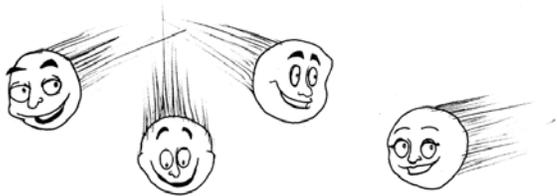


Assignment overview.

For the bonding unit final assessment, you may:

1. Create an illustrated concept map of bonding ideas as a multipage, linked PowerPoint.
2. Or create a story called *A Tale of Four Electrons* that incorporates concepts from the unit.



Concepts and vocabulary

For either option, you must include the concepts listed below and the vocabulary described on the Grading Sheet:

- Incorporate all concepts listed on the Grading Sheet in a way that shows you understand them. If you just write or paraphrase the concept, you will receive no credit. When you discuss a concept, list its Grade Sheet number in brackets. For example, Concept 2 (three major types of bonding) should be labeled with a “[2].” Using the Microsoft Word “bookmark” feature, highlight and bookmark all the sentences related to that concept. Label the bookmarks with the concept number, as well. For example, Concept 2 should be labeled “Concept2.” If your concept explanation appears in more than one place, bookmark each separately as “Concept2a,” “Concept2b,” and so on.
- At least 35 of the vocabulary words listed on the Grading Sheet must be incorporated in a way that shows you understand them. Credit will only be given for vocabulary words that are checked and included in the vocabulary word count on your grading sheet. The sentences related to your use of that word should be bookmarked using the Microsoft Word “bookmark” feature. For stories, extra credit (1/4 point per word) will be given for each properly used word beyond 35 words.

Timeline

For the preliminary concept map, you will submit a “words only” 8.5 × 11 concept map, created in C-Map or Inspiration. The concept map should include

- all of your ideas,
- meaningful connecting words, and
- numbers showing where the concepts will be described.

For the preliminary story, you will submit

- an outline of your story and
- numbers showing where the concepts will be described.

You will have four weeks to complete this assignment. As usual, 10% per day will be deducted for any late assignments.

Grading

The assignment will be worth a total of 94 test points. Creating a story instead of a PowerPoint will earn you up to 10 extra credit points.

Resources and time

You will be given two full class days to work on this assignment. The first day will occur before your preliminary draft is due; the second day before the final draft is due. You will be given four

nights during where you will have no other homework assignments. It is expected that you will use the class and homework time wisely.

Details for the story option: A Tale of Four Electrons.

Overview: To consolidate your understanding of basic bonding principles, write a story about four electrons that start their life in individual atoms but end up in ionic, metallic, polar covalent, and nonpolar covalent compounds. There should be four parts to your story.

Part 1: Life before bonding

1. Name each electron. The name should creatively reflect the bond type the electron will experience.
2. To start, each electron should reside on an atom appropriate for its eventual bonding.
3. For each electron, briefly describe its atom using atomic theory (include Effective Nuclear Charge [ENC]) and describe the electron itself (which should be a valence electron) with an electron configuration.

Part 2: The bonding experience

1. Pick an appropriate atom to bond with your electron-containing atom to form an ionic, metallic, polar-covalent, or nonpolar covalent bond.
2. For each bond type, describe the bond-forming process. Describe what your electron experiences as the bond is formed. You may use illustrations from the “Bonding Images” file but the illustrations cannot be the primary way used to describe the bonding process.

Part 3: Results of bonding

1. Have your electron describe (in their words) the results of the bonding on both a molecular and everyday level. Make sure you describe the expected physical properties for each type of bond. Also describe any intermolecular forces that the electron might experience.

Part 4: Discussion

1. Imagine your four electrons meet for coffee at a local diner. Create a conversation comparing and contrasting their experiences. As part of the conversation, include a claim by the covalently bonded electron that *all bonding is really just different forms of covalent bonding*. Have the other electrons respond to that claim. Please be aware that there is no right answer to the question of modeling covalent bonding. Both metallic bonding and ionic bonding can be viewed as either extensions of covalent bonding or different and unique types of bonding. I am looking for evidence-based reasoning that is incorporated into your character’s coffee shop discussions.

Details for concept map option: PowerPoint.

1. Your PowerPoint should be primarily illustrations. Create links to other illustrations or text pages describing the illustrations.
2. On the top page of your PowerPoint, show the atomic structure (ENC and valence shell) of three atoms (one metal and two nonmetal atoms). From that center, connect the appropriate atoms to one of the four bonding types (i.e., ionic, metallic, polar covalent, or nonpolar covalent bond).
3. Linked to those four bonding models, provide illustrations showing the process of bonding and the results of bonding on both the molecular and everyday (macroscopic) level.
4. Include links to a page showing how ionic, covalent, and metallic bonding are related.
5. Appropriate and specific connecting words should be used. Try to avoid general connecting words such as “part of” or “connected to.”
6. *Do not* copy the concepts directly from the table. You will not get credit for any copied concepts. Rewrite them in your own words. Better yet, reorganize them in a way that helps you better understand their relationships