



High School Science Learning Plans

These plans are also available on our website:

www.accomack.k12.va.us

Please note: The online portion of these plans is optional.

High School Learning Plans

Chemistry

Activities to Support Instruction During Extended School Closures

The purpose of this document is to provide an overview of suggested activities available to ACPs students. These suggestions can be used by families to support the continuity of education. The learning experiences developed and provided will give students opportunities to go deeper into concepts, ideas, and skills independently. These activities do not require copies or additional supplies.

Activity choice #1: Chemical and Physical Changes

Online Option:

- Using review materials, students will review physical and chemical changes then compare and contrast physical and chemical changes in a T-chart.
- Students will create a Venn diagram comparing and contrasting physical and chemical changes seen in the household. These can be real-life examples or images/videos found on the internet.
- Using Google Drawings (via their school email accounts), or any online infographic site of choice, students will create a Venn diagram image, one side being labeled “physical changes” and the other “chemical changes.”
- Potential examples of physical/chemical changes can include, but are not limited to (with parental permission):
 - Cooking, cleaning, yardwork, eating/digestion, painting, playing video games, building, practicing social distancing, arts & crafts, smashing things out of frustration, burning fuel
- Students can submit their projects electronically by sharing them on remind, Google Classroom, or any other platform the school system utilizes. Pictures can be taken and uploaded if a physical poster is made.

Offline Option:

- Using review materials, students will review physical and chemical changes then compare and contrast physical and chemical changes in a T-chart.
- Students will create a Venn diagram comparing and contrasting physical and chemical changes seen around the household, in textbooks, or any other offline source.
- Potential examples of physical/chemical changes can include, but are not limited to (with parental permission):
 - Cooking, cleaning, yardwork, eating/digestion, painting, playing video games, building, practicing social distancing, arts & crafts, smashing things out of frustration, burning fuel
- On a sheet of paper (of any size available, the larger the better) using pencils, markers, etc students will draw a physical Venn diagram one side being labeled “physical changes” and the other “chemical changes.”

Supporting materials, as needed:

- CK-12 Phys vs Chem Change - https://www.ck12.org/book/cbse_chemistry_book_class_ix/section/2.7/
- Google Drawing on Google Drive (school email account)
- Infographic Website - <https://piktochart.com/> <https://venngage.com/>
- YouTube videos
 - https://www.youtube.com/watch?v=37pir0ej_SE
 - <https://www.youtube.com/watch?v=4ZGULLWEy1c&t=101s>

Activity choice #2: The Periodic Table

Online option:

- A long time from now in a galaxy far, far away, our home planet is on the verge of destruction. Luckily, we have the technology available to create a new planet. Unfortunately, due to limits in this technology, only 20 elements can be used to form this planet.
- Your task is to use the internet to research common uses of the elements on the [periodic table](#) and, based on your research, determine which elements to use for our new planet. Be sure to think about

both how the elements are used in nature and how humans have learned to use the elements in our everyday lives. For example, don't just think about elements needed by the human body, also think about elements that we need for farming or to make structures to use as shelters. Remember, you can only pick 20 elements!! Choose wisely!

- You must create a persuasive product, such as a travel brochure, pamphlet, newspaper article, or commercial, listing the elements you choose. For each element you should include the following:
 - How this element is used and why you picked this element
 - A physical or chemical property of each element. Be sure to say if the property you give is physical or chemical.
 - The atomic number for the element
 - An orbital diagram or an electron configuration for each element. It is okay to use the noble gas shortcut.
 - The group and period number for the element
 - The family the element belongs to (if applicable). For example, sodium is an alkali metal.
- After choosing all 20 elements, please complete the following:
 - Based on the periodic trends, state the element with the largest atomic radius, largest first ionization energy, and largest electronegativity. Also give the definition of each property.
 - For each compound mentioned in your persuasive product, say if the compound is ionic or covalent. For example, hydrogen and oxygen make water and water is a covalent compound.

Offline option:

- A long time from now in a galaxy far, far away, our home planet is on the verge of destruction. Luckily, we have the technology available to create a new planet. Unfortunately, due to limits in this technology, only 20 elements can be used to form this planet.
- Your task is to use Chapters 5, 6, and Appendix A in your textbook to research common uses of the elements on the periodic table and, based on your research, determine which elements to use for our new planet. Be sure to think about both how the elements are used in nature and how humans have learned to use the elements in our everyday lives. For example, don't just think about elements needed by the human body, also think about elements that we need for farming or to make structures to use as shelters. Remember, you can only pick 20 elements!! Choose wisely!
 - You must create a persuasive product, such as a travel brochure, pamphlet, newspaper article, or commercial, listing the elements you choose. For each element you should include the following:
 - How this element is used and why you picked this element
 - A physical or chemical property of each element. Be sure to say if the property you give is physical or chemical.
 - The atomic number for the element
 - An orbital diagram or an electron configuration for each element. It is okay to use the noble gas shortcut.
 - The group and period number for the element
 - The family the element belongs to (if applicable). For example, sodium is an alkali metal.
- After choosing all 20 elements, please complete the following:
 - Based on the periodic trends, state the element with the largest atomic radius, first largest ionization energy, and largest electronegativity. Also give the definition of each property.
 - For each compound mentioned in your persuasive product, say if the compound is ionic or covalent. For example, hydrogen and oxygen make water and water is a covalent compound.

Activity choice #3: History of the Atomic Model

Online option:

- Students should choose one item from the choice board below
- Students should only use materials that are readily available at home.
- Students may use online resources to research various scientists and atomic models.

Offline option:

- Students should choose one item from the choice board below
- Students should only use materials that are readily available at home.
- Students may use their textbook and/or other reference books resources to research various scientists and atomic models.

Choice Board:

<p>□ Design a Windowpane Choose six scientists that are important in our study of the atomic model (textbook, notes). Record the scientists names, diagram their contribution, and indicate three facts about them. Put the scientists in chronological order.</p>	<p>□ Create a Scrapbook Choose one of the scientists that most interests you. Create a scrapbook about this scientist's accomplishments. It should be ten pages with at least five themed pages. Each page should have at least one picture. All photos will have captions.</p>	<p>□ You Be the Star! Record a video about one scientist from your textbook. Presentation should be 5 minutes in length. You must include 5 important facts about his/her life and/or work. A script should accompany your recording.</p>
<p>□ Design a Game To explain the following: Atomic number, protons, neutrons, electrons, average atomic mass, mass number, isotope, ion, and models of the atom (Dalton's theory, Thompson, Rutherford, Bohr and the quantum mechanical or electron cloud). It should have at least 4 game pieces, at least 25 color/themed squares, 20 question or action cards. Game board should be two 8.5x11" paper with a title, a complete set of rules and explanation for playing and winning the game.</p>	<p>□ Free Choice Submit a proposal to your teacher. You must get approval before working on the free choice.</p>	<p>□ Concentration Cards To include the following: Atomic number, protons, neutrons, electrons, average atomic mass, mass number, isotope, ion, and models of the atom (Dalton's theory, Thompson, Rutherford, Bohr and the quantum mechanical or electron cloud). At least 30 index cards (15 matching sets) must be made. Both pictures and words can be used. Information should be placed on just one side of the card. Include an answer key that shows all the matches. Design and construct a carrying bag for your cards.</p>
<p>□ Children's or Comic Book To explain the following: Atomic number, protons, neutrons, electrons, average atomic mass, mass number, isotope, ion, and models of the atom (Dalton's theory,</p>	<p>□ 3-D Model Of an atom of an element in the 3rd energy level or period. It can be a Bohr model, but should explain the s and p orbitals and how an orbital differs from Bohr's model with electron orbits. Each</p>	<p>□ Trading Cards Create a set of trading cards: To explain the following: Atomic number, protons, neutrons, electrons, average atomic mass, mass number, isotope, ion, and models of the</p>

Thompson, Rutherford, Bohr and the quantum mechanical or electron cloud).	subparticle of the atom should be explained and a key made. What is the most likely ion it will form? How would the outer shell of the ion be different from the atom? Include the full electron configuration and orbital diagram for the element.	atom (Dalton's theory, Thompson, Rutherford, Bohr and the quantum mechanical or electron cloud) on 3x5 index cards. Include a color picture or drawing, three facts on the topic or model, information should be on both sides.
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