The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 1: WHAT IS A CHEMICAL REACTION?

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 make a model of a chemical reaction to see where the atoms in the products of the reaction come from. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to reactant, product, and chemical reaction 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 their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to the model that they create. Students apply reasoning from the molecular models to make and support a claim that answers the Question to Investigate about where the atoms in the products of a chemical reaction come from.

The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 2: CONTROLLING THE AMOUNT OF PRODUCTS IN A CHEMICAL REACTION

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 the amount of reactants (vinegar and baking soda) required to produce a certain amount of product (carbon dioxide gas). Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to reactant, product, milliliter, graduated cylinder, and chemical reaction 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 their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to their observations. Students apply reasoning from the molecular models to evidence from their observations to make and support a claim that answers the Question to Investigate about how the amount of each reactant affects the amount of product in a chemical reaction.

The Common Core English Language Arts Standards (CCELA)

Chapter 6, Lesson 3: Forming a Precipitate

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 how to tell that a precipitate has been formed in a chemical reaction. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to reactant, product, solution, precipitate, and chemical reaction 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 their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to their observations. Students apply reasoning from the molecular models to evidence from their observations to make and support a claim that answers the Question to Investigate about how you can tell that a precipitate has been formed in a chemical reaction.

The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 4: TEMPERATURE AND THE RATE OF A CHEMICAL REACTION

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 whether the temperature of the reactants affects the rate of the chemical reaction. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to reactant, product, rate, and chemical reaction 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 their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to their observations. Students apply reasoning from the molecular models to evidence from their observations to make and support a claim that answers the Question to Investigate about whether the temperature of the reactants affects the rate of the chemical reaction.

The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 5: A CATALYST AND THE RATE OF REACTION

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 whether yeast can act as a catalyst when added to hydrogen peroxide. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to reactant, catalyst, product, rate, and chemical reaction 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 their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to their observations. Students apply reasoning from the molecular models to evidence from their observations to make and support a claim that answers the Question to Investigate about whether yeast can act as a catalyst when added to hydrogen peroxide.

The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 6: USING CHEMICAL CHANGE TO IDENTIFY AN UNKNOWN

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 identify an unknown by the way it reacts with certain substances. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to characteristic properties and chemical reactions. 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 their observations. Students apply reasoning from their observations to make and support a claim that answers the Question to Investigate about whether an unknown substance can be identified by the way it reacts with certain substances.

The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 7: ENERGY CHANGES IN CHEMICAL REACTIONS

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 see whether the temperature changes when vinegar reacts with baking soda and when a baking soda solution reacts with calcium chloride. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to reactants, products, bonds, energy, exothermic, endothermic, and chemical reactions 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 their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to their observations. Students apply reasoning from the molecular models to evidence from their observations to make and support a claim that answers the Question to Investigate about whether the temperature changes when vinegar and baking soda react and when a baking soda solution reacts with calcium chloride.

The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 8: PH AND COLOR CHANGE

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 how the concentration of an acid or base affects the color of a pH indicator. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to acid, base, pH, concentration, and 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 their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to their observations. Students apply reasoning from the molecular models to evidence from their observations to make and support a claim that answers the Question to Investigate about whether the concentration of acids and bases affect the color of a pH indicator.

The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 9: NEUTRALIZING ACIDS AND BASES

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 whether a base can be used to neutralize an acidic solution and whether more base would be needed to neutralize a more acidic solution. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to acid, base, pH, neutralize, and concentration 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 their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to their observations. Students apply reasoning from the molecular models to evidence from their observations to make and support a claim that answers the Question to Investigate about how much base is needed to neutralize an acid and whether more base is needed to neutralize a more acidic solution.

The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 10: CARBON DIOXIDE CAN MAKE A SOLUTION ACIDIC

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 whether carbon dioxide from soda pop, exhaled breath, and a chemical reaction all make water acidic. Students read the questions and information on the Activity Sheet and apply them to their observations to learn the meaning of words related to carbon dioxide, carbonic acid, and chemical reactions 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 their observations. Students also describe how the molecular model illustrations and animations from the lesson relate to their observations. Students apply reasoning from the molecular models to evidence from their observations to make and support a claim that answers the Question to Investigate about whether carbon dioxide from soda pop, exhaled breath, and a chemical reaction all make water acidic.

The Common Core English Language Arts Standards (CCELA)

CHAPTER 6, LESSON 11: CHEMICAL REACTIONS AND ENGINEERING DESIGN

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 the amount of baking soda solution and calcium chloride to mix to achieve a target temperature but not to produce too much gas. Students interpret information in a chart to determine what temperature range to aim for and then record results from trials in a separate table.

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

LITERACY.WHST.6-8.1
Write arguments focused on discipline-specific content

a. Support claim(s) with logical reasoning and relevant accurate data and evidence that demonstrate an understanding of the topic or text using credible sources.

b. Use words, phrases, and clauses to create cohesion and clarify the relationship among claim(s), counterclaims, reasons, and evidence.

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

Students use the Activity Sheet to write about the criteria and constraints related to using a chemical reaction in the design of a portable reptile egg incubator. Students write about the advantages and disadvantages of using baking soda in the design of the incubator. Students also write about how the production of a gas can help improve the design of the device.

