



Medical Detectives

Standards	Goals
<p>Lesson 1: Disease Detectives 17 days</p> <p>Activity 1.1: Vital Signs</p>	<ul style="list-style-type: none"> • Collect and analyze vital signs to draw conclusions. • Explain differences among vital sign readings.
<p>Activity 1.2: Exploring What's Vital</p> <p>Technology and Engineering</p> <p>3.5.6-8.N (ETS) Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</p> <p>3.5.6-8.Q Apply a technology and engineering design thinking process.</p> <p>3.5.6-8.W (ETS) Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p> <p>3.5.6-8.II Predict outcomes of a future product or system at the beginning of the design process.</p> <p>3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.</p>	<ul style="list-style-type: none"> • Use the experimental design process to investigate a question. • Design and conduct an experiment to draw conclusions. • Collaborate within a team.
<p>Activity 1.3: Disease Agents</p> <p>Technology and Engineering</p> <p>3.5.6-8.Q Apply a technology and engineering design thinking process.</p> <p>3.5.6-8.II Predict outcomes of a future product or system at the beginning of the design process.</p> <p>3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.</p>	<ul style="list-style-type: none"> • Analyze a patient's signs and symptoms to diagnose a problem. • Design, document, and conduct an experiment to draw conclusions and provide treatment options. • Explore how disease agents are transmitted and treated. • Use aseptic technique to culture bacteria.
<p>Activity 1.4: Disease Diagnosis</p> <p>Technology and Engineering</p> <p>3.5.6-8.Q Apply a technology and engineering design thinking process.</p> <p>3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.</p>	<ul style="list-style-type: none"> • Analyze a patient's medical file and physician notes to request and interpret lab tests. • Identify the purpose of positive and negative controls.
<p>Project 1.5: Diagnostic Detectives</p> <p>Technology and Engineering</p> <p>3.5.6-8.N (ETS) Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</p> <p>3.5.6-8.Q Apply a technology and engineering design thinking process.</p>	



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<p>Project 1.5: Diagnostic Detectives cont.</p> <p>3.5.6-8.V Refine design solutions to address criteria and constraints.</p> <p>3.5.6-8.W (ETS) Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p> <p>3.5.6-8.X Defend decisions related to a design problem.</p> <p>3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.</p>	<ul style="list-style-type: none"> • Conduct interviews to gather information. • Provide a diagnosis and treatment for a patient based on test results, patient interviews, and medical file information. • Collaborate within a team. • Demonstrate effective communication skills.
<p>Lesson 2: Mysteries of the Human Body 13 days</p> <p>Activity 2.1: Secrets of the Nervous System</p> <p>Life Science</p> <p>3.1.6-8.H Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p>	<ul style="list-style-type: none"> • Describe how the nervous system works to sense, process, and respond to stimuli in the world. • Identify the path of input and output signals through the nervous system.
<p>Activity 2.2: Smart Signals</p> <p>Life Science</p> <p>3.1.6-8.B Develop and use a model to describe the function of a cell as a whole and ways the parts of cells contribute to the function.</p>	<ul style="list-style-type: none"> • Describe the structure and function of neurons. • Model how a signal is transferred through and among neurons. • Demonstrate effective communication skills.
<p>Activity 2.3: Mysterious Miscommunications</p> <p>Life Science</p> <p>3.1.6-8.H Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p> <p>Technology and Engineering</p> <p>3.5.6-8.W (ETS) Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p> <p>3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.</p>	<ul style="list-style-type: none"> • Explore types of neurological tests. • Analyze a patient’s medical file, physician notes, and medical examination tests to draw conclusions. • Identify the communication breakdown of a nervous system dysfunction.
<p>Activity 2.4: The Control Center</p> <p>Life Science</p> <p>3.1.6-8.H Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p>	<ul style="list-style-type: none"> • Describe the structure and function of the brain and its parts. • Compare human and sheep anatomy. • Predict dysfunction based on the location of brain injury or disorder.



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<p>Project 2.5: Mystery Disease</p> <p>Life Science 3.1.6-8.H Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p> <p>Technology and Engineering 3.5.6-8.P (ETS) Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. 3.5.6-8.Q Apply a technology and engineering design thinking process. 3.5.6-8.W (ETS) Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. 3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.</p>	<ul style="list-style-type: none"> Analyze a patient’s medical file, physician notes, and medical examination tests to draw conclusions. Plan an investigation to solve a problem. Support the diagnosis with facts from the investigation. Identify the communication breakdown of a nervous system dysfunction. Collaborate within a team. Demonstrate effective communication skills.
<p>Lesson 3: Outbreak! 10 days</p> <p>Activity 3.1: Food Fiasco</p> <p>Technology and Engineering 3.5.6-8.Q Apply a technology and engineering design thinking process. 3.5.6-8.II Predict outcomes of a future product or system at the beginning of the design process. 3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.</p>	<ul style="list-style-type: none"> Organize and analyze data to calculate probability. Use attack rate calculations to determine the likely source of illness.
<p>Problem 3.2: Disease Detectives</p> <p>Technology and Engineering 3.5.6-8.N (ETS) Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. 3.5.6-8.Q Apply a technology and engineering design thinking process. 3.5.6-8.W (ETS) Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. 3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.</p>	<ul style="list-style-type: none"> Analyze medical evidence to determine the source of an outbreak. Develop and carry out a plan to determine the source of illness. Use evidence from an investigation to support a claim. Communicate effectively to the public about the source of the outbreak. Collaborate within a team.