

Student Functionality

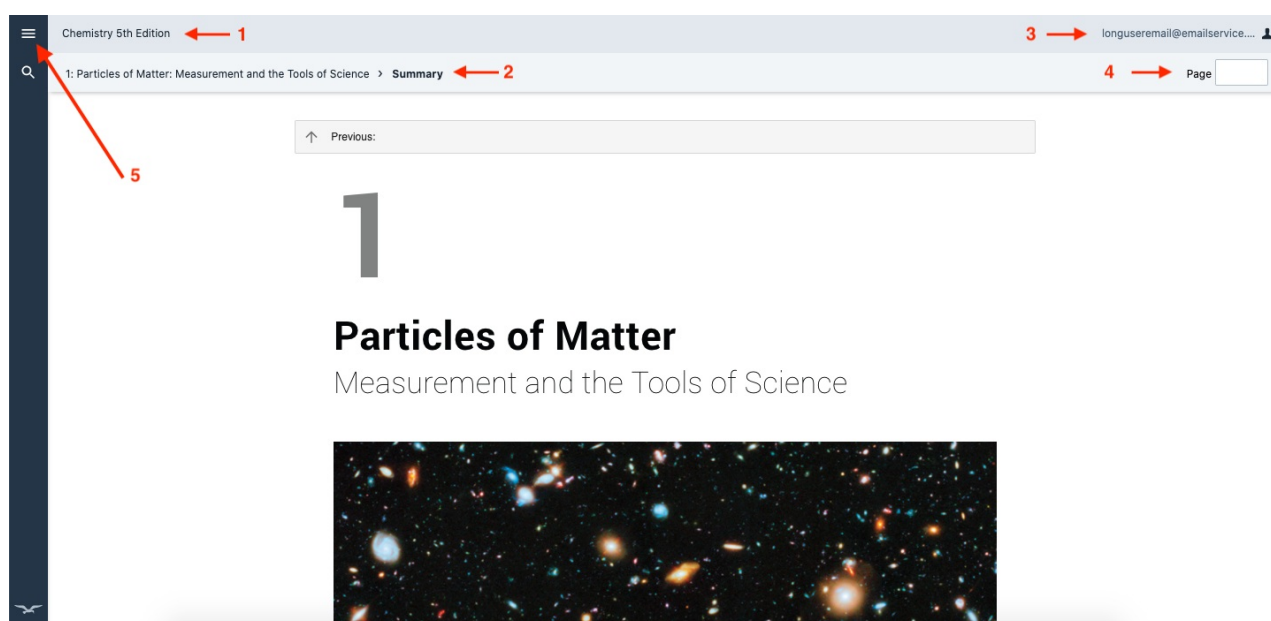
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The Norton Ebook Reader provides an active reading experience, enabling students to take notes, search, highlight, and read offline. This page provides details on how to access and manage these tools.

Hide All Answers

How do I navigate my Ebook?

This section provides details on how users can navigate and search through the new ebook reader.



1. When logged in you see the **Book Title** displayed at the top of the page.
2. The **Chapter and Section** you are working in are visible below the Book Title.
3. You can open the **Account Menu** by selecting your username. More information about the features available from this menu are discussed here.
4. Indicates what **Page** you are currently viewing.
5. Select the three horizontal lines to make the **Table of Contents** appear. More information about this feature can be found here.

How do I navigate between sections?

To view the previous section of the ebook scroll to the top of the page you are currently viewing. Select the box showing the previous section name.

Chemistry 5th Edition longuseremail@emailservice...

1: Particles of Matter: Measurement and the Tools of Science > **How and Why** Page

↑ Previous: 1: Particles of Matter: Measurement and the Tools of Science

1.1 How and Why

For thousands of years, humans have sought to better understand the world around us. For most of that time we resorted to mythological explanations of natural phenomena. Many once believed, for example, that the Sun rose in the east and set in the west because it was carried across the sky by a god driving a chariot propelled by winged horses.

In recent times we have been able to move beyond such fanciful accounts of natural phenomena to explanations based on observation and scientific reasoning. Unfortunately, this movement toward rational explanations has not always been smooth. Consider, for example, the contributions of a man whom Albert Einstein called the father of modern science, Galileo Galilei. At the dawn of the 17th century, Galileo used advanced telescopes of his own design to observe the movement of the planets and their moons. He concluded that they, like Earth, revolved around the Sun. However, this view conflicted with a belief held by many religious leaders of his time that Earth was the center of the universe. In 1633 a religious tribunal forced Galileo to disavow his conclusion that Earth orbited the Sun and banned him (or anyone) from publishing the results of studies that called into question the Earth-centered view of the universe. The ban was not completely lifted until 1835—nearly 200 years after Galileo's death.

In the last century, advances in the design and performance of telescopes have led to the astounding discovery that we live in an expanding universe that probably began 13.8 billion years ago with an enormous release of energy. In this chapter and in later ones, we examine some of the

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To view the next section of the ebook scroll to the bottom of the page you are currently viewing. Select the box indicating the next section.

Sample Exercises 1.3, 1.4, 1.9

L08 Express uncertain values with the appropriate number of significant figures

Sample Exercise 1.5

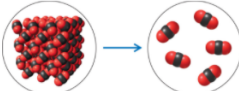
L09 Distinguish between exact and uncertain values, evaluate the precision and accuracy of experimental results, and identify outliers

Sample Exercises 1.6, 1.7, 1.8

PARTICULATE PREVIEW

Matter and Energy

The temperature in outer space is 2.73 K. The temperature of dry ice (carbon dioxide, CO₂) is 70 times warmer, but still cold enough to keep ice cream frozen on a hot summer day. As you read Chapter 1, look for ideas that will help you answer these questions:



- Particulate images of CO₂ as it sublimates are shown here. Which two phases of matter are involved in sublimation?
- What features of the images helped you decide which two phases were involved?
- What is the role of energy in this transformation of matter? Must energy be added or is energy produced?

↓ Next: How and Why

More information about navigating the ebook can be found in the Table of Contents section.

Additionally, you can view your current location by selecting the three dots found underneath the book title.

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Alloys and Medicine > Substitutional Alloys Page

CURRENT LOCATION

1: Solids: Crystals, Alloys, and Polymers


↳ Alloys and Medicine

↳ Substitutional Alloys

↑ Previous: Structures of Metals

12.3 Alloys and Medicine

The antibacterial properties of copper metal are attractive for coating surfaces in hospitals and in food service kitchens where an infection can prove deadly (Figure 12.11). However, pure copper has two disadvantages: it is both relatively soft and very malleable, which means that pure copper objects are easily bent and damaged. We can explain the malleability of Au, Cu, and other metals in terms of the relatively weak bonds between the atoms in their cubic closest-packed crystal structure. This arrangement gives the atoms in one layer the ability, under stress, to slip past atoms in an adjacent layer (Figure 12.12), but the overall crystal structure is still cubic closest-packed. The ease with which copper atoms slip past each other makes it easy to bend copper pipes used in plumbing, but it also makes them susceptible to damage. Additionally, copper reacts with air to produce blue-green copper hydroxides and carbonates.



How do I search the ebook content?

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3: Stoichiometry: Mass, Formulas, and Reactions Page 82

↑ Previous: Questions and Problems

3

Stoichiometry


Mass, Formulas, and Reactions



Enter a term in the search field.

Search

Atoms



Type in the field above to search the book

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3: Stoichiometry: Mass, Formulas, and Reactions Page 82

↑ Previous: Questions and Problems

3

Stoichiometry

Mass, Formulas, and Reactions



See the full book search results displayed below.

Chemistry

3: Stoichiometry: Mass, Formulas, and Reactions

0 results in this section

Previous: Questions and Problems

3

Stoichiometry

Mass, Formulas, and Reactions

Clicking on the search results will take you to that specific page in the ebook. Additionally, the keyword you entered will appear highlighted in the text, and you will see a note at the top of the page indicating how many times that word is used within the section.

Chemistry

1: Particles of Matter: Measurement and the Tools of Science

0 of 6 results in this section

ANCIENT UNIVERSE The colors of the more than 10,000 galaxies in this image give us a glimpse into the universe as it existed about 13 billion years ago. This image was taken by NASA's Hubble Space Telescope.

PARTICULATE REVIEW

Atoms and Molecules: What's the Difference?

In Chapter 1 we explore how chemists classify different kinds of matter, from elements to compounds to mixtures. Hydrogen and helium were the first two elements formed after the universe began. Chemists use distinctively colored spheres to distinguish atoms of different elements in their drawings and models. For example, hydrogen is almost always depicted as white.

- How many of the following particles are shown in this image?
 - Hydrogen atoms?
 - Hydrogen molecules?
 - Helium atoms?
- Are molecules composed of atoms, or are atoms composed of molecules?

SHOW ANSWER

Learning Outcomes

Please Note: These search results are for the entire book. Anytime the keyword you entered is displayed in the text, it will show up here. If you would like to view the help notes on searching the Table of Contents, please click here.

How do I search by page number?

You can search by a specific page number by inserting a number into the page field on the right-hand of the screen. This box will display the current page number you are viewing.

Chemistry

2: Atoms, Ions, and Molecules: Matter Starts Here > 2.9 Nucleosynthesis: The Origin of the Elements

Page 70

2.9 Nucleosynthesis: The Origin of the Elements

We began this chapter by discussing remarkable advances in the early 20th century that provided science with a clearer view of atomic structure and of why elements react the way they do. Later in the century, scientists increased our understanding of how the elements may have originally formed by determining the composition of the very early universe—the particles that appeared in the moments immediately following the Big Bang.

Scientists believe that much of the energy released at the instant of the Big Bang transformed into matter within a few microseconds (Figure 2.22). This matter consisted of the smallest of subatomic particles: electrons and quarks. Less than a millisecond later, the universe had expanded and “cooled” to a mere 10^{12} K, and quarks combined with one another to form neutrons and protons. Thus in less than a second, the matter in the universe consisted of the three types of subatomic particles that would eventually make up all atoms.

Primordial Nucleosynthesis

By about four minutes after the Big Bang, the universe had expanded and cooled to 10^9 K. In this hot, dense subatomic “soup,” neutrons and protons that collided with one another began to fuse in a process called primordial nucleosynthesis. (We discuss fusion in more detail in Chapter 19.) In one step, protons (p) and neutrons (n) fused to form deuterons (d), which are nuclei of the deuterium (^2H) isotope of hydrogen:

$$^1_1\text{p} + ^1_0\text{n} \rightarrow ^2_1\text{d} \quad (2.2)$$

In writing this equation, we follow the rules we described in Section 2.3 for writing nuclide symbols: the superscript is a mass number and the subscript is an atomic number. We use a similar convention for writing the symbols of subatomic particles, except that in this case a subscript represents the charge on the particle. For example, the symbol of the neutron is ^1_0n because a neutron has a mass number of 1 and a charge of 0.

After inserting a number in the page and select return on your keyboard, the ebook will take you to that page.

How do I highlight text?

Personal Highlights

To highlight text, use the cursor to select the text you would like to highlight and the **Context Menu** will appear. Select the color in which you would like the text highlighted: yellow, pink, blue, or green.

1 Learning Outcomes

L01 Use Avogadro's number and the definition of the mole in calculations
Sample Exercises 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7

L02 Write balanced chemical equations that describe chemical reactions
Sample Exercises 3.8, 3.9, 3.10, 3.11

L03 Use balanced chemical equations to determine the amount of a reactant consumed or the mass of a product formed
Sample Exercises 3.12, 3.13

L04 Determine an empirical formula from the mass of a substance
Sample Exercises 3.14, 3.15, 3.16

L05 Determine a molecular formula from the empirical formula and molar mass of a substance
Sample Exercise 3.17

L06 Use data from combustion reactions to determine empirical formulas of substances
Sample Exercises 3.18, 3.19

L07 Determine the limiting reactant in a chemical reaction
Sample Exercises 3.20, 3.21

L08 Calculate the theoretical and percent yields in a chemical reaction
Sample Exercises 3.22, 3.23

2 HIGHLIGHT

3 Create Note

4 Copy

Removing Highlights

To remove a highlight, use the cursor to select the text from which you would like to remove the highlighting and the **Context Menu** will appear.

Click **Delete Highlight**

6: Properties of Gases: The Air We Breathe

Notebook

- Classify the products as elements, compounds, or a mixture.
(Review Sections 1.1, 1.2, and 3.3 if you need help.)

SHOW ANSWER

1 Learning Outcomes

LO1 Distinguish gases from liquids and solids

LO2 Measure pressure and convert to standard conditions to quantify it

Sample Exercises 6.1, 6.2

LO3 Calculate changes in the volume of a gas using the ideal gas law, individual, combined, and ideal gas law

Sample Exercises 6.3, 6.4, 6.5, 6.6

LO4 Use balanced chemical equations to determine the amount of product by using the stoichiometric coefficients

Sample Exercises 6.8, 6.9

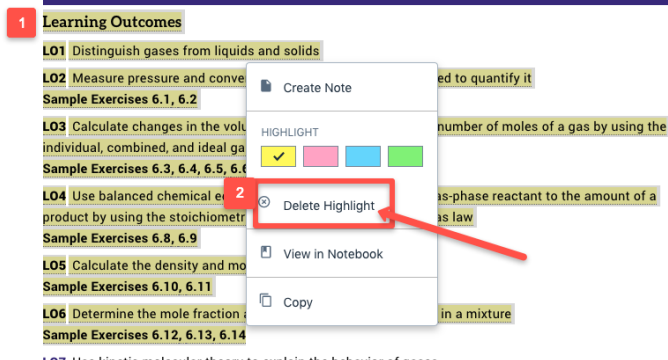
LO5 Calculate the density and molar mass of a gas

Sample Exercises 6.10, 6.11

LO6 Determine the mole fraction of a gas in a mixture

Sample Exercises 6.12, 6.13, 6.14

LO7 Use kinetic molecular theory to explain the behavior of gases

A screenshot of a digital learning interface. At the top, there's a search bar and a 'Notebook' tab. Below that, a list of learning outcomes (LO1-LO7) is displayed. A context menu is open over the text, showing options like 'Create Note', 'HIGHLIGHT' (with color swatches), 'Delete Highlight' (highlighted with a red box and arrow), 'View in Notebook', and 'Copy'. A red arrow also points from the 'Delete Highlight' option to the 'Delete' button in the dialog box below.

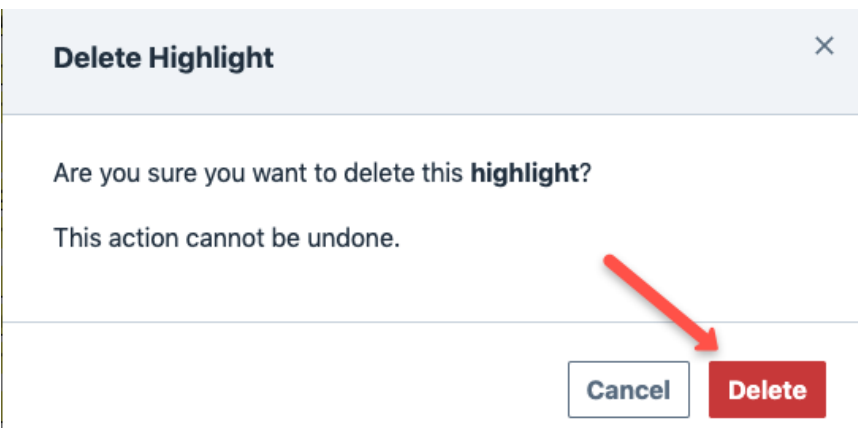
Select **Delete** and the highlighting will be removed from the selected text.

Delete Highlight

Are you sure you want to delete this **highlight**?

This action cannot be undone.

Cancel Delete

A dialog box titled 'Delete Highlight' with a close button (X) in the top right corner. The main text asks 'Are you sure you want to delete this highlight?' and states 'This action cannot be undone.' At the bottom, there are two buttons: 'Cancel' and 'Delete'. A red arrow points from the 'Delete Highlight' option in the menu above to the 'Delete' button in this dialog.

How do I create annotations?

Personal Annotations

To create an annotation that will only appear in your ebook, use the cursor to select the text you would like to annotate and the **Context Menu** will appear.

Click **Create Note**

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6: Properties of Gases: The Air We Breathe > 6.1 Air: An Invisible Necessity Page 274

anesthesiologists in a hospital operating room constantly monitor levels of oxygen and carbon dioxide in the blood. The management of the delicate balance of gases entering and leaving a patient can mean the difference between a normal recovery and an irreversible coma.

We have seen how dissolved compounds react in aqueous solution. Chemical reactions also take place in the gas phase, and gases are intimately involved in chemical reactions in living systems as well as in the material world. Most life in our biosphere requires oxygen. Insects, birds, mammals, plants, and even underwater organisms need O_2 to metabolize nutrients.

1 How do gases differ from solids and liquids? Gases have neither definite volumes nor definite shapes; they expand to occupy the entire volume of their container and assume the container's shape. Under everyday conditions, other properties also distinguish gases from liquids and solids:

1. Unlike the volume occupied by a liquid or solid, the volume occupied by a gas changes significantly with pressure. If we carry an inflated balloon from sea level (0 m) to the top of a 1600-m mountain, the balloon volume increases by about 20%. The volume of a liquid or solid is unchanged under these conditions.
2. The volume of a gas changes with temperature. For example, the volume of a balloon filled with room-temperature air decreases when the balloon is taken outside on a cold winter's day. A temperature decrease from 20°C to 0°C leads to a volume decrease of about 7%, whereas the volume of a liquid or solid remains practically unchanged by this modest temperature change.
3. Gases are **miscible**, which means they can be mixed in any proportion (unless they chemically

1 2

Create Note

HIGHLIGHT

Copy

Type your annotation into the text field and click the **Save** button save your annotation.

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6: Properties of Gases: The Air We Breathe > 6.1 Air: An Invisible Necessity Page 274

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Create note

6: Properties of Gases: The Air We Breathe > 6.1 Air: An Invisible Necessity

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HIGHLIGHT

NOTE

Important definition

Cancel Save

Click on the **Notebook** page icon to view notes in the Notebook

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6: Properties of Gases: The Air We Breathe > 6.1 Air: An Invisible Necessity Page 274

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4. Gases are typically much less dense than liquids or solids. One indicator of this large difference is that gas densities are expressed in grams per *liter* but liquid densities are expressed in grams per *milliliter*. The density of dry air at 20°C at typical atmospheric pressure is 1.20 g/L, for example, whereas the density of liquid water under the same conditions is 1.00 g/mL—more than 800 times greater than the density of dry air.

These four observations about gases are consistent with the idea that the particles of a gas (be their molecules or atoms) are further apart than the particles in solids and liquids. The larger

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2: Atoms, Ions, and Molecules: Matter Starts Here

4: Reactions in Solution: Aqueous Chemistry in Nature

6: Properties of Gases: The Air We Breathe

6: Properties of Gases: The Air We Breathe > 6.1 Air: An Invisible Necessity

Sept 22, 2021

Learning Outcomes LO1 Distinguish gases from liquids and solids. LO2 Measure pressure and convert between the different units used to quantify it. Sample Exercises 6.1, 6.2. LO3 Calculate changes in the volume, temperature, pressure, and number of moles of a gas by using the individual, combined, and ideal gas laws. Sample Exercises 6.3, 6.4, 6.5, 6.6, 6.7. LO4 Use balanced chemical equations to relate the volume of a gas-phase reactant to the amount of a product by using the stoichiometry of the reaction and the ideal gas law. Sample Exercises 6.8, 6.9. LO5 Calculate the density and molar mass of any gas. Sample Exercises 6.10, 6.11. LO6 Determine the mole fraction and the partial pressure of a gas in a mixture. Sample Exercises 6.12, 6.13, 6.14

6: Properties of Gases: The Air We Breathe > 6.1 Air: An Invisible Necessity

Sept 23, 2021

How do gases differ from solids and liquids? Gases have neither definite volumes nor definite shapes; they expand to occupy the entire volume of their container and assume the container's shape. Under everyday conditions, other properties also distinguish gases from liquids and solids:

Important definition

Answers to Selected End-of-Chapter Questions and Problems

How to Edit Annotations

Click the **notebook** page icon. The **Context Menu** will appear. Select **Edit Note**

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6: Properties of Gases: The Air We Br... > 6.1 Air: An Invisible Necessity Page 274

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After editing the note, select **Save**.

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6: Properties of Gases: The Air We Br... > 6.1 Air: An Invisible Necessity Page 274

Edit note

6: Properties of Gases: ...

6.1 Air: An Invisible Necessity

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HIGHLIGHT

NOTE

This item will be on the exam!

1

Cancel Save 2

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How to Delete Annotations

1. Select the **notebook page icon** on the annotation that you want to delete

2. Click **Delete Highlight & Note**

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6: Properties of Gases: The Air We Br... > 6.1 Air: An Invisible Necessity Page 274

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1. Unlike liquids or solids, the volume occupied by a gas changes when the temperature or pressure changes. For example, if you carry an inflated balloon from sea level (0 m) to the top of a mountain, the volume of the balloon increases by about 20%. The volume of a liquid or solid is unaffected by changes in temperature or pressure.

2. The temperature of a gas affects its volume. For example, the volume of a balloon filled with air at 20°C increases to about 1.07 times its original volume when the balloon is taken outside on a cold winter's day. A decrease in temperature to 0°C leads to a volume decrease of about 7%, whereas the volume of a liquid or solid is practically unchanged by this modest temperature change.

3. Gases can be mixed in any proportion (unless they chemically react). For example, oxygen and nitrogen can be mixed in any proportion (unless they chemically react). A patient experiencing respiratory difficulties may be given a mixture of oxygen and nitrogen in which the proportion of oxygen is much higher than its proportion in air. Alternatively, a scuba diver may leave the ocean surface with a tank of air containing a homogeneous mixture of 17% oxygen, 34% nitrogen, and 49% helium. In contrast, many liquids are immiscible, such as oil and water.

Click the **Delete** button to confirm

Delete Highlight and Note

Are you sure you want to delete this **highlight** and **note**?

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To view a complete list of the highlights and annotations in your ebook, select the **Notebook** icon on the left of the page

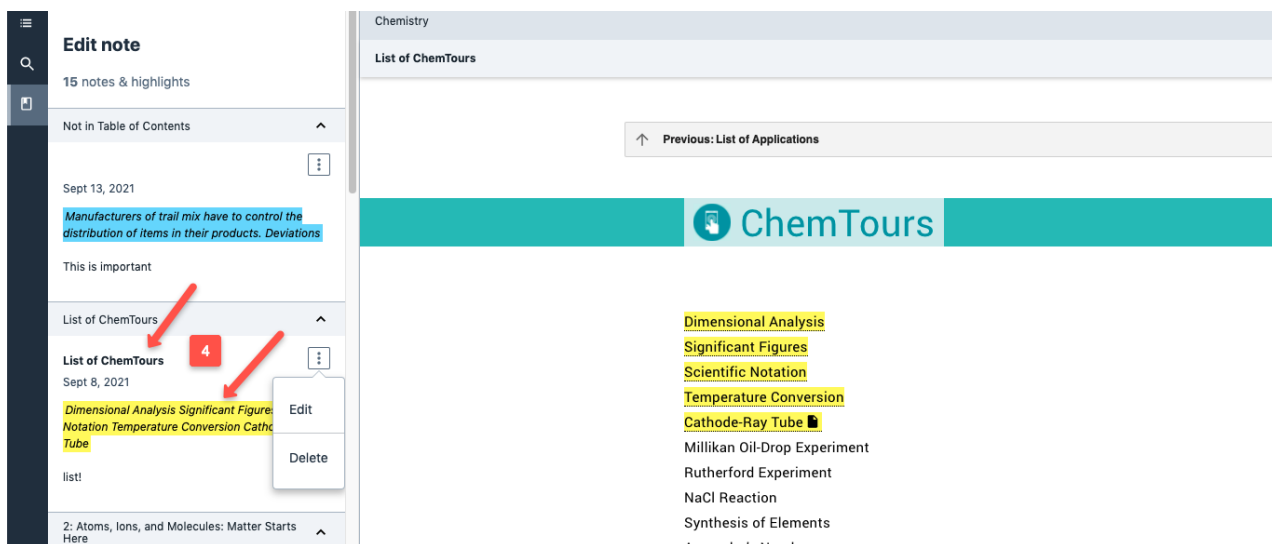
The screenshot shows a chemistry notebook interface. On the left is a sidebar titled 'Edit note' with a 'Notebook Panel View' button. It lists 15 notes and highlights, including sections like 'Manufacturers of trail mix...', 'List of ChemTours', and '2: Atoms, Ions, and Molecules: Matter Starts Here'. The main content area on the right shows the title '1 Particles of Matter' and subtitle 'Measurement and the Tools of Science', with a large image of a galaxy cluster below.

This annotated screenshot highlights three key features:

- 1**: A red box around the '15 notes & highlights' text in the sidebar.
- 2**: A red box around the three-dot menu icon above a note in the sidebar.
- 3**: A red box around the 'Edit' and 'Delete' options in the context menu that appears when the three-dot icon is clicked.

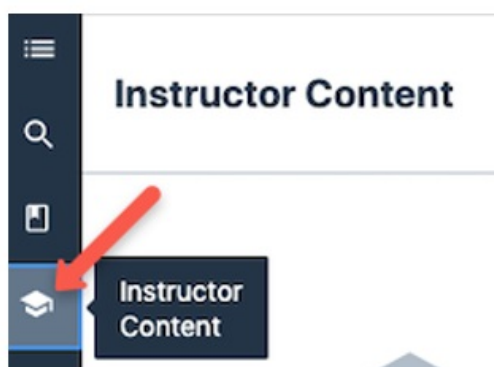
 The main content area on the right remains the same as in the first screenshot, showing the title '1 Particles of Matter' and the galaxy image.

1. This is the **total number** of notes and highlights
2. To **Edit** or **Delete** content select the 3 dots icon above the annotation or highlight
3. Annotations that you have created can be found under the highlights
4. Click on the **section title** to go directly to the page where an annotation or highlight is located.



How to view content that my Instructor shared

From the Ebook, click the Instructor Content icon (mortarboard hat) from the Context menu on the left side of screen.



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Mozilla Firefox: [Read Aloud: A Text-to-Speech Voice Reader](#)

Install and use the “Read Aloud” tool on Mozilla Firefox for text-to-speech compatibility.

Apple iOS: [VoiceOver](#)

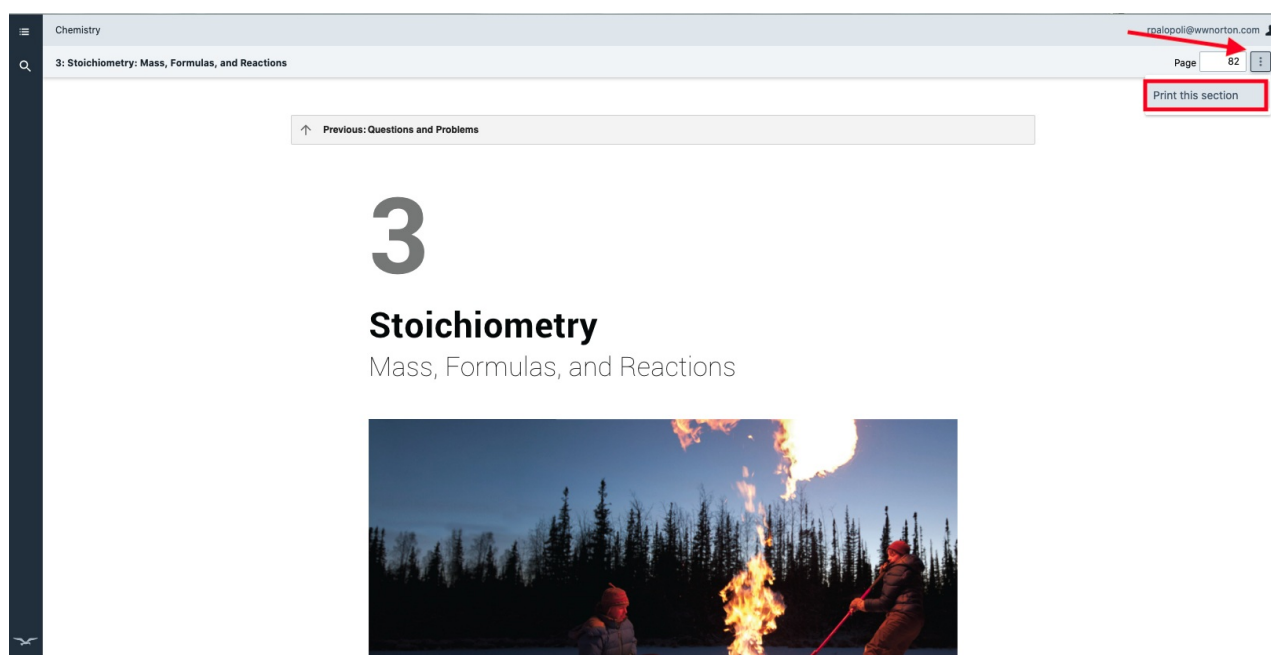
Enable VoiceOver for seamless audio narration on your iOS device.

Google Android: [Google Text-to-Speech](#)

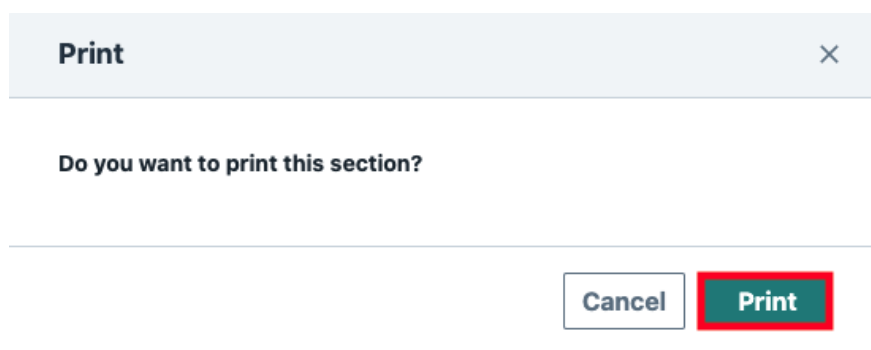
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How do I print a specific section of the ebook?

To print a specific section, select the three dots next to the page number at the top.



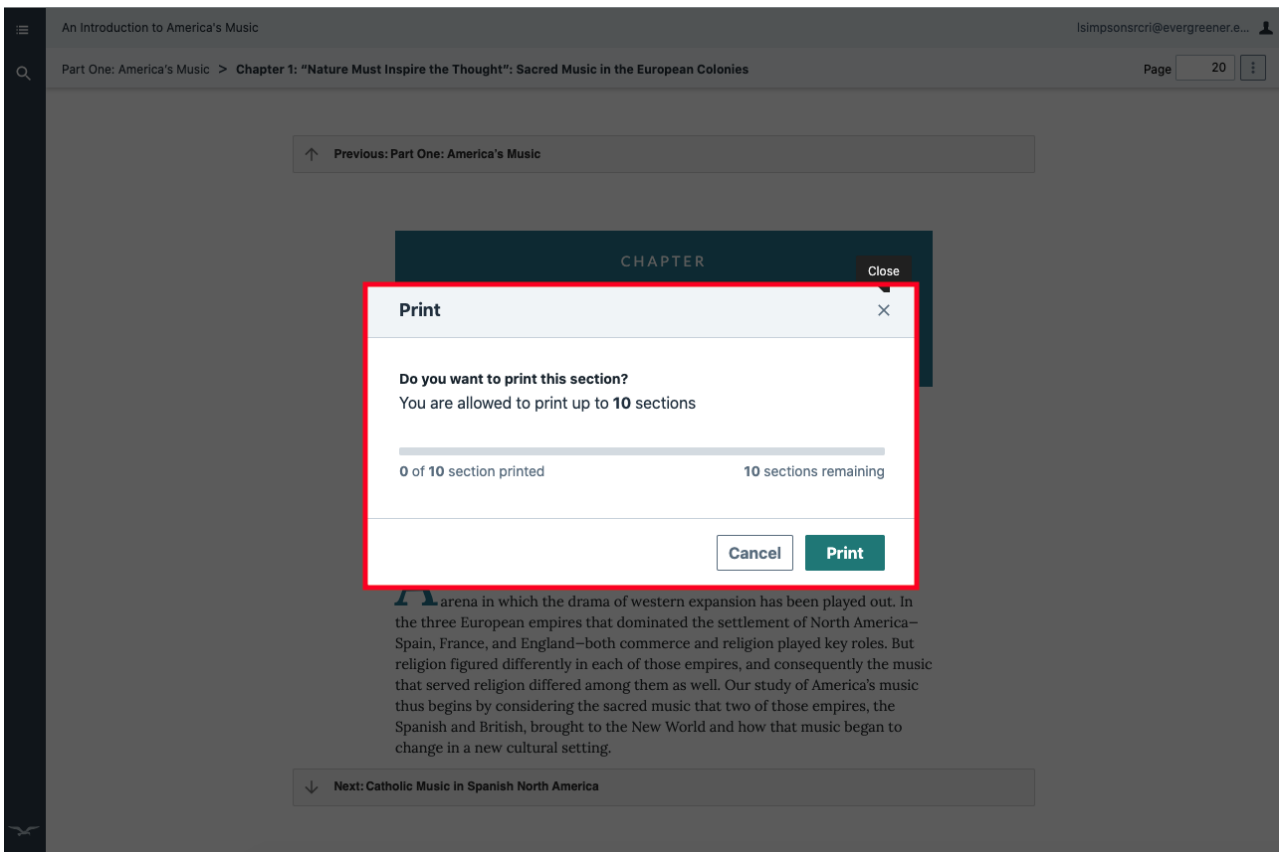
Select ‘print’ from the confirmation box.



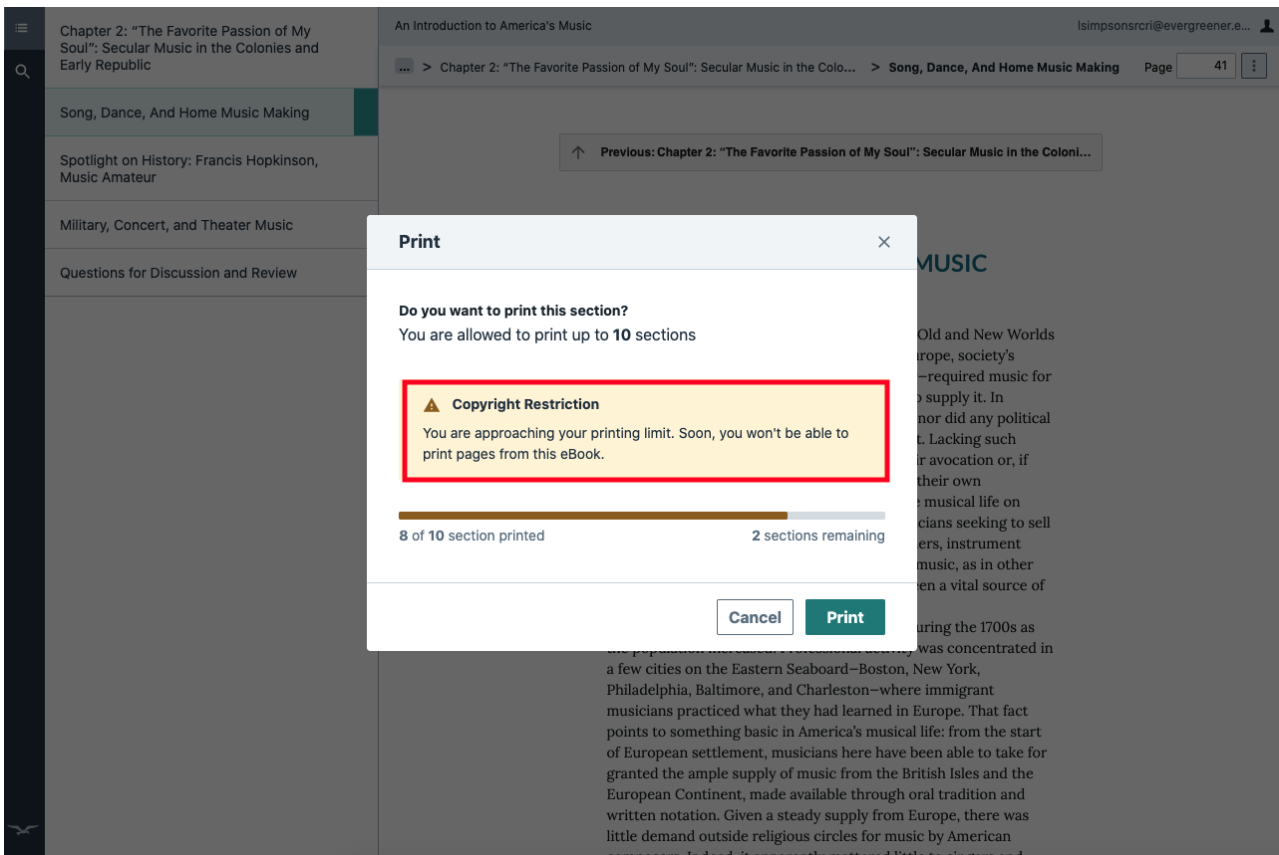
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The number of sections you are allowed to print varies by title.

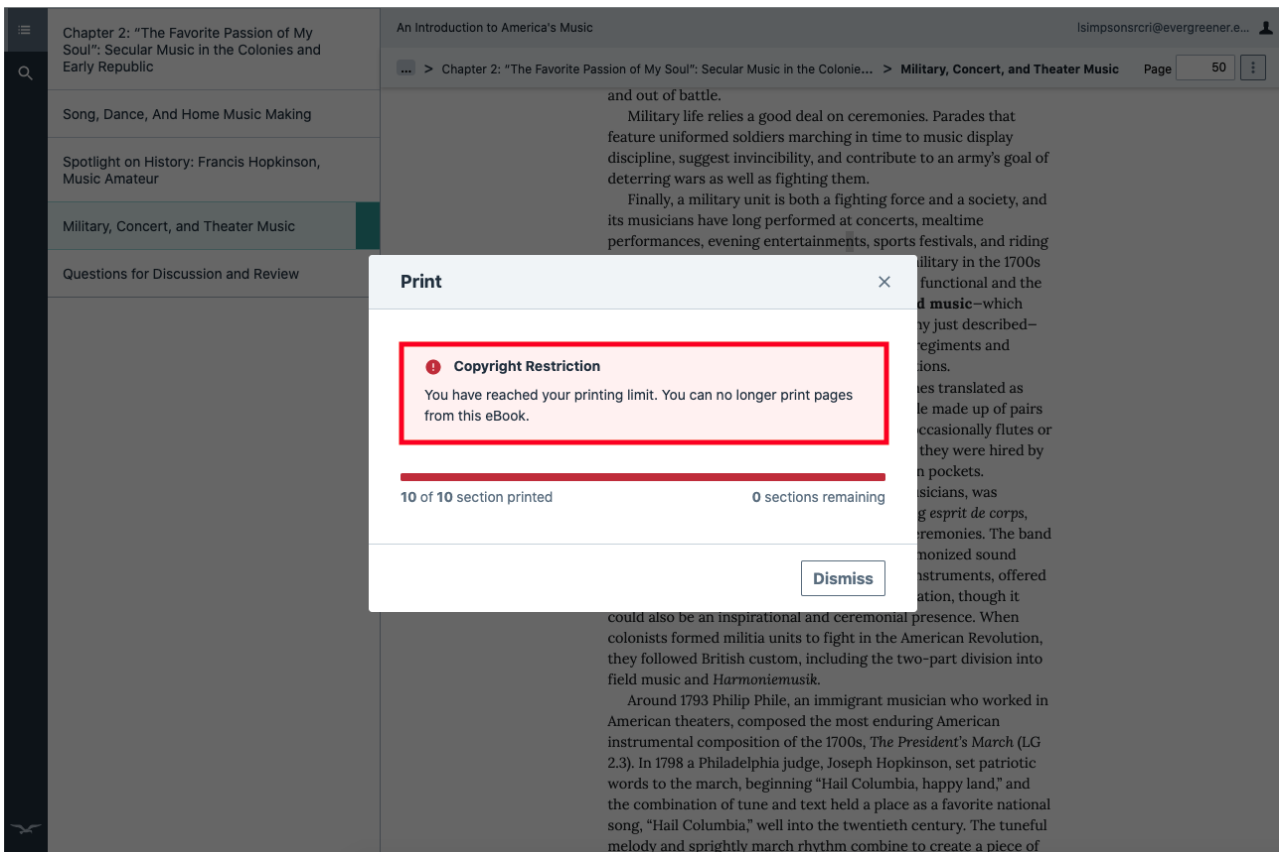
When you select print on a section, you will see a popup window with a progress bar which indicates how many sections you have already printed and how many you have left to print.



When you are close to the limit, you will see a copyright restriction message.



When you have reached the limit, you will see a message notifying you the limit has been reached.

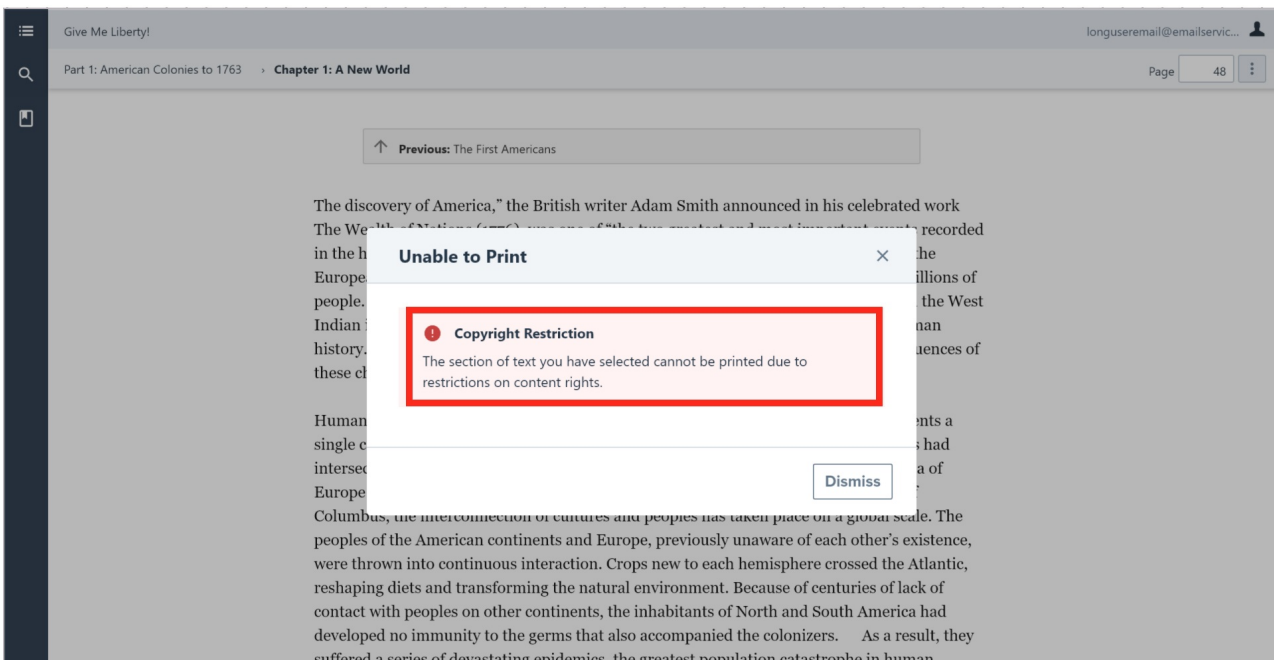


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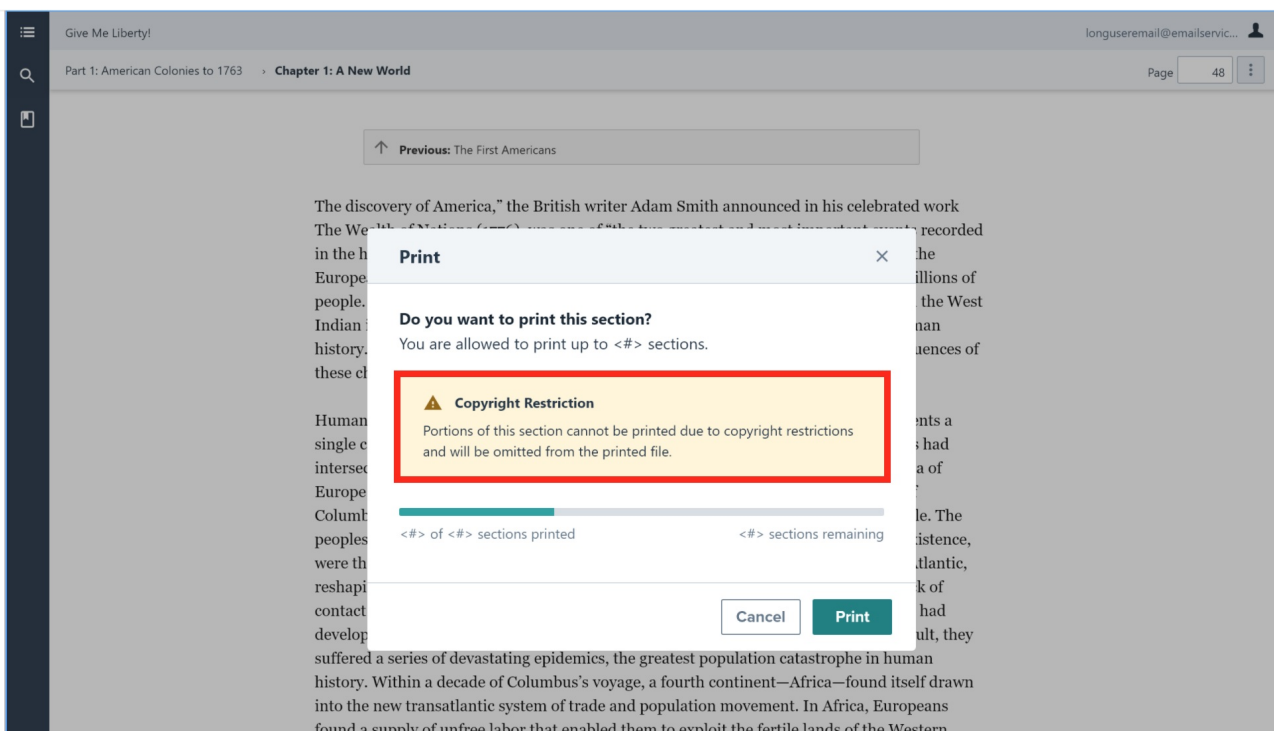
Why can't I print certain sections?

Some sections or parts of a section cannot be printed due to copyright restrictions. After selecting print this section, the popup you see will indicate if the section is available.

If the section you want to print is unavailable due to a copyright restriction, you will see the following message.



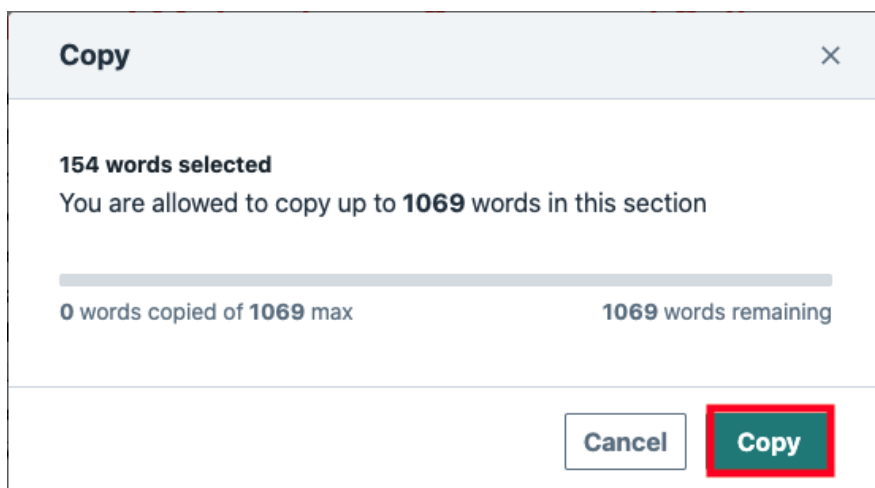
You may also see a message that indicates only part of the section is available for printing.



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You can copy text by highlighting a portion of the text and using your keyboard shortcuts (command+c for mac, control+c for windows).

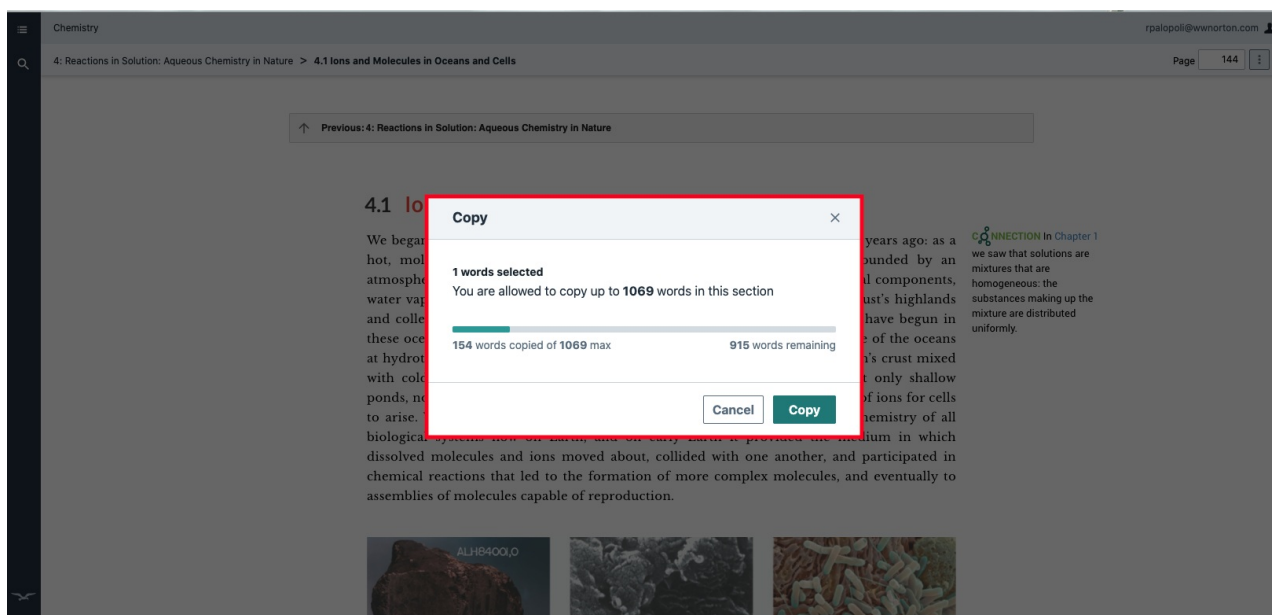
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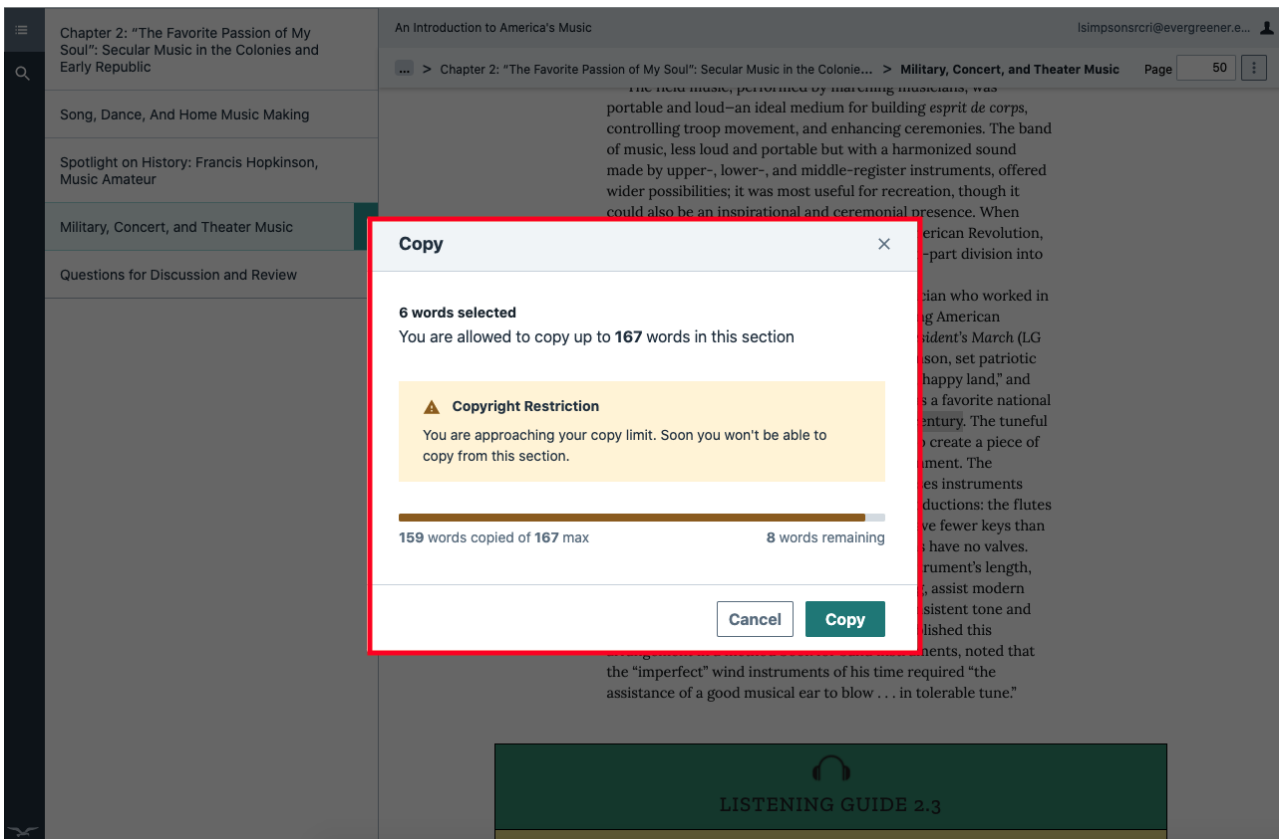
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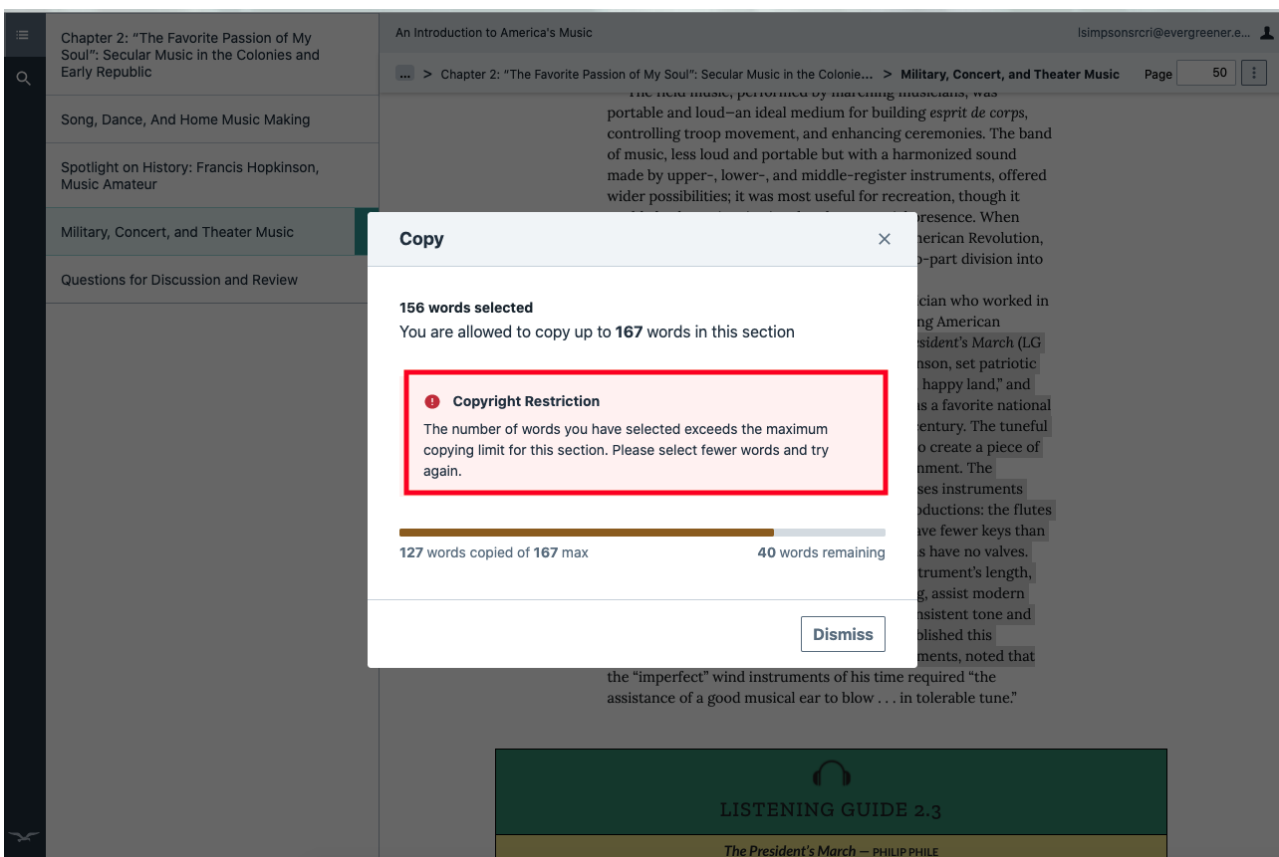
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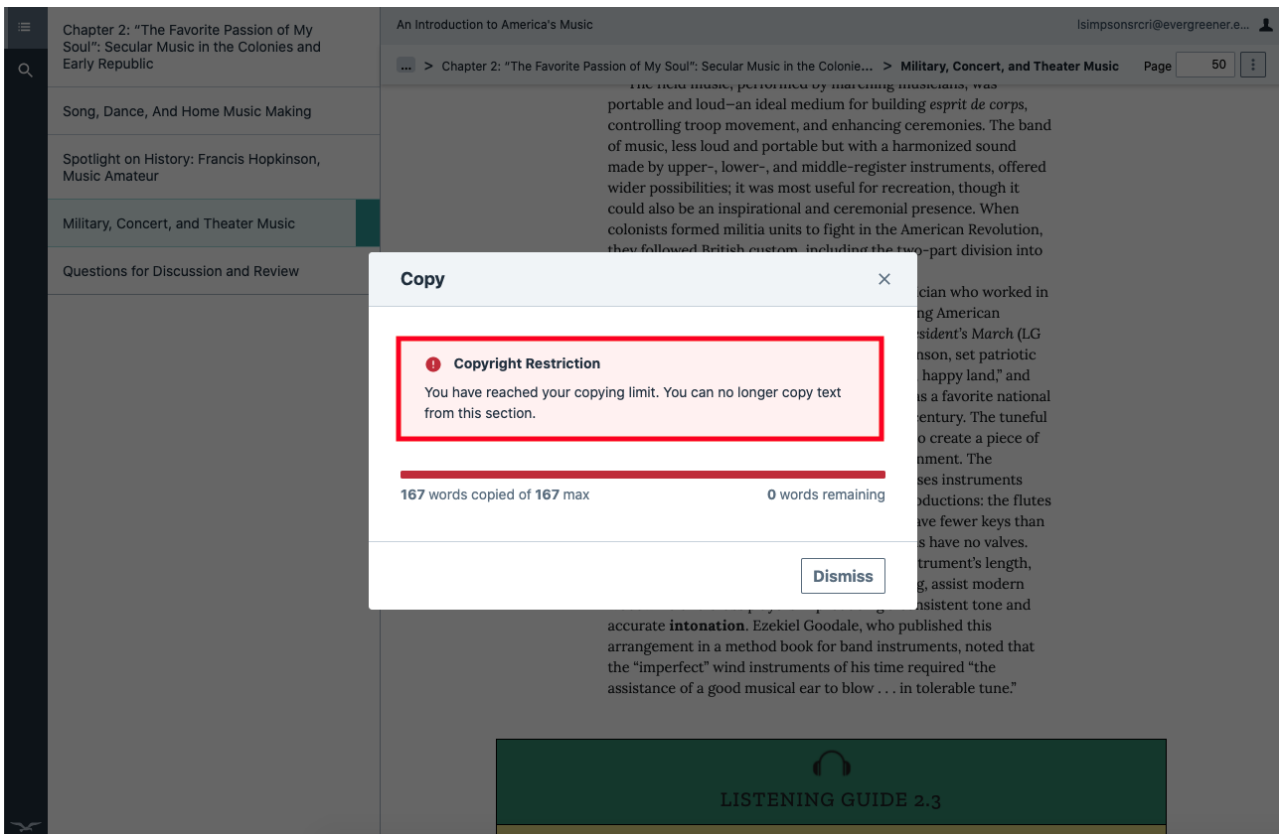
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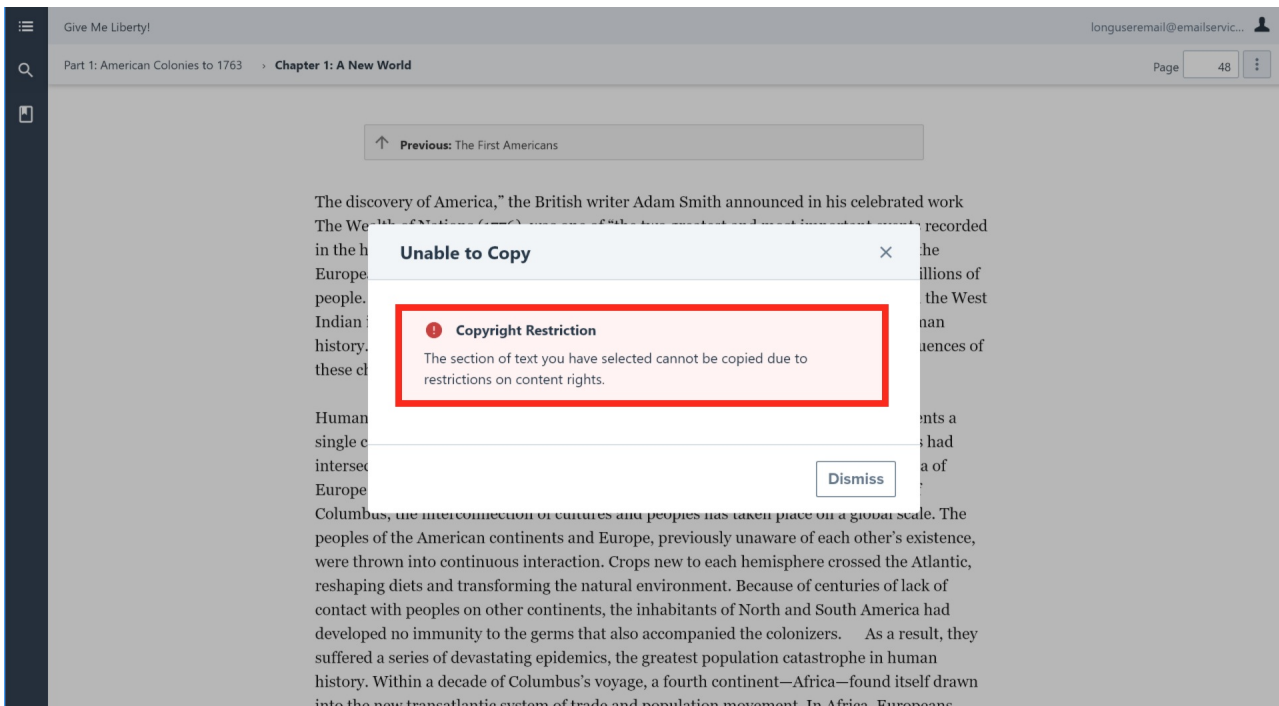


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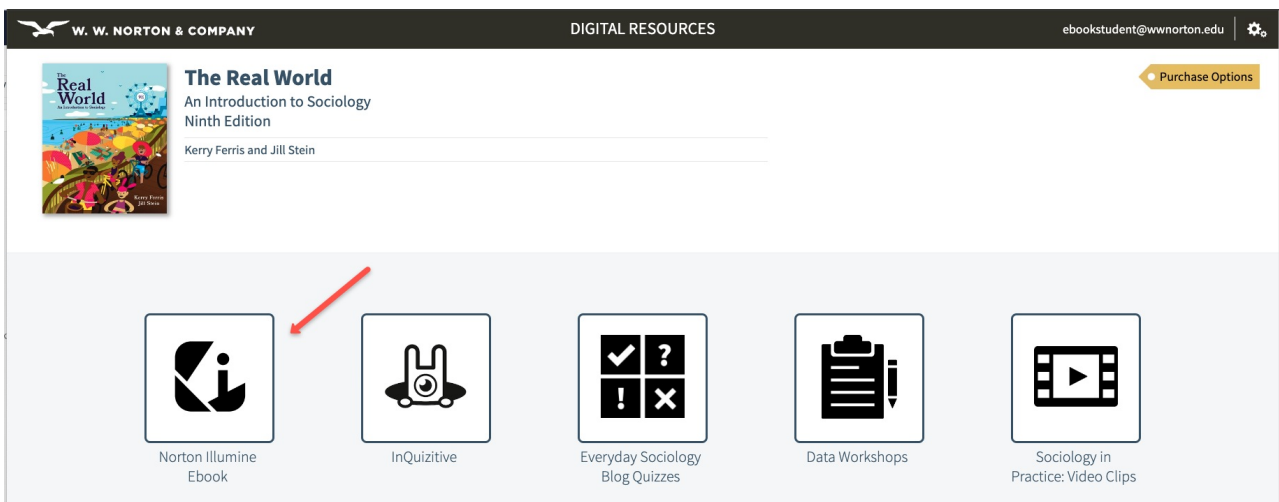


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Chapter 4: Socialization, Interaction, and the Self	—	—	—
Chapter 5: Separate and Together: Life in Groups	—	—	—
Chapter 6: Deviance	—	—	—
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Chapter 8: Race and Ethnicity as Lived Experience	—	—	—
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Chapter 4: Socialization, Interaction, and the Self

↑ Previous: Chapter 3 Review: Applying What You've Learned

CHAPTER 4

Socialization, Interaction, and the Self

Take a picture of this. For many young people, and some older ones as well, Instagram has become a primary means for presenting themselves to the world. An Instagram account is more than just a scrapbook of images and words; nowadays, it's a way of establishing one's identity, of making a claim about who you are. There is an implicit demand to document and display all the right moments of our lives, so a smartphone camera must always be at the ready.

Everyone is a photographer now, clambering to find the perfect shot that's going to convey what we want to say about our lives and ourselves. Accounts are built and meticulously curated to create just the right impression. The best photos must first be selected. Then they are cropped, filtered, and further enhanced using an expansive array of editing tools. Clever captions are thought up and hashtags applied to every post. We must post often but not too much, lest we spoil the effect.

The point of this is not only to create our own sense of self but also to project that self out into the world for approval. So we must always keep up appearances. And it's this part—about having to manipulate how we look to others, about seeking and getting followers, likes, and comments—that has

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