



## **National Ag in the Classroom Lesson Matrix**

### **TEKS Alignment: 9<sup>th</sup> Grade – 12<sup>th</sup> Grade**

\*(Click on the below lesson in the Table of Contents to view the alignment for that lesson)

#### **TABLE OF CONTENTS**

[A Tale of Two Burgers: Beef and Plant-Based Protein](#)

[Agricultural Land Use](#)

[Agricultural Production Regions in the United States](#)

[Apples and the Science of Genetic Selection](#)

[Carbon Hoofprints: Cows and Climate Change](#)

[Concentrate on the Solution](#)

[Double the Muscle: Probabilities and Pedigrees](#)

[Farm-to-Fork in Augmented Reality](#)

[Fermentation of Honey](#)

[Fertilizers and the Environment](#)

[Filling the Global Grocery Bag](#)

[From Boom to Dust](#)

[Geography and Climate for Agricultural Landscapes](#)

[Hen House Engineering](#)

[Journey 2050 Lesson 1: Introduction to Sustainable Agriculture](#)

[Journey 2050 Lesson 2: Plant Health](#)

[Journey 2050 Lesson 3: Water](#)

[Journey 2050 Lesson 4: Economy](#)

[Journey 2050 Lesson 5: Land Use](#)

[Journey 2050 Lesson 6: Careers for 2050 and Beyond!](#)

[Journey 2050 Lesson 7: Technology and Innovations](#)

#### **A TALE OF TWO BURGERS: BEEF AND PLANT-BASED PROTEIN**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and



- occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
  - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.G: evaluate details read to determine key ideas;
    - 110.36.c.4.H: synthesize information from two texts to create new understanding;
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.36.c.11.A: develop questions for formal and informal inquiry
    - 110.36.c.11.E: locate relevant sources
    - 110.36.c.11.F: synthesize information from a variety of sources
    - 110.36.c.11.G: examine sources for:
      - 110.36.c.11.G.i: credibility and bias, including omission
    - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that



- employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
  - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.G: evaluate details read to determine key ideas;
    - 110.37.c.4.H: synthesize information from multiple texts to create new understanding;
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.37.c.11.A: develop questions for formal and informal inquiry;
    - 110.37.c.11.E: locate relevant sources;
    - 110.37.c.11.F: synthesize information from a variety of sources;
    - 110.37.c.11.G: examine sources for:
      - 110.37.c.11.G.i: credibility and bias, including omission;
    - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for



- effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
  - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.G: evaluate details read to understand key ideas;
  - 110.38.c.4.H: synthesize information from a variety of text types to create new understanding
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order
- 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.38.c.11.A: develop questions for formal and informal inquiry;
  - 110.38.c.11.E: locate relevant sources;
  - 110.38.c.11.F: synthesize information from a variety of sources;
  - 110.38.c.11.G: examine sources for:
    - 110.38.c.11.G.i: credibility, bias, and accuracy
  - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;



- 110.39.c.1.C: formulate sound arguments and present using elements of classical speeches such as introduction, first and second transitions, body, conclusion, the art of persuasion, rhetorical devices, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
  - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.4.H: synthesize information from a variety of text types to create new understanding;
- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.39.c.11.A: develop questions for formal and informal inquiry;
  - 110.39.c.11.E: locate relevant sources;
  - 110.39.c.11.F: synthesize information from a variety of sources;
  - 110.39.c.11.G: examine sources for:
    - 110.39.c.11.G.i: credibility, bias, and accuracy
  - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- Environmental Systems
  - 112.37.c.9: Science concepts. The student knows the impact of human activities on the environment. The student is expected to:
    - 112.37.c.9.G: analyze how ethical beliefs can be used to influence scientific practices such as methods for increasing food production;



## **AGRICULTURAL LAND USE**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.E: make connections to personal experiences, ideas in other texts, and society
    - 110.36.c.4.G: evaluate details read to determine key ideas:
    - 110.36.c.4.H: synthesize information from two texts to create new understanding;
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate
  - 110.36.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:



- 110.36.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.36.c.11.E: locate relevant sources;
    - 110.36.c.11.F: synthesize information from a variety of sources;
    - 110.36.c.11.G: examine sources for:
      - 110.36.c.11.G.i: credibility and bias, including omission;
    - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.E: make connections to personal experiences, ideas in other texts, and society;
    - 110.37.c.4.G: evaluate details read to determine key ideas;
    - 110.37.c.4.H: synthesize information from multiple texts to create new understanding;





- 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.37.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- 110.37.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.37.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
- 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.37.c.11.E: locate relevant sources;
  - 110.37.c.11.F: synthesize information from a variety of sources;
  - 110.37.c.11.G: examine sources for:
    - 110.37.c.11.G.i: credibility and bias, including omission;
  - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in





decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.38.c.4.G: evaluate details read to understand key ideas;
  - 110.38.c.4.H: synthesize information from a variety of text types to create new understanding;
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- 110.38.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.38.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
- 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.38.c.11.E: locate relevant sources;
  - 110.38.c.11.F: synthesize information from a variety of sources;
  - 110.38.c.11.G: examine sources for:
    - 110.38.c.11.G.i: credibility, bias, and accuracy;
  - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and



- critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
- 110.39.c.1.C: formulate sound arguments and present using elements of classical speeches such as introduction, first and second transitions, body, conclusion, the art of persuasion, rhetorical devices, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.4.H: synthesize information from a variety of text types to create new understanding;
- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- 110.39.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.39.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and



sustained recursive inquiry processes for a variety of purposes. The student is expected to:

- 110.39.c.11.E: locate relevant sources;
  - 110.39.c.11.F: synthesize information from a variety of sources;
  - 110.39.c.11.G: examine sources for:
    - 110.39.c.11.G.i: credibility, bias, and accuracy;
  - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- Aquatic Science
    - 112.32.c.12: Science concepts. The student understands how human activities impact aquatic environments. The student is expected to:
      - 112.38.c.12.A: predict effects of chemical, organic, physical, and thermal changes from humans on the living and nonliving components of an aquatic ecosystem;
- Biology
    - 112.34.c.2: Scientific processes. The student uses scientific practices and equipment during laboratory and field investigations. The student is expected to:
      - 112.34.c.2.E: plan and implement descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology;
      - 112.34.c.2.F: collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as data-collecting probes, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, balances, gel electrophoresis apparatuses, micropipettes, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;
      - 112.34.c.2.G: analyze, evaluate, make inferences, and predict trends from data; and
      - 112.34.c.2.H: communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.
- Environmental Systems
    - 112.37.c.5: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
      - 112.37.c.5.A: summarize methods of land use and management and describe its effects on land fertility;
    - 112.37.c.9: Science concepts. The student knows the impact of human activities on the environment. The student is expected to:



- 112.37.c.9.A: identify causes of air, soil, and water pollution, including point and nonpoint sources;
- United States History Since 1877
  - 113.41.c.12: Geography. The student understands the impact of geographic factors on major events. The student is expected to analyze the impact of physical and human geographic factors on the Klondike Gold Rush, the Panama Canal, the Dust Bowl, and the levee failure in New Orleans after Hurricane Katrina.

## **AGRICULTURAL PRODUCTION REGIONS IN THE UNITED STATES**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:



- 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
    - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;



- 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- Environmental Systems
  - 112.37.c.5: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.37.c.5.A: summarize methods of land use and management and describe its effects on land fertility;
- United States History Since 1877
  - 113.41.c.26: Science, technology, and society. The student understands the impact of science, technology, and the free enterprise system on the economic development of the United States. The student is expected to:
    - 113.41.c.26.B: explain how specific needs result in scientific discoveries and technological innovations in agriculture, the military, and medicine; and
  - 113.41.c.28: Social studies skills. The student understands how historians use historiography to interpret the past and applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including technology. The student is expected to:
    - 113.41.c.28.A: analyze primary and secondary sources such as maps, graphs, speeches, political cartoons, and artifacts to acquire information to answer historical questions;
- World Geography Studies
  - 113.43.c.11: Economics. The student understands how geography influences economic activities. The student is expected to:
    - 113.43.c.11.B: identify the factors affecting the location of different types of economic activities, including subsistence and commercial agriculture, manufacturing, and service industries; and

## **APPLES AND THE SCIENCE OF GENETIC SELECTION**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.



- 110.36.c.3: Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.
- 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.36.c.4.G: evaluate details read to determine key ideas;
- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.3: Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.G: evaluate details read to determine key ideas;
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
- English III





- 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
  - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- 110.38.c.3: Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.
- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.G: evaluate details read to understand key ideas;
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.3: Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking--self-sustained reading. The student



reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.

- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
- Biology
  - 112.34.c.7: Science concepts. The student knows evolutionary theory is a scientific explanation for the unity and diversity of life. The student is expected to:
    - 112.34.c.7.e: analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species; and
- Integrated Physics and Chemistry
  - 112.38.c.6: Science concepts. The student knows that relationships exist between the structure and properties of matter. The student is expected to:
    - 112.38.c.6.A: examine differences in physical properties of solids, liquids, and gases as explained by the arrangement and motion of atoms or molecules;

## **CARBON HOOFPRIINTS: COWS AND CLIMATE CHANGE**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.



- 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.36.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.36.c.4.F: make inferences and use evidence to support understanding;
  - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.36.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.A: establish purpose for reading assigned and self-selected texts;



- 110.37.c.4.F: make inferences and use evidence to support understanding;
  - 110.37.c.4.G: evaluate details read to determine key ideas;
  - 110.37.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
- 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.37.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.A: establish purpose for reading assigned and self-selected texts;
    - 110.38.c.4.F: make inferences and use evidence to support understanding;
    - 110.38.c.4.G: evaluate details read to understand key ideas;
    - 110.38.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.



- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.38.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.A: establish purpose for reading assigned and self-selected texts;
    - 110.39.c.4.F: make inferences and use evidence to support understanding;
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
    - 110.39.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;



- 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.39.c.5.F: respond using acquired content and academic vocabulary as appropriate;
- Biology
  - 112.34.c.12: Science concepts. The student knows that interdependence and interactions occur within an environmental system. The student is expected to:
    - 112.34.c.12.D: describe the flow of matter through the carbon and nitrogen cycles and explain the consequences of disrupting these cycles;
- Earth and Space Science
  - 112.36.c.15: Fluid Earth. The student knows that interactions among Earth's five subsystems influence climate and resource availability, which affect Earth's habitability. The student is expected to:
    - 112.36.c.15.D: explain the global carbon cycle, including how carbon exists in different forms within the five subsystems and how these forms affect life;
- Environmental Systems
  - 112.37.c.4: Science concepts. The student knows the relationships of biotic and abiotic factors within habitats, ecosystems, and biomes. The student is expected to:
    - 112.37.c.4.C: diagram abiotic cycles, including the rock, hydrologic, carbon, and nitrogen cycles;

## **CONCENTRATE ON THE SOLUTION**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:



- 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and
- Algebra I
  - 111.39.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.39.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.39.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.39.c.1.C: select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;





- Chemistry
  - 112.35.c.3: Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:
    - 112.35.c.3.E: describe the connection between chemistry and future careers; and
  - 112.35.c.7: Science concepts. The student knows how atoms form ionic, covalent, and metallic bonds. The student is expected to:
    - 112.35.c.7.B: write the chemical formulas of ionic compounds containing representative elements, transition metals and common polyatomic ions, covalent compounds, and acids and bases;
  - 112.35.c.8: Science concepts. The student can quantify the changes that occur during chemical reactions. The student is expected to:
    - 112.35.c.8.C: calculate percent composition of compounds;
  - 112.35.c.10: Science concepts. The student understands and can apply the factors that influence the behavior of solutions. The student is expected to:
    - 112.35.c.10.H: define pH and calculate the pH of a solution using the hydrogen ion concentration.
- Career Preparation II
  - 127.15.c.4: The student applies and enhances academic knowledge and skills in the workplace. The student is expected to:
    - 127.15.c.4.A: apply critical- and creative-thinking skills to solve complex problems;

## **DOUBLE THE MUSCLE: PROBABILITIES AND PEDIGREES**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English II



- 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
  - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.



- Statistics
  - 111.47.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.47.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
    - 111.47.c.1.B: use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution;
    - 111.47.c.1.C: select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems;
    - 111.47.c.1.D: communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;
  - 111.47.c.5: Probability and random variables. The student applies the mathematical process standards to connect probability and statistics. The student is expected to:
    - 111.47.c.5.A: determine probabilities, including the use of a two-way table;
- Biology
  - 112.34.c.6: Science concepts. The student knows the mechanisms of genetics such as the role of nucleic acids and the principles of Mendelian and non-Mendelian genetics. The student is expected to:
    - 112.34.c.6.D: recognize that gene expression is a regulated process;
    - 112.34.c.6.F: predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses, and non-Mendelian inheritance; and

## **FARM-TO-FORK IN AUGMENTED REALITY**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;



- 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.36.c.11.A: develop questions for formal and informal inquiry
    - 110.36.c.11.E: locate relevant sources
    - 110.36.c.11.F: synthesize information from a variety of sources
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.37.c.11.A: develop questions for formal and informal inquiry;
    - 110.37.c.11.E: locate relevant sources;
    - 110.37.c.11.F: synthesize information from a variety of sources;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
  - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.38.c.11.A: develop questions for formal and informal inquiry;



- 110.38.c.11.E: locate relevant sources;
  - 110.38.c.11.F: synthesize information from a variety of sources;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
  - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.39.c.11.A: develop questions for formal and informal inquiry;
    - 110.39.c.11.E: locate relevant sources;
    - 110.39.c.11.F: synthesize information from a variety of sources;

## **FERMENTATION OF HONEY**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:



- 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- Mathematical Models with Applications



- 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
  - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;
- Biology
  - 112.34.c.2: Scientific processes. The student uses scientific practices and equipment during laboratory and field investigations. The student is expected to:
    - 112.34.c.2.E: plan and implement descriptive, comparative, and experimental investigations, including asking questions, formulating testable hypotheses, and selecting equipment and technology;
    - 112.34.c.2.F: collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as data-collecting probes, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, balances, gel electrophoresis apparatuses, micropipettes, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures;
    - 112.34.c.2.G: analyze, evaluate, make inferences, and predict trends from data; and
    - 112.34.c.2.H: communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.
  - 112.34.c.9: Science concepts. The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms. The student is expected to:
    - 112.34.c.9.B: compare the reactants and products of photosynthesis and cellular respiration in terms of energy, energy conversions, and matter; and

## **FERTILIZERS AND THE ENVIRONMENT**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:





- 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
  - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.36.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.36.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.36.c.4.F: make inferences and use evidence to support understanding;
  - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
- 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;



- 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
  - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.37.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.37.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.37.c.4.F: make inferences and use evidence to support understanding;
  - 110.37.c.4.G: evaluate details read to determine key ideas;
  - 110.37.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down.
- 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
  - 110.37.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in



decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.38.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.38.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.38.c.4.F: make inferences and use evidence to support understanding;
  - 110.38.c.4.G: evaluate details read to understand key ideas;
  - 110.38.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
- 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.



- 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
  - 110.39.c.4.A: establish purpose for reading assigned and self-selected texts;
  - 110.39.c.4.E: make connections to personal experiences, ideas in other texts, and society;
  - 110.39.c.4.F: make inferences and use evidence to support understanding;
  - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.4.I: monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, annotating, and using outside sources when understanding breaks down.
- 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
  - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
  - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
  - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- Mathematical Models with Applications
  - 111.43.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
    - 111.43.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
  - 111.43.c.9: Mathematical modeling in social sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:
    - 111.43.c.9.A: interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots, to draw conclusions from the data and determine the strengths and weaknesses of conclusions;
- Advanced Quantitative Reasoning
  - 111.44.c.1: Mathematical process standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:



- 111.44.c.1.A: apply mathematics to problems arising in everyday life, society, and the workplace;
  - 111.44.c.2: Numeric reasoning. The student applies the process standards in mathematics to generate new understandings by extending existing knowledge. The student generates new mathematical understandings through problems involving numerical data that arise in everyday life, society, and the workplace. The student extends existing knowledge and skills to analyze real-world situations. The student is expected to:
    - 111.44.c.2.A: use precision and accuracy in real-life situations related to measurement and significant figures;
- Environmental Systems
  - 112.37.c.3: Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:
    - 112.37.c.3.E: describe the connection between environmental science and future careers;
  - 112.37.c.5: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.37.c.5.A: summarize methods of land use and management and describe its effects on land fertility;
  - 112.37.c.7: Science concepts. The student knows the relationship between carrying capacity and changes in populations and ecosystems. The student is expected to:
    - 112.37.c.7.A: relate carrying capacity to population dynamics;
    - 112.37.c.7.B: calculate birth rates and exponential growth of populations;
  - 112.37.c.9: Science concepts. The student knows the impact of human activities on the environment. The student is expected to:
    - 112.37.c.9.A: identify causes of air, soil, and water pollution, including point and nonpoint sources;
    - 112.37.c.9.F: evaluate cost-benefit trade-offs of commercial activities such as municipal development, farming, deforestation, over-harvesting, and mining;
    - 112.37.c.9.G: analyze how ethical beliefs can be used to influence scientific practices such as methods for increasing food production;

## **FILLING THE GLOBAL GROCERY BAG**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:



- 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
  - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
  - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.36.c.11.A: develop questions for formal and informal inquiry
  - 110.36.c.11.E: locate relevant sources
  - 110.36.c.11.F: synthesize information from a variety of sources
  - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.37.c.11.A: develop questions for formal and informal inquiry;
    - 110.37.c.11.E: locate relevant sources;



- 110.37.c.11.F: synthesize information from a variety of sources;
  - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.38.c.11.A: develop questions for formal and informal inquiry;
    - 110.38.c.11.E: locate relevant sources;
    - 110.38.c.11.F: synthesize information from a variety of sources;
    - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in





decision making, and evaluating the work of the group based on agreed-upon criteria.

- 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.39.c.11.A: develop questions for formal and informal inquiry;
  - 110.39.c.11.E: locate relevant sources;
  - 110.39.c.11.F: synthesize information from a variety of sources;
  - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- Environmental Systems
  - 112.37.c.5: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.37.c.5.E: analyze and evaluate the economic significance and interdependence of resources within the environmental system; and
- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.6: Economics. The student understands the right to own, use, and dispose of private property. The student is expected to:
    - 113.31.c.6.B: identify and evaluate examples of restrictions that the government places on the use of business and individual property.
- World Geography Studies
  - 113.43.c.11: Economics. The student understands how geography influences economic activities. The student is expected to:
    - 113.43.c.11.B: identify the factors affecting the location of different types of economic activities, including subsistence and commercial agriculture, manufacturing, and service industries; and
    - 113.43.c.11.C: assess how changes in climate, resources, and infrastructure (technology, transportation, and communication) affect the location and patterns of economic activities.
  - 113.43.c.16: Culture. The student understands how the components of culture affect the way people live and shape the characteristics of regions. The student is expected to:
    - 113.43.c.16.B: describe elements of culture, including language, religion, beliefs, institutions, and technologies; and
  - 113.43.c.18: Culture. The student understands the ways in which cultures change and maintain continuity. The student is expected to:
    - 113.43.c.18.D: evaluate the spread of cultural traits to find examples of cultural convergence and divergence such as the spread of democratic ideas, language, foods, technology, or global sports.



## **FROM BOOM TO DUST**

- English I

- 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
  - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- 110.36.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.36.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing
  - 110.36.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
    - 110.36.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context; and
    - 110.36.c.9.B.ii: developing an engaging idea reflecting depth of thought with specific details, examples, and commentary;
- 110.36.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
  - 110.36.c.10.C: compose argumentative texts using genre characteristics and craft; and

- English II

- 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
  - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - using acquired content and academic vocabulary as appropriate;



- 110.37.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
  - 110.37.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
  - 110.37.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
    - 110.37.c.9.B.i: using an organizing structure appropriate to purpose, audience, topic, and context; and
    - 110.37.c.9.B.ii: developing an engaging idea reflecting depth of thought with specific details, examples, and commentary;
- 110.37.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
  - 110.37.c.10.C: compose argumentative texts using genre characteristics and craft; and
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.38.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
    - 110.38.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
      - 110.38.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context; and



- 110.38.c.9.B.ii: developing an engaging idea reflecting depth of thought with effective use of rhetorical devices, details, examples, and commentary;
  - 110.38.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
    - 110.38.c.10.C: compose argumentative texts using genre characteristics and craft;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.9: Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and use appropriate conventions. The student is expected to:
    - 110.39.c.9.A: plan a piece of writing appropriate for various purposes and audiences by generating ideas through a range of strategies such as brainstorming, journaling, reading, or discussing;
    - 110.39.c.9.B: develop drafts into a focused, structured, and coherent piece of writing in timed and open-ended situations by:
      - 110.39.c.9.B.i: using strategic organizational structures appropriate to purpose, audience, topic, and context; and
      - 110.39.c.9.B.ii: developing an engaging idea reflecting depth of thought with effective use of rhetorical devices, details, examples, and commentary;
  - 110.39.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
    - 110.39.c.10.C: compose argumentative texts using genre characteristics and craft;



- Earth and Space Science
  - 112.36.c.11: Solid Earth. The student knows that the geosphere continuously changes over a range of time scales involving dynamic and complex interactions among Earth's subsystems. The student is expected to:
    - 112.36.c.11.A: compare the roles of erosion and deposition through the actions of water, wind, ice, gravity, and igneous activity by lava in constantly reshaping Earth's surface;
- United States History Studies Since 1877
  - 113.41.c.2: History. The student understands traditional historical points of reference in U.S. history from 1877 to the present. The student is expected to:
    - 113.41.c.2.B: explain the significance of the following years as turning points: 1898 (Spanish-American War), 1914-1918 (World War I), 1929 (the Great Depression begins), 1939-1945 (World War II), 1957 (Sputnik launch ignites U.S.-Soviet space race), 1968 (Martin Luther King Jr. assassination), 1969 (U.S. lands on the moon), 1991 (Cold War ends), 2001 (terrorist attacks on World Trade Center and the Pentagon), and 2008 (election of first black president, Barack Obama).
  - 113.41.c.12: Geography. The student understands the impact of geographic factors on major events. The student is expected to analyze the impact of physical and human geographic factors on the Klondike Gold Rush, the Panama Canal, the Dust Bowl, and the levee failure in New Orleans after Hurricane Katrina.

## **GEOGRAPHY AND CLIMATE FOR AGRICULTURAL LANDSCAPES**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and



- 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.36.c.4.E: create mental images to deepen understanding;
    - 110.36.c.4.G: evaluate details read to determine key ideas;
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.36.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.36.c.11.E: locate relevant sources;
    - 110.36.c.11.F: synthesize information from a variety of sources;
    - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.B: follow and give complex oral instructions to perform specific tasks, answer questions, or solve problems and complex processes;
    - 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and



- 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.37.c.4.E: make connections to personal experiences, ideas in other texts, and society;
    - 110.37.c.4.G: evaluate details read to determine key ideas;
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.37.c.5.B: write responses that demonstrate understanding of texts, including comparing texts within and across genres;
    - 110.37.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.37.c.11.E: locate relevant sources;
    - 110.37.c.11.F: synthesize information from a variety of sources;
    - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and





- 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.38.c.4.E: make connections to personal experiences, ideas in other texts, and society;
    - 110.38.c.4.G: evaluate details read to understand key ideas;
  - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.38.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
    - 110.38.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.38.c.11.E: locate relevant sources;
    - 110.38.c.11.F: synthesize information from a variety of sources;
    - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.B: follow and give complex instructions, clarify meaning by asking pertinent questions, and respond appropriately;
    - 110.39.c.1.C: formulate sound arguments and present using elements of classical speeches such as introduction, first and second transitions, body,



- conclusion, the art of persuasion, rhetorical devices, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
- 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.4: Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:
    - 110.39.c.4.E: make connections to personal experiences, ideas in other texts, and society;
    - 110.39.c.4.G: evaluate details read to analyze key ideas;
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.B: write responses that demonstrate analysis of texts, including comparing texts within and across genres;
    - 110.39.c.5.D: paraphrase and summarize texts in ways that maintain meaning and logical order;
    - 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
  - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.39.c.11.E: locate relevant sources;
    - 110.39.c.11.F: synthesize information from a variety of sources;
    - 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
  - World History Studies
    - 113.42.c.29: Social studies skills. The student uses geographic skills and tools to collect, analyze, and interpret data. The student is expected to:
      - 113.42.c.29.A: create and interpret thematic maps, graphs, and charts to demonstrate the relationship between geography and the historical development of a region or nation; and
      - 113.42.c.29.B: analyze and compare geographic distributions and patterns in world history shown on maps, graphs, charts, and models.



- World Geography Studies
  - 113.43.c.9: Geography. The student understands the concept of region as an area of Earth's surface with related geographic characteristics. The student is expected to:
    - 113.43.c.9.A: identify physical and/or human factors such as climate, vegetation, language, trade networks, political units, river systems, and religion that constitute a region; and

## **HEN HOUSE ENGINEERING**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.36.c.5.C: use text evidence and original commentary to support a comprehensive response;
    - 110.36.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:



- 110.37.c.5.C: use text evidence and original commentary to support an interpretive response;
  - 110.37.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.38.c.5.C: use text evidence and original commentary to support an analytic response;
    - 110.38.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.5: Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:
    - 110.39.c.5.C: use text evidence and original commentary to support an evaluative response;



- 110.39.c.5.E: interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating;
- Environmental Systems
  - 112.37.c.9: Science concepts. The student knows the impact of human activities on the environment. The student is expected to:
    - 112.37.c.9.I: discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards;
- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.C: describe the economic factors of production: land, labor, capital, and entrepreneurship; and
  - 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

## **JOURNEY 2050 LESSON 1: INTRODUCTION TO SUSTAINABLE AGRICULTURE**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:



- 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- Environmental Systems
  - 112.37.c.5: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.37.c.5.A: summarize methods of land use and management and describe its effects on land fertility;
    - 112.37.c.5.B: identify source, use, quality, management, and conservation of water;
    - 112.37.c.5.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
  - 112.37.c.9: Science concepts. The student knows the impact of human activities on the environment. The student is expected to:
    - 112.37.c.9.E: evaluate the effect of human activities, including habitat restoration projects, species preservation efforts, nature conservancy groups, hunting, fishing, ecotourism, all terrain vehicles, and small personal watercraft, on the environment;
    - 112.37.c.9.G: analyze how ethical beliefs can be used to influence scientific practices such as methods for increasing food production;
- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
  - 113.31.c.10: Economics. The student understands key components of economic growth. The student is expected to:
    - 113.31.c.10.B: analyze how technology relates to growth; and
  - 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather



information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World Geography Studies
  - 113.43.c.8: Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:
    - 113.43.c.8.A: compare ways that humans depend on, adapt to, and modify the physical environment, including the influences of culture and technology;
    - 113.43.c.8.C: evaluate the economic and political relationships between settlements and the environment, including sustainable development and renewable/non-renewable resources.
  - 113.43.c.11: Economics. The student understands how geography influences economic activities. The student is expected to:
    - 113.43.c.11.C: assess how changes in climate, resources, and infrastructure (technology, transportation, and communication) affect the location and patterns of economic activities.
  - 113.43.c.19: Science, technology, and society. The student understands the impact of technology and human modifications on the physical environment. The student is expected to:
    - 113.43.c.19.C: analyze the environmental, economic, and social impacts of advances in technology on agriculture and natural resources.

## **JOURNEY 2050 LESSON 2: PLANT HEALTH**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English III





- 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- Environmental Systems
  - 112.37.c.5: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.37.c.5.A: summarize methods of land use and management and describe its effects on land fertility;
    - 112.37.c.5.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
  - 112.37.c.9: Science concepts. The student knows the impact of human activities on the environment. The student is expected to:
    - 112.37.c.9.E: evaluate the effect of human activities, including habitat restoration projects, species preservation efforts, nature conservancy groups, hunting, fishing, ecotourism, all terrain vehicles, and small personal watercraft, on the environment;
- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
    - 113.31.c.1.C: describe the economic factors of production: land, labor, capital, and entrepreneurship; and
  - 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather



information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- World Geography Studies
  - 113.43.c.8: Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:
    - 113.43.c.8.A: compare ways that humans depend on, adapt to, and modify the physical environment, including the influences of culture and technology;

### **JOURNEY 2050 LESSON 3: WATER**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- Aquatic Science



- 112.32.c.1: Scientific processes. The student, for at least 40% of instructional time, conducts laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:
    - 112.32.c.1.B: demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.
  - 112.32.c.7: Science concepts. The student knows the origin and use of water in a watershed. The student is expected to:
    - 112.32.c.7.A: identify sources and determine the amounts of water in a watershed, including rainfall, groundwater, and surface water;
- Earth and Space Science
  - 112.36.c.1: Scientific processes. The student conducts laboratory and field investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. The student is expected to:
    - 112.36.c.1.B: demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials; and
  - 112.36.c.11: Solid Earth. The student knows that the geosphere continuously changes over a range of time scales involving dynamic and complex interactions among Earth's subsystems. The student is expected to:
    - 112.36.c.11.E: evaluate the impact of changes in Earth's subsystems on humans such as earthquakes, tsunamis, volcanic eruptions, hurricanes, flooding, and storm surges and the impact of humans on Earth's subsystems such as population growth, fossil fuel burning, and use of fresh water.
  - 112.36.c.12: Solid Earth. The student knows that Earth contains energy, water, mineral, and rock resources and that use of these resources impacts Earth's subsystems. The student is expected to:
    - 112.36.c.12.A: evaluate how the use of energy, water, mineral, and rock resources affects Earth's subsystems;
    - 112.36.c.12.C: discriminate between renewable and nonrenewable resources based upon rate of formation and use;
- Environmental Systems
  - 112.37.c.1: Scientific processes. The student, for at least 40% of instructional time, conducts hands-on laboratory and field investigations using safe, environmentally appropriate, and ethical practices. The student is expected to:
    - 112.37.c.1.B: demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.
  - 112.37.c.5: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.37.c.5.B: identify source, use, quality, management, and conservation of water;



- 112.37.c.5.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
  - 112.37.c.5.D: identify renewable and non-renewable resources that must come from outside an ecosystem such as food, water, lumber, and energy;
- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
  - 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.
- World Geography Studies
  - 113.43.c.12: Economics. The student understands the economic importance of, and issues related to, the location and management of resources. The student is expected to:
    - 113.43.c.12.A: analyze how the creation, distribution, and management of key natural resources affects the location and patterns of movement of products, money, and people; and
    - 113.43.c.12.B: evaluate the geographic and economic impact of policies related to the development, use, and scarcity of natural resources such as regulations of water.
  - 113.43.c.19: Science, technology, and society. The student understands the impact of technology and human modifications on the physical environment. The student is expected to:
    - 113.43.c.19.C: analyze the environmental, economic, and social impacts of advances in technology on agriculture and natural resources.

## **JOURNEY 2050 LESSON 4: ECONOMY**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;



- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- Environmental Systems
  - 112.37.c.5: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.37.c.5.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
    - 112.37.c.5.E: analyze and evaluate the economic significance and interdependence of resources within the environmental system; and
- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
    - 113.31.c.1.B: describe how societies answer the basic economic questions: what to produce, how to produce, and for whom to produce;
    - 113.31.c.1.C: describe the economic factors of production: land, labor, capital, and entrepreneurship; and



- 113.31.c.2: Economics. The student understands the interaction of supply, demand, and price. The student is expected to:
  - 113.31.c.2.A: understand the effect of changes in price on the quantity demanded and quantity supplied;
  - 113.31.c.2.B: identify the non-price determinants that create changes in supply and demand, which result in a new equilibrium price; and
- 113.31.c.17: Personal financial literacy. The student understands the role of individuals in financial markets. The student is expected to:
  - 113.31.c.17.A: assess ways to be a wise investor in the stock market and in other personal investment options such as developing a personal retirement plan;
- 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

## **JOURNEY 2050 LESSON 5: LAND USE**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
- English IV



- 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
- Earth and Space Science
  - 112.36.c.1: Scientific processes. The student conducts laboratory and field investigations, for at least 40% of instructional time, using safe, environmentally appropriate, and ethical practices. The student is expected to:
    - 112.36.c.1.B: demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials; and
  - 112.36.c.12: Solid Earth. The student knows that Earth contains energy, water, mineral, and rock resources and that use of these resources impacts Earth's subsystems. The student is expected to:
    - 112.36.c.12.C: discriminate between renewable and nonrenewable resources based upon rate of formation and use;
- Environmental Systems
  - 112.37.c.5: Science concepts. The student knows the interrelationships among the resources within the local environmental system. The student is expected to:
    - 112.37.c.5.A: summarize methods of land use and management and describe its effects on land fertility;
    - 112.37.c.5.C: document the use and conservation of both renewable and non-renewable resources as they pertain to sustainability;
  - 112.37.c.9: Science concepts. The student knows the impact of human activities on the environment. The student is expected to:
    - 112.37.c.9.E: evaluate the effect of human activities, including habitat restoration projects, species preservation efforts, nature conservancy groups, hunting, fishing, ecotourism, all terrain vehicles, and small personal watercraft, on the environment;
- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.1: Economics. The student understands the concepts of scarcity and opportunity costs. The student is expected to:
    - 113.31.c.1.A: explain why scarcity and choice are basic economic problems faced by every society;
    - 113.31.c.1.C: describe the economic factors of production: land, labor, capital, and entrepreneurship; and
  - 113.31.c.23: Social studies skills. The student uses problem-solving and decision-making skills, working independently and with others. The student is expected to use problem-solving and decision-making processes to identify a problem, gather





information, list and consider options, consider advantages and disadvantages, choose and implement a solution, and evaluate the effectiveness of the solution.

- United States History Studies Since 1877
  - 113.41.c.14: Geography. The student understands the relationship between population growth and the physical environment. The student is expected to:
    - 113.41.c.14.A: identify the effects of population growth and distribution on the physical environment; and
- World Geography Studies
  - 113.43.c.8: Geography. The student understands how people, places, and environments are connected and interdependent. The student is expected to:
    - 113.43.c.8.A: compare ways that humans depend on, adapt to, and modify the physical environment, including the influences of culture and technology;

## **JOURNEY 2050 LESSON 6: CAREERS FOR 2050 AND BEYOND!**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
    - 110.36.c.10.B: compose informational texts such as explanatory essays, reports, and personal essays using genre characteristics and craft;
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:



- 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
  - 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
  - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
- 110.37.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
  - 110.37.c.10.B: compose informational texts such as explanatory essays, reports, and personal essays using genre characteristics and craft;
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
    - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.38.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
    - 110.38.c.10.B: compose informational texts such as explanatory essays, reports, resumes, and personal essays using genre characteristics and craft;
- English IV



- 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
  - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
  - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- 110.39.c.10: Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:
  - 110.39.c.10.B: compose informational texts such as explanatory essays, reports, resumes, and personal essays using genre characteristics and craft;
- Environmental Systems
  - 112.37.c.3: Scientific processes. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:
    - 112.37.c.3.E: describe the connection between environmental science and future careers; and
- Career Preparation I
  - 127.14.c.1: The student demonstrates professional employability skills to gain an entry-level position. The student is expected to:
    - 127.14.c.1.A: identify employment opportunities;

## **JOURNEY 2050 LESSON 7: TECHNOLOGY AND INNOVATIONS**

- English I
  - 110.36.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.36.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.36.c.1.C: give a presentation using informal, formal, and technical language effectively to meet the needs of audience, purpose, and occasion, employing eye contact, speaking rate such as pauses for effect,



- volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.36.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.36.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.36.c.11.E: locate relevant sources
    - 110.36.c.11.F: synthesize information from a variety of sources
    - 110.36.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results
- English II
  - 110.37.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.37.c.1.A: engage in meaningful and respectful discourse by listening actively, responding appropriately, and adjusting communication to audiences and purposes;
    - 110.37.c.1.C: give a formal presentation that incorporates a clear thesis and a logical progression of valid evidence from reliable sources and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
    - 110.37.c.1.D: participate collaboratively, building on the ideas of others, contributing relevant information, developing a plan for consensus building, and setting ground rules for decision making.
  - 110.37.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.37.c.11.E: locate relevant sources;
    - 110.37.c.11.F: synthesize information from a variety of sources;
    - 110.37.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English III
  - 110.38.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:



- 110.38.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction and syntax;
  - 110.38.c.1.C: give a formal presentation that exhibits a logical structure, smooth transitions, accurate evidence, well-chosen details, and rhetorical devices and that employs eye contact, speaking rate such as pauses for effect, volume, enunciation, purposeful gestures, and conventions of language to communicate ideas effectively; and
  - 110.38.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
- 110.38.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
  - 110.38.c.11.E: locate relevant sources;
  - 110.38.c.11.F: synthesize information from a variety of sources;
  - 110.38.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- English IV
  - 110.39.c.1: Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking--oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:
    - 110.39.c.1.A: engage in meaningful and respectful discourse when evaluating the clarity and coherence of a speaker's message and critiquing the impact of a speaker's use of diction, syntax, and rhetorical strategies;
    - 110.39.c.1.D: participate collaboratively, offering ideas or judgments that are purposeful in moving the team toward goals, asking relevant and insightful questions, tolerating a range of positions and ambiguity in decision making, and evaluating the work of the group based on agreed-upon criteria.
  - 110.39.c.11: Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:
    - 110.39.c.11.E: locate relevant sources;
    - 110.39.c.11.F: synthesize information from a variety of sources;



- 110.39.c.11.I: use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.
- Environmental Systems
  - 112.37.c.9: Science concepts. The student knows the impact of human activities on the environment. The student is expected to:
    - 112.37.c.9.I: discuss the impact of research and technology on social ethics and legal practices in situations such as the design of new buildings, recycling, or emission standards;
- Economics with Emphasis on the Free Enterprise System and its Benefits
  - 113.31.c.2: Economics. The student understands the interaction of supply, demand, and price. The student is expected to:
    - 113.31.c.2.A: understand the effect of changes in price on the quantity demanded and quantity supplied;
    - 113.31.c.2.B: identify the non-price determinants that create changes in supply and demand, which result in a new equilibrium price; and
  - 113.31.c.10: Economics. The student understands key components of economic growth. The student is expected to:
    - 113.31.c.10.B: analyze how technology relates to growth; and
- United States History Since 1877
  - 113.41.c.26: Science, technology, and society. The student understands the impact of science, technology, and the free enterprise system on the economic development of the United States. The student is expected to:
    - 113.41.c.26.B: explain how specific needs result in scientific discoveries and technological innovations in agriculture, the military, and medicine; and
- World Geography Studies
  - 113.43.c.11: Economics. The student understands how geography influences economic activities. The student is expected to:
    - 113.43.c.11.C: assess how changes in climate, resources, and infrastructure (technology, transportation, and communication) affect the location and patterns of economic activities.
  - 113.43.c.19: Science, technology, and society. The student understands the impact of technology and human modifications on the physical environment. The student is expected to:
    - 113.43.c.19.C: analyze the environmental, economic, and social impacts of advances in technology on agriculture and natural resources.