# Unit 3: Sensation and Perception

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## Title Section

## Department of Curriculum and Instruction

**Belleville Public Schools**

**Curriculum Guide**

# AP Psychology, Grades 11-12

# Sensation and Perception

**Belleville Board of Education**

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## Unit Overview

In this unit, students will build on the biological foundation of psychology established in the previous unit by examining how the brain, sensory organs, and central nervous system highlights the physiological processes involved in an individual's perception of their surroundings.

Students will learn the following:

- The Principles of Sensation
- The Principles of Perception
- Visual Anatomy
- Visual Perception
- Auditory Sensation and Perception
- Chemical Senses
- Body Senses

## Enduring Understanding

- Psychologists study sensation and perception to explain how and why externally gathered sensations and perceptions impact behaviors and mental processes.
- Using input from several anatomical structures, the sensations we perceive process and interpret information about the environment around us and our place within it, resulting in perceptions that influence how we think and behave.
- Sensation and perception provide a bridge between the biological and cognitive perspectives, offering aspects of both for explaining how we think and behave.

## Essential Questions

- How do we process the information we receive from our environments?
- How does our interpretation of the information we receive from the environment influence our behaviors and mental processes?

## Exit Skills

By the end of Unit 3, the student should be able to:

- Describe examples of anatomical structures, physiological processes, and psychological concepts related to sensation and perception.
- Analyze the effects of sensation and perception on behavior and mental processes in relation to psychological theories and perspectives, particularly their strengths and weaknesses.
- Understand and utilize scientific investigation, furthering their understanding of the physiological process of energy transduction as it relates to chemical senses.
- Define and/or apply the concepts related to the principles of sensation, visual anatomy, and body senses.
- Explain behavior in authentic context as it relates to the principles of perception, visual perception, and auditory sensation and perception.
- Analyze psychological research studies related to chemical senses.

## New Jersey Student Learning Standards (NJSLS-S)

| | |
|---|---|
| SOC.9-12.1 | Concept Understanding |
| SOC.9-12.1.A | Define and/or apply concepts. |
| SOC.9-12.1.B | Explain behavior in authentic context. |
| SOC.9-12.1.C | Apply theories and perspectives in authentic contexts. |
| SOC.9-12.3 | Sensation and Perception |
| SOC.9-12.3.1 | Principles of Sensation |
| SOC.9-12.3.A | Describe general principles of organizing and integrating sensation to promote stable awareness of the external world. |
| SOC.9-12.3.B | Discuss basic principles of sensory transduction, including absolute threshold, difference threshold, signal detection, and sensory adaptation. |
| SOC.9-12.3.C | Identify the research contributions of major historical figures in sensation and perception. |
| SOC.9-12.3.2 | Principles of Perception |
| SOC.9-12.3.D | Discuss how experience and culture can influence perceptual processes. |
| SOC.9-12.3.E | Discuss the role of attention in behavior. |
| SOC.9-12.3.3 | Visual Anatomy |
| SOC.9-12.3.F | Describe the vision process, including the specific nature of energy transduction, relevant anatomical structures, and specialized pathways in the brain for each of the senses. |
| SOC.9-12.3.G | Explain common sensory conditions. |
| SOC.9-12.3.4 | Visual Perception |
| SOC.9-12.3.H | Explain the role of top-down processing in producing vulnerability to illusion. |
| SOC.9-12.3.5 | Auditory Sensation and Perception |
| SOC.9-12.3.I | Describe the hearing process, including the specific nature of energy transduction, relevant anatomical structures, and specialized pathways in the brain for each of the senses. |
| SOC.9-12.3.6 | Chemical Senses |
| SOC.9-12.3.J | Describe taste and smell processes, including the specific nature of energy transduction, relevant anatomical structures, and specialized pathways in the brain for each of the senses. |
| SOC.9-12.3.7 | Body Senses |
| SOC.9-12.3.K | Describe sensory processes, including the specific nature of energy transduction, relevant anatomical structures, and specialized pathways in the brain for each of the body senses. |

## Interdisciplinary Connections

| | |
|---|---|
| LA.RH.11-12.2 | Determine the theme, central ideas, information and/or perspective(s) presented in a primary or secondary source; provide an accurate summary of how key events, ideas and/or author's perspective(s) develop over the course of the text. |

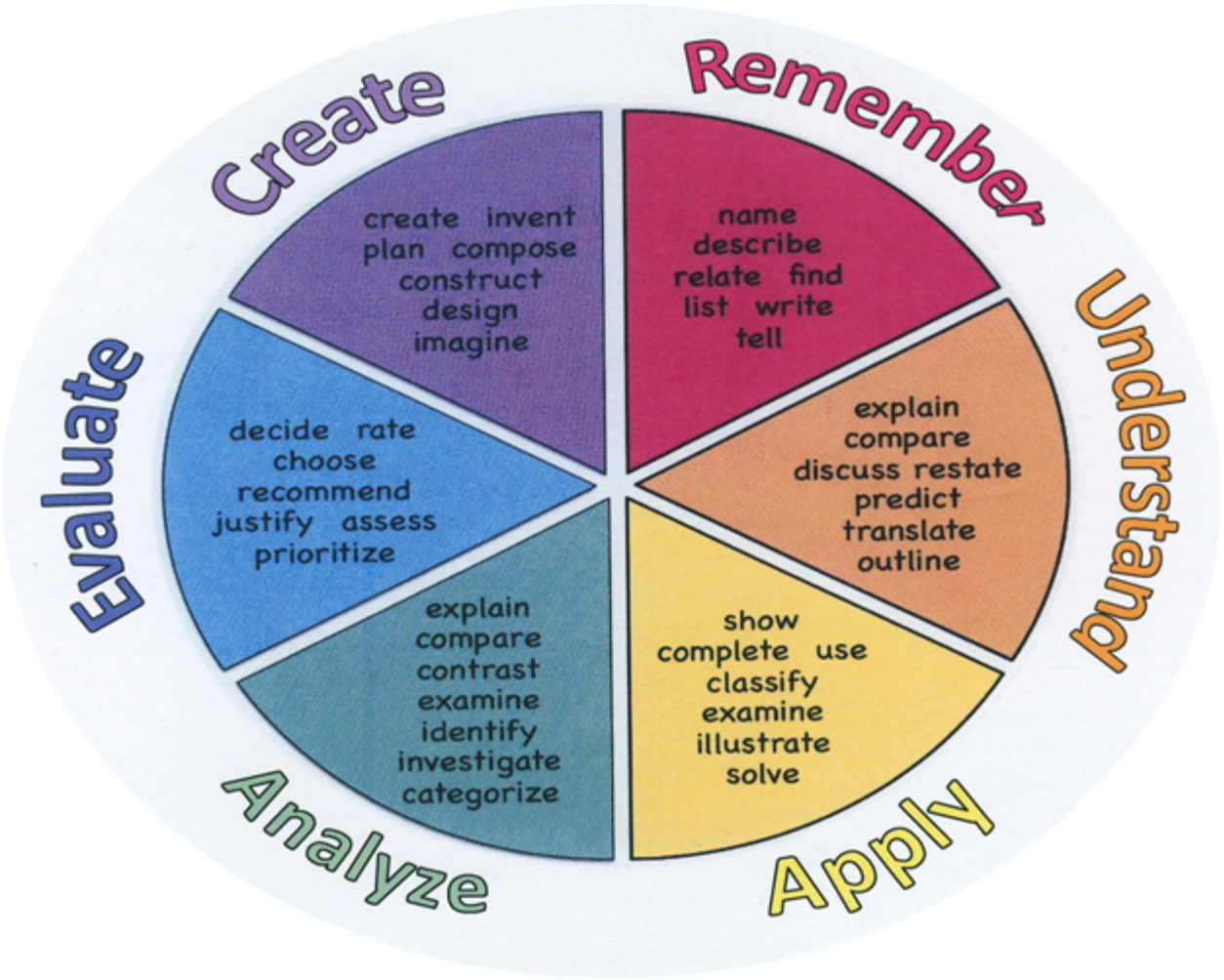
| | |
|---|---|
| LA.RH.11-12.5 | Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole. |
| LA.RH.11-12.8 | Evaluate an author's claims, reasoning, and evidence by corroborating or challenging them with other sources. |
| LA.RH.11-12.10 | By the end of grade 12, read and comprehend history/social studies texts in the grades 11-CCR text complexity band independently and proficiently. |
| LA.WHST.11-12.1.B | Develop claim(s) and counterclaims using sound reasoning and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. |
| LA.WHST.11-12.2 | Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. |
| LA.WHST.11-12.2.B | Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. |
| LA.WHST.11-12.5 | Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. |
| LA.WHST.11-12.8 | Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. |
| LA.WHST.11-12.10 | Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. |

## Learning Objectives

- Describe general principles of organizing & integrating sensation to promote stable awareness of the external world (Examples:Gestalt principles, Depth perception, Top-down processing, Bottom-up processing).
- Discuss basic principles of sensory transduction, including absolute threshold, difference threshold, signal detection, and sensory adaptation.
- Identify the research contributions of major historical figures in sensation and perception (Examples: Gustav Fechner, David Hubel, Ernst Weber, Torsten Wiesel).
- Discuss how experience and culture can influence perceptual processes, such as perceptual set, context effects, and schema.
- Discuss the role of attention in behavior.
- Describe the vision process, including the specific nature of energy transduction, relevant anatomical structures, and specialized pathways in the brain for each of the senses (Examples: Vision process, Concepts related to visual perception, Theories of color vision).
- Explain common sensory conditions, such as visual and hearing impairments and synesthesia.
- Explain the role of top-down processing in producing vulnerability to illusion.
- Describe the hearing process, including the specific nature of energy transduction, relevant anatomical structures, and specialized pathways in the brain for each of the senses.
- Describe taste and smell processes, including the specific nature of energy transduction, relevant anatomical structures, and specialized pathways in the brain for each of the senses.
- Describe sensory processes, including the specific nature of energy transduction, relevant anatomical structures, and specialized pathways in the brain for each of the body senses (Examples: touch, pain, vestibular, kinesthesis).

**Action Verbs:** Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy.

| Remember | Understand | Apply | Analyze | Evaluate | Create |
|---|---|---|---|---|---|
| Choose | Classify | Choose | Categorize | Appraise | Combine |
| Describe | Defend | Dramatize | Classify | Judge | Compose |
| Define | Demonstrate | Explain | Compare | Criticize | Construct |
| Label | Distinguish | Generalize | Differentiate | Defend | Design |
| List | Explain | Judge | Distinguish | Compare | Develop |
| Locate | Express | Organize | Identify | Assess | Formulate |
| Match | Extend | Paint | Infer | Conclude | Hypothesize |
| Memorize | Give Examples | Prepare | Point out | Contrast | Invent |
| Name | Illustrate | Produce | Select | Critique | Make |
| Omit | Indicate | Select | Subdivide | Determine | Originate |
| Recite | Interrelate | Show | Survey | Grade | Organize |
| Select | Interpret | Sketch | Arrange | Justify | Plan |
| State | Infer | Solve | Breakdown | Measure | Produce |
| Count | Match | Use | Combine | Rank | Role Play |
| Draw | Paraphrase | Add | Detect | Rate | Drive |
| Outline | Represent | Calculate | Diagram | Support | Devise |
| Point | Restate | Change | Discriminate | Test | Generate |
| Quote | Rewrite | Classify | Illustrate | | Integrate |
| Recall | Select | Complete | Outline | | Prescribe |
| Recognize | Show | Compute | Point out | | Propose |
| Repeat | Summarize | Discover | Separate | | Reconstruct |
| Reproduce | Tell | Divide | | | Revise |
| | Translate | Examine | | | Rewrite |
| | Associate | Graph | | | Transform |
| | Compute | Interpolate | | | |
| | Convert | Manipulate | | | |
| | Discuss | Modify | | | |
| | Estimate | Operate | | | |
| | Extrapolate | Subtract | | | |
| | Generalize | | | | |
| | Predict | | | | |




## Suggested Activities & Best Practices

- Think-Pair-Share: For example, ask students, “If you had to give up one of your senses, which one would you be willing to live without?” Have them explain their answer. Then ask, “If you could only keep one of your senses, which one would you choose?” Have them explain their answer.
- Misconception Check: For example, have students draw and label a diagram of the eye, noting the functions of the labeled structures. Emphasis should be placed on the rods and cones. Students can do a blindspot test and a test for visual acuity.
- Graph and Switch: For examole, give each pair of students 10 jellybeans. Have each partner take a turn tasting five jellybeans with eyes closed and nose plugged. Have the other partner record whether or not the subject correctly identified the flavor in each of the five trials. Collect the class data and graph the results on the board to be analyzed. Without the olfactory sense and sight, most individuals cannot accurately identify flavors. Have students explain how this relates to sensory interaction.
- Read case studies and psychological experiments related to Unit 3 (For example: "Artificial Reality II"; "Out of Darkness and Silence") and respond to related writing tasks using a personal response journal.
- Conduct experiments related to Unit 3 (For example: "Sensory Thresholds and Perceptional Organization" Lab; "Light-Dark Adaptation" Quick Lab) and analyze the results using a rubric (student or teacher created).
- Analyze cartoons based on human behavior/psychology topics discussed in Unit 3 using a personal response journal.
- Create cartoons or other illustrations based on human behavior/psychology topics discussed in Unit 3.

- Student or teacher created rubrics for each project.
- Building a portfolio throughout the course; contains experiments and independent projects.
- Complete study guides for Assessment on "Sensation and Perception".
- Practice Quizzes (Multiple Choice Questions)
- Personal Progress Check 3 (Multiple-choice Questions; Free-response Questions)

## Assessment Evidence - Checking for Understanding (CFU)

- Unit Test on Sensation and Perception-summative assessment
- Experiment on the Sensory Thresholds and Perceptional Organization-alternate assessment
- Think Pair Share on Senses-formative assessment
- Personal Progress Check 3-self-assessment
- Mutlimedia Report - Benchmark Assessment

- Admit Tickets
- Anticipation Guide
- Common Benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- DBQ's
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Illustration
- Journals
- KWL Chart
- Learning Center Activities
- Multimedia Reports
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments

- Socratic Seminar
- Study Guide
- Surveys
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit review/Test prep
- Unit tests
- Web-Based Assessments
- Written Reports

## Primary Resources & Materials

*Pearson Psychology AP Edition (Fourth Edition) by Saundra K. Ciccarelli & J. Noland White:*

- *Student Edition Textbook*
- *Teacher Edition & Resources (online)*
- *Ebook with interactive component (MyPsychLab)*

## Ancillary Resources

- *HMH Psychology Text Set: Ebook and Textbook* (Readings: Case Study, Current Research in Psychology, Cultural Diversity in Psychology, Psychology in Today's World, Careers in Psychology; Statistically Speaking; Lab Experiments: Quick Labs, Labs, Experiments, Simulations)
- *Psychology Principles in Practice* Power Point Presentations
- *Psychology* Student Edition by Educational Impressions
- *Psychology* Teacher Supplement by Educational Impressions
- *Famous Psychology Experiments* (Social Studies School Service)
- *Great Thinkers in Psychology* (Social Studies School Service)

## Technology Infusion

- *MyPsychLab/*HMH online/Youtube videos: "Concentration and Perception"; "Thinking like a

Psychologist: Can Smells Alter Mood and Behavior"

- *MyPsychLab* Simulation "Muller-Lyer Illusion?"
- Use of Google Classroom/Slides for Presentation on Unit 3



## Alignment to 21st Century Skills & Technology

| | |
|---|---|
| CRP.K-12.CRP1.1 | Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others. They are conscientious of the impacts of their decisions on others and the environment around them. They think about the near-term and long-term consequences of their actions and seek to act in ways that contribute to the betterment of their teams, families, community and workplace. They are reliable and consistent in going beyond the minimum expectation and in participating in activities that serve the greater good. |
| CRP.K-12.CRP2.1 | Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications, and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation. |
| CAEP.9.2.12.C.2 | Modify Personalized Student Learning Plans to support declared career goals. |
| CAEP.9.2.12.C.3 | Identify transferable career skills and design alternate career plans. |
| TECH.8.1.12.B.CS1 | Apply existing knowledge to generate new ideas, products, or processes. |
| TECH.8.1.12.B.CS2 | Create original works as a means of personal or group expression. |

## 21st Century Skills/Interdisciplinary Themes

The **21st Century/Interdisciplinary Themes** that will be incorporated into this unit include:

- Communication and Collaboration
- Information Literacy
- Media Literacy
- ICT(Information, Communications and Technology) Literacy
- Life and Career Skills
- Creativity and Innovation
- Critical Thinking and Problem Solving

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- ICT (Information, Communications and Technology) Literacy
- Information Literacy

- Life and Career Skills
- Media Literacy

## 21st Century Skills

The **21st Century Skills** that will be incorporated into this unit include:

- Global Awareness
- Civic Literacy
- Health Literacy

- Civic Literacy
- Environmental Literacy
- Financial, Economic, Business and Entrepreneurial Literacy
- Global Awareness
- Health Literacy

## Differentiation

- Preview vocabulary for the textbook sections "The ABC's of Sensation" and "The ABC's of Perception" .
- Small group instruction for guided notes on "Sensation and Perception".
- Small group assignment for Graph and Switch activity.
- Study guides for "Sensation and Perception" Assessments.
- Project-based learning for "Sensory Thresholds and Perceptional Organization" Lab.

**Differentiations:**

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches

- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

**Hi-Prep Differentiations:**

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

**Lo-Prep Differentiations**

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

## Special Education Learning (IEP's & 504's)

- Provide a copy of teacher's notes for Unit 3.
- Decrease the number of slides for Unit 3 student presentation.
- Modify Experiments/Labs for Unit 3.
- Provide modifications as dictated in the student's IEP/504 plan.

- printed copy of board work/notes provided
- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multi-sensory presentation
- multiple test sessions
- preferential seating
- preview of content, concepts, and vocabulary
- Provide modifications as dictated in the student's IEP/504 plan
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet

- Use open book, study guides, test prototypes

## English Language Learning (ELL)

- Provide a copy of teacher's notes for Unit 3.
- Decrease the number of slides for Unit 3 student presentation.
- Modify Experiments/Labs for Unit 3.

- teaching key aspects of a topic.  Eliminate nonessential information
- using videos, illustrations, pictures, and drawings to explain or clarif
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests

## At Risk

- Allow the use of notecards on the Unit Test on "Sensation and Perception".
- Decrease the number of slides for the Unit 3 student presentation.
- Modify Labs/Experiments for Unit 3.

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic.  Eliminate nonessential information
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes

- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

## Talented and Gifted Learning (T&G)

- Project-based learning for in-depth research on Unit 3 topics.
- Use research to complete a misconception check regarding visual acuity.
- Used advanced problem solving skills to complete a "quick lab" on light-dark adaptation.

- Above grade level placement option for qualified students
- Advanced problem-solving
- Allow students to work at a faster pace
- Cluster grouping
- Complete activities aligned with above grade level text using Benchmark results
- Create a blog or social media page about their unit
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Flexible skill grouping within a class or across grade level for rigor
- Higher order, critical & creative thinking skills, and discovery
- Multi-disciplinary unit and/or project
- Teacher-selected instructional strategies that are focused to provide challenge, engagement, and growth opportunities
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge

## Sample Lesson