

# The Common Core English Language Arts Standards (CCELA)

## CHAPTER 4, LESSON 1: PROTONS, NEUTRONS, AND ELECTRONS

### Reading Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.RST.6-8.3

Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

#### LITERACY.RST.6-8.4

Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

#### LITERACY.RST.6-8.7

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

*Students use the Activity Sheet to read and follow a multistep procedure to discover that static electricity is about the protons and electrons of atoms. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to proton, electron, and attraction at the molecular level. Students also integrate information from text with molecular models to improve their understanding.*

### Writing Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.WHST.6-8.1

Write arguments focused on discipline-specific content

- a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim (s) from alternate or opposing claims, and organize the reasons and evidence logically.
- b. Support claim(s) with logical reasoning and relevant accurate data and evidence that demonstrate an understanding of the topic or text using credible sources.
- c. Use words, phrases, and clauses to create cohesion and clarify the relationship

among claim(s), counterclaims, reasons, and evidence.

d. Establish and maintain a formal style.

e. Provide a concluding statement or section that follows from and supports the argument presented.

*Students use the Activity Sheet to write answers to questions about the way Lewis Dot structures relate to energy level models. Students learn to use different short-hand methods of representing covalent and ionic bonding using Lewis Dot diagrams. Students also describe how different molecular model illustrations can be used to represent the same molecule.*

# The Common Core English Language Arts Standards (CCELA)

## CHAPTER 4, LESSON 2: THE PERIODIC TABLE

### Reading Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.RST.6-8.4

Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

#### LITERACY.RST.6-8.7

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

*Using the Activity Sheet and a set of element cards, students use the information on the cards and a periodic table to determine which element the card describes. By reading the questions and information on the Activity Sheet and reading and interpreting the element cards, students learn the meaning of words related to protons, neutrons, electrons, atomic number, atomic mass, isotope, and the periodic table. Students also integrate information from text with molecular models to improve their understanding.*

### Writing Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.WHST.6-8.1

Write arguments focused on discipline-specific content

- a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim (s) from alternate or opposing claims, and organize the reasons and evidence logically.
- b. Support claim(s) with logical reasoning and relevant accurate data and evidence that demonstrate an understanding of the topic or text using credible sources.
- c. Use words, phrases, and clauses to create cohesion and clarify the relationship among claim(s), counterclaims, reasons, and evidence.
- d. Establish and maintain a formal style.

- e. Provide a concluding statement or section that follows from and supports the argument presented.

*Using the Activity Sheet, element cards, and a periodic table of the first 20 elements, students identify the atom the card is describing. Students can write down their reasoning for their answers although they are not required to in this activity.*

# The Common Core English Language Arts Standards (CCELA)

## CHAPTER 4, LESSON 3: THE PERIODIC TABLE AND ENERGY LEVEL MODELS

### Reading Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.RST.6-8.4

Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

#### LITERACY.RST.6-8.7

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

*Using the Activity Sheet and a set of element cards showing electron energy levels, students use the information on the card and a periodic table to determine which element the card describes. By reading the questions and information on the Activity Sheet and reading and interpreting the element cards, students learn the meaning of words related to energy levels, electrons, atomic number, and the periodic table. Students also integrate information from text with molecular models to improve their understanding.*

### Writing Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.WHST.6-8.1

Write arguments focused on discipline-specific content

- a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim (s) from alternate or opposing claims, and organize the reasons and evidence logically.
- b. Support claim(s) with logical reasoning and relevant accurate data and evidence that demonstrate an understanding of the topic or text using credible sources.
- c. Use words, phrases, and clauses to create cohesion and clarify the relationship among claim(s), counterclaims, reasons, and evidence.
- d. Establish and maintain a formal style.

- e. Provide a concluding statement or section that follows from and supports the argument presented.

*Using the Activity Sheet, element cards showing energy levels, and a periodic table of the first 20 elements, students identify the atom the card is describing. Students can write down their reasoning for their answers although they are not required to in this activity.*

# The Common Core English Language Arts Standards (CCELA)

## CHAPTER 4, LESSON 4: ENERGY LEVELS, ELECTRONS, AND COVALENT BONDING

### Reading Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.RST.6-8.3

Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

#### LITERACY.RST.6-8.4

Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

#### LITERACY.RST.6-8.7

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

*Students observe and discuss animations modeling the covalent bonding between hydrogen atoms to make hydrogen gas and between oxygen and hydrogen atoms to make water. Students use the Activity Sheet to read the questions and information and apply them to the animations to learn the meaning of words related to electrons, attraction, energy level, and covalent bonding. Students also follow a multistep procedure to see evidence that water is made up of more of one gas (hydrogen) than the other (oxygen).*

### Writing Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.WHST.6-8.1

Write arguments focused on discipline-specific content

- a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim (s) from alternate or opposing claims, and organize the reasons and evidence logically.
- b. Support claim(s) with logical reasoning and relevant accurate data and evidence that demonstrate an understanding of the topic or text using credible sources.

- c. Use words, phrases, and clauses to create cohesion and clarify the relationship among claim(s), counterclaims, reasons, and evidence.
- d. Establish and maintain a formal style.
- e. Provide a concluding statement or section that follows from and supports the argument presented.

*Students use the Activity Sheet to write answers to questions about the animations of covalent bonding. Students also write captions describing the process of covalent bonding. Students apply reasoning from the molecular models to make and support claims about why atoms form only a certain number of covalent bonds*

# The Common Core English Language Arts Standards (CCELA)

## CHAPTER 4, LESSON 5: ENERGY LEVELS, ELECTRONS, AND IONIC BONDING

### Reading Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.RST.6-8.3

Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

#### LITERACY.RST.6-8.4

Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

#### LITERACY.RST.6-8.7

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

*Students observe and discuss animations modeling the ionic bonding between sodium and chlorine to make sodium chloride. Students also use a magnifier to observe salt crystals. Students use the Activity Sheet to read the questions and information and apply them to their observations and to the animations to learn the meaning of words related to electrons, attraction, energy level, and ionic bonding.*

### Writing Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.WHST.6-8.1

Write arguments focused on discipline-specific content

- a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim (s) from alternate or opposing claims, and organize the reasons and evidence logically.
- b. Support claim(s) with logical reasoning and relevant accurate data and evidence that demonstrate an understanding of the topic or text using credible sources.
- c. Use words, phrases, and clauses to create cohesion and clarify the relationship among claim(s), counterclaims, reasons, and evidence.

- d. Establish and maintain a formal style.
- e. Provide a concluding statement or section that follows from and supports the argument presented.

*Students use the Activity Sheet to write answers to questions about their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to their observations. Students make and support a claim that answers the Question to Investigate about why salt crystals are shaped like cubes.*

# The Common Core English Language Arts Standards (CCELA)

## CHAPTER 4, LESSON 6: REPRESENT BONDING WITH LEWIS DOT DIAGRAMS

### Reading Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.RST.6-8.4

Determine the meaning of symbols, key terms and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

#### LITERACY.RST.6-8.7

Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

*Students use the Activity Sheet to read about Lewis Dot diagrams for representing atoms and molecules. Students compare Lewis Dot structures with energy level models to see the similarities and differences. Students also read about ways to show covalent and ionic bonding using Lewis Dot structures. Students also integrate information from text with molecular models to improve their understanding.*

### Writing Standards for Literacy in Science and Technical Subjects 6-8

#### LITERACY.WHST.6-8.1

Write arguments focused on discipline-specific content

- a. Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim (s) from alternate or opposing claims, and organize the reasons and evidence logically.
- b. Support claim(s) with logical reasoning and relevant accurate data and evidence that demonstrate an understanding of the topic or text using credible sources.
- c. Use words, phrases, and clauses to create cohesion and clarify the relationship among claim(s), counterclaims, reasons, and evidence.
- d. Establish and maintain a formal style.

- e. Provide a concluding statement or section that follows from and supports the argument presented.

*Students use the Activity Sheet to write answers to questions about the different components of Lewis Dot structures and what they represent.*