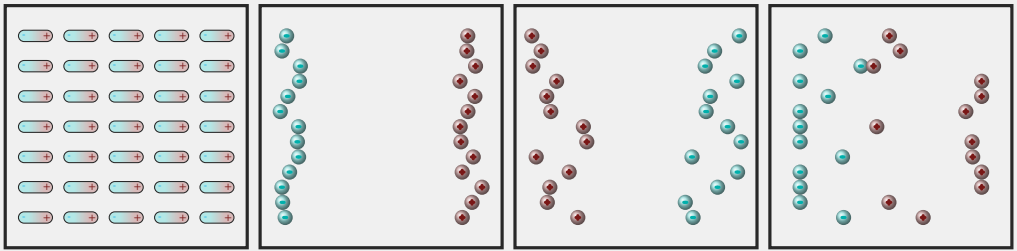
Announcements

- Homework
  - Online HW4 due tonight!
  - Online HW5 due on Friday
- I'm still working on getting the video homework graded
- Pretty much finishing Ch 14 today
- Polling: `rembold-class.ddns.net`

Review Question

An electric field is applied to a neutral ionic (conducting) solution. The applied electric field points to the right. Which of the images below best describes the resulting charge distribution?

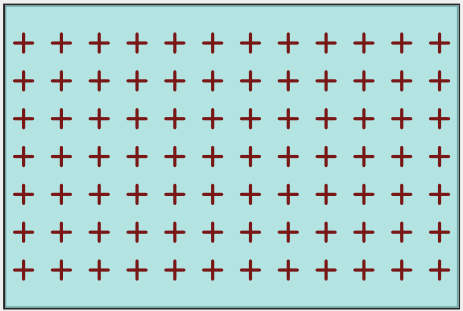
A B C D



Solution: D

Taking a Dip in the Electron Sea

Metals commonly describes as having an electron sea, where outer electrons are free to move between various atoms.



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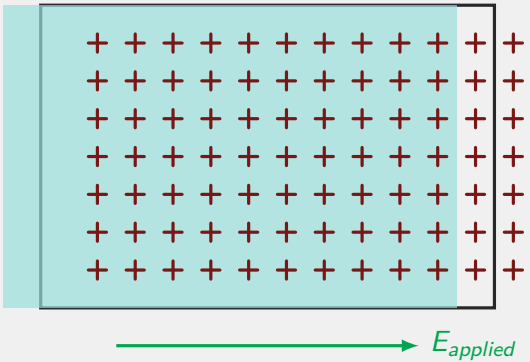
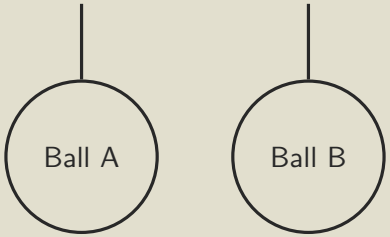


Conductor - Insulator Summary

	Conductor	**Insulator**
Charges can move	Yes	No
Polarization	Entire sea shifts	Individual atoms polarize
Equilibrium	$\vec{E}_{net} = 0$ inside	$\vec{E}_{net} \neq 0$ inside
Excess charge	Spreads over surface	Stays put in patches

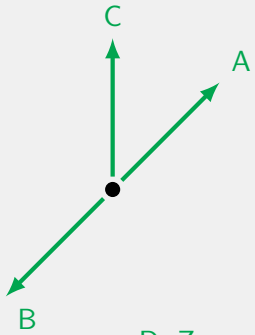
Charges Example

Suppose we have the situation below with two balls hanging from a piece of string. Explain the location of charges across all objects if a large amount of negative charge is deposited on the left side of insulated Ball A while Ball B is a conductor. Consider the situation again if Ball B is an insulator and Ball A is a conductor.

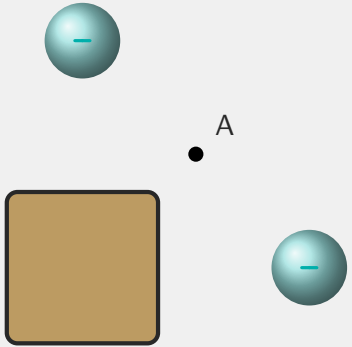


Your Turn!

A neutral copper block is located near two balls with have equal negative charges as shown to the right. What is the direction of the net electric field at A?



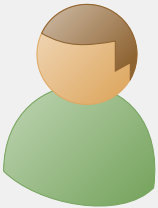
D. Zero electric field



Solution: A

Touch the Charge, Feel the Charge

- Charges transfer through contact
- Understand first that your skin and the Earth are pretty good conductors
  - Both have minerals dissolved in water to transfer charge
- Touching a charged object allows that charge to spread out over the larger area of your body (or Earth)
  - This is what happens when you "ground" something
- Removing charge from insulators is more difficult, but can neutralize the overall insulator



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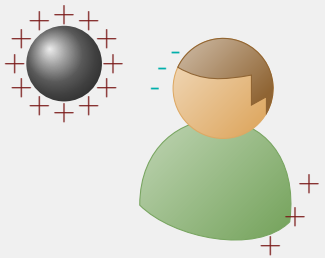

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