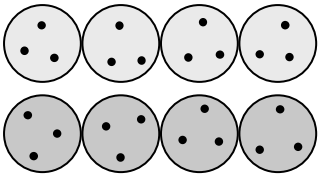
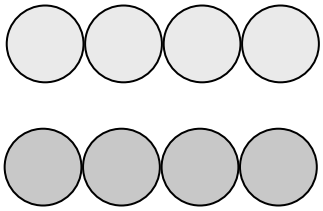
Unit 5 – Review

1. Recall your representations of the atoms in the Sticky Tape activity. Below is a pair of tapes before they have been pulled apart. Explain why they would **not** exert a force (either attractive or repulsive) on one another.

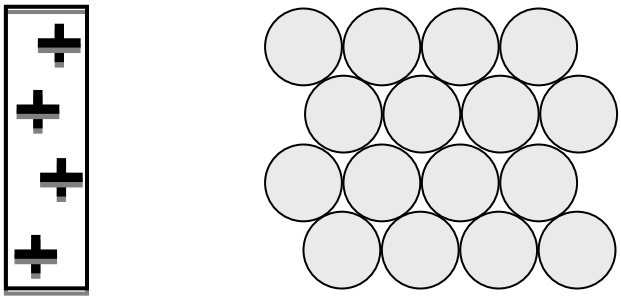


2. Below are groups of the inner cores of the atoms of the tapes after they have been pulled apart. Sketch in the mobile negative charges to show how the top tape becomes (+) and the bottom becomes (-).



3. What evidence allowed us to conclude that the top tape was (+)?

4. Below is a group of the inner cores of a piece of metal foil. Sketch in where you would expect to find the mobile negative charges if a top (+) tape were brought to the left of the foil. Explain your diagram.

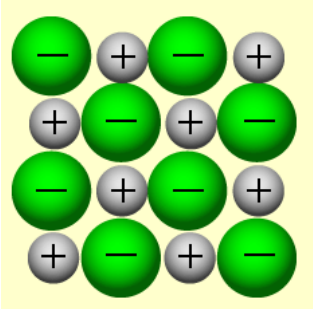


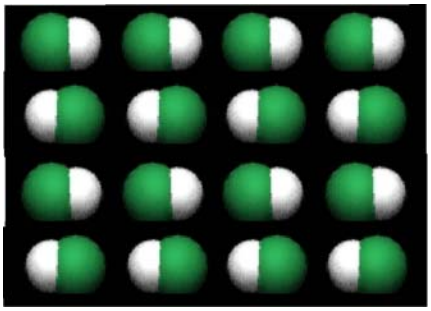
How would your drawing be different if the top (+) tape were brought near a piece of paper?

5. Describe how JJ Thomson concluded that the mobile charged particle in the atom had a (–) charge.

6. A solution of salt conducts electricity; a solution of sugar does not. Explain.

7. Below left is a 2-D array that represents an ionic lattice. At right is a 2-D array that represents a molecular solid. In what ways are they similar? In what ways are they different?





8. What evidence helped us to conclude that chloride ions have a (–) charge?

9. How do you decide how many ions of each type combine to form an ionic compound?

10. Why do ionic solids have higher melting and boiling points than do most molecular solids?

11. Why do we use the term "formula unit" rather than "molecule" when we refer to the simplest repeating unit of an ionic solid?

12. How many ions are formed when solid Na_2SO_4 dissolves? _____
    In what ways are the (+) and (–) ions different?

13. How is water able to separate ions from sodium and chloride away from each other yet it is not able to conduct electricity?

14. Apart from making life difficult for beginning chemistry students, why do chemists refer to CO_2 as carbon dioxide, yet use the name tin(IV) oxide to describe SnO_2?

15. Make sure that you know which combinations of elements give rise to ionic compounds and which form molecular compounds.

16. Make sure that you are familiar with the names, formulas and charge of the common ions you were assigned to learn so that you can readily name ionic compounds as well as write formulas for compounds whose names are given.