. d) 

52.

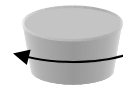
- **Direction will be around the circuit counterclockwise.**
- **Direction is towards the back of the diagram (into page)**
- **They will be repelled away from each other.**

63.

- 0.98 N
- Above the magnet:



Below the magnet



- Plastic is a non-conductor and would not allow the eddy currents. A magnet would stick to the iron and not fall
- Stronger magnet, thicker metal tube (less resistance)
- No, the magnetic friction results from motion of the magnet

70.

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- Field direction is out of the page