PLTW GATEWAY | Standards Guide
PA STEELS

Unit Title	Life Science	Physical Science	Earth and Space Science	Environmental Literacy & Sustainability	Technology & Engineering	Computer Science
Medical Detectives	✓				✓	
Science of Technology		✓	✓	✓	✓	
Flight and Space		✓	✓	✓	✓	
Energy and the Environment		✓	✓	✓	✓	
Green Architecture				✓	✓	
Magic of Electrons				✓	✓	
Design and Modeling					✓	
Automation and Robotics					✓	✓
Computer Science for Innovators and Makers					✓	✓
App Creators					✓	✓

Medical Detectives

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Standards	Activities, Projects, Problems
Life Science 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.	Activity 2.2 Smart Signals
3.1.6-8.H Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behvaior or storage as memories.	Activity 2.1 Secrets of the Nervous System Activity 2.3 Mysterious Miscommunication Activity 2.4 The Control Center Project 2.5 Mystery Disease
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.	Activity 1.2 Exploring What's Vital Project 1.5 Diagnostic Detectives Problem 3.2 Disease Detectives
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	Project 2.5 Mystery Disease
3.5.6-8.Q Apply a technology and engineering design thinking process.	Activity 1.2 Exploring What's Vital Activity 1.3 Disease Agents Activity 1.4 Disease Diagnosis Project 1.5 Diagnostic Detectives Project 2.5 Mystery Disease Activity 3.1 Food Fiasco Problem 3.2 Disease Detectives
3.5.6-8.V Refine design solutions to address criteria and constraints.	Project 1.5 Diagnostic Detectives
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.	Activity 1.2 Exploring What's Vital Project 1.5 Diagnostic Detectives Activity 2.3 Mysterious Miscommunications Project 2.5 Mystery Disease Problem 3.2 Disease Detectives
3.5.6-8.X Defend decisions related to a design problem.	Project 1.5 Diagnostic Detectives
3.5.6-8.II Predict outcomes of a future product or system at the beginning of the design process.	Activity 1.2 Exploring What's Vital Activity 1.3 Disease Agents Activity 3.1 Food Fiasco
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Activity 1.2 Exploring What's Vital Activity 1.3 Disease Agents Activity 1.4 Disease Dlagnosis Project 1.5 Diagnostic Detectives Activity 2.3 Mysterious Miscommunications Project 2.5 Mystery Disease Activity 3.1 Food Fiasco Problem 3.2 Disease Detectives

Science of Technology

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Standards	Activities, Projects, Problems
Physical Science 3.2.6-8.A Develop models to describe the atomic composition of simple modules and extended structures.	Activity 2.2.a Build a Buckyball
3.2.6-8.C Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	Activity 1.2 Gluing It All Together Activity 2.1: Nanotechnology: Fact or Myth Activity 2.3a Exploring Nanoproducts Activity 2.3b Exploring Nanoproducts (Alternative Activity) Activity 2.5 Amazing Nanotechology
3.2.6-8.D Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	Activity 1.1 Let's Make Ice Cream Activity 1.2 Gluing It All Together
3.2.6-8.F Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.	Activity 1.1 Let's Make Ice Cream Activity 1.1.a Let's Make Yogurt
3.2.6-8.G Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	Problem 3.7 Product Creation
3.2.6-8.H Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	Activity 3.4 Energy Project 3.5 Roller Coaster Mania Problem 3.7 Product Creation
3.2.6-8.J Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.	Activity 3.4 Energy
3.2.6-8.P Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.	Activity 3.4 Energy Project 3.5 Roller Coaster Mania Problem 3.7 Product Creation
Earth and Space Science 3.3.6-8.K Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	Project 1.3 Oil Spill Cleanup
Environmental Literacy and Sustainability 3.4.6-8.G Obtain and communicate information to describe how best resource management practices and environmental laws are designed to achieve environmental sustainability.	Project 1.3 Oil Spill Cleanup
3.4.6-8.H Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.	Project 1.3 Oil Spill Cleanup

Science of Technology

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Standards	Activities, Projects, Problems
Technology and Engineering 3.5.6-8.A Research information from various sources to use and maintain technological products or systems.	Activity 2.1 Nanotechnology: Fact or Myth Activity 2.3.a Exploring Nanoproducts Activity 2.3.b Exploring Nanoproducts (AA) Activity 2.5 Amazing Nanotechnology
3.5.6-8.B Use instruments to gather data on the performance of everyday products.	Activity 1.2 Gluing It All Together Activity 2.3.a Exploring Nanoproducts Activity 2.4 Testing Nanofabric
3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate.	Activity 2.1 Nanotechnology: Fact or Myth Activity 2.3.a Exploring Nanoproducts Activity 2.3.b Exploring Nanoproducts (AA) Activity 2.4 Testing Nanofabric Activity 3.1 Simple Machines Activity 3.2 Simple Machines Scavenger Hunt Activity 3.3 Simple Machines Exploration
3.5.6-8.G Analyze how an invention or innovation was influenced by the context and circumstances in which it is developed.	Activity 1.2 Gluing It All Together
3.5.6-8.I Examine the ways that technology can have both positive and negative effects at the same time.	Activity 2.1 Nanotechnology: Fact or Myth Activity 2.5 Amazing Nanotechnology
3.5.6-8.L Design methods to gather data about technological systems.	Activity 2.3.a Exploring Nanoproducts Activity 2.4 Testing Nanofabric Project 3.5 Roller Coaster Mania
3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Activity 1.2 Gluing It All Together Project 1.3 Oil Spill Cleanup Problem 3.7 Product Creation
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.	Activity 1.1 Let's Make Ice Cream Activity 1.1.a Let's Make Yogurt Activity 1.2 Gluing It All Together Project 1.3 Oil Spill Cleanup Activity 2.3.a Exploring Nanoproducts Activity 2.4 Testing Nanofabric Project 3.5 Roller Coaster Mania Problem 3.7 Product Creation
3.5.6-8.O Interpret the accuracy of information collected.	Activity 2.3.b Exploring Nanoproducts (Alternate Activity)
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	Activity 1.2 Gluing It All Together Project 1.3 Oil Spill Cleanup Activity 2.3.a Exploring Nanoproducts Activity 2.4 Testing Nanofabric Problem 3.7 Product Creation

Science of Technology

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Standards	Activities, Projects, Problems
3.5.6-8.Q Apply a technology and engineering design thinking process.	Activity 1.2 Gluing it All Together Project 1.3 Oil Spill Cleanup Project 3.5 Roller Coaster Mania Problem 3.7 Product Creation
3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.	Activity 1.2 Gluing it All Together Problem 3.7 Product Creation
3.5.6-8.V Refine design solutions to address criteria and constraints.	Activity 1.2 Gluing it All Together Problem 3.7 Product Creation
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.	Activity 1.2 Gluing It All Together Project 1.3 Oil Spill Cleanup Problem 3.7 Product Creation
3.5.6-8.X Defend decisions related to a design problem.	Activity 1.2 Gluing it All Together Project 1.3 Oil Spill Cleanup Problem 3.7 Product Creation
3.5.6-8.BB Demonstrate how knowledge gained from other content areas affects the development of technological products and systems.	Project 3.5 Roller Coaster Mania Problem 3.7 Product Creation
3.5.6-8.CC Consider historical factors that have contributed to the development of technologies and human progress.	Activity 1.2 Gluing It All Together Activity 3.1 Simple Machines Video
3.5.6-8.DD Engage in a research and development process to simulate how inventions and innovations have evolved through systematic tests and refinements.	Activity 2.3.a Exploring Nanoproducts
3.5.6-8.FF Demonstrate how systems thinking involves considering relationships between every part, as well as how the systems interact with the environment in which it is used.	Problem 3.7 Product Creation
3.5.6-8.GG Create an open-loop system that has no feedback path and requires human intervention.	Activity 3.4 Energy Activity 3.5 Roller Coaster Mania Problem 3.7 Product Creation
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Activity 1.2 Gluing it All Together Project 1.3 Oil Spill Cleanup Problem 3.7 Product Creation

Flight and Space

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Standards	Activities, Projects, Problems
Science - Physical Science 3.2.6-8.G Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.	Activity 1.2 Forces of Flight Activity 1.3 Test Flight Activity 2.2 3...2...1...Liftoff Activity 2.3 All Systems Go Project 2.7 Take Two! Problem 3.1 Mission to Mars
3.2.6-8.H Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	Activity 1.3 Test Flight Activity 2.2 3...2...1...Liftoff Activity 2.3 All Systems Go Project 2.7 Take Two! Problem 3.1 Mission to Mars
Science - Earth and Space Science 3.3.6-8.B Use a model to describe the role of gravity in the motions within galaxies and the solar system.	Activity 2.3 All Systems Go
Environmental Literacy and Sustainability 3.4.6-8.G Obtain and communicate information to describe how best resource management practices and environmental laws are designed to achieve environmental sustainability.	Activity 2.6 Stayin' Alive
Technology and Engineering 3.5.6-8.A Research information from various sources to use and maintain technological products or systems.	Activity 1.4 Drones to the Rescue Activity 2.1 Explorers of the Universe
3.5.6-8.B Use instruments to gather data on the performance of everyday products.	Activity 2.2 3...2...1...Liftoff!
3.5.6-8.E Consider the impacts of a proposed or existing technology and devise strategies for reducing, reusing, and recycling waste caused by its creation.	Activity 2.6 Stayin' Alive
3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate.	Activity 2.1 Explorers of the Universe
3.5.6-8.L Design methods to gather data about technological systems.	Activity 2.6 Stayin' Alive
3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Activity 1.1 Instant Design Challenge Activity 1.3 Test Flight Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars
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.	Activity 1.1 Instant Design Challenge Activity 1.3 Test Flight Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars

Flight and Space

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Standards	Activities, Projects, Problems
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	Activity 1.1 Instant Design Challenge Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars
3.5.6-8.Q Apply a technology and engineering design thinking process.	Activity 1.1 Instant Design Challenge Activity 1.3 Test Flight Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars
3.5.6-8.R Develop innovative products and systems that solve problems and extend capabilities based on individual or collective needs and wants.	Activity 1.1 Instant Design Challenge Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars
3.5.6-8.S Illustrate the benefits and opportunities associated with different approaches to design.	Activity 1.1 Instant Design Challenge Problem 3.1 Mission to Mars
3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.	Activity 1.1 Instant Design Challenge Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars
3.5.6-8.V Refine design solutions to address criteria and constraints.	Activity 1.1 Instant Design Challenge Activity 1.3 Test Flight Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars
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.	Activity 1.1 Instant Design Challenge Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars
3.5.6-8.X Defend decisions related to a design problem.	Activity 1.1 Instant Design Challenge Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars
3.5.6-8.AA Adapt and apply an existing product, system, or process to solve a problem in a different setting.	Project 2.7 Take Two!

Flight and Space

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Standards	Activities, Projects, Problems
3.5.6-8.BB Demonstrate how knowledge gained from other content areas affects the development of technological products and systems.	Activity 1.2 Forces of Flight Activity 1.3 Test Flight Activity 1.4 Drones to the Rescue Activity 1.5 Flight Planning Project 1.7 Cleared for Takeoff Activity 2.2 3...2...1...Liftoff! Activity 2.3 All Systems Go Activity 2.4 Out of This World Activity 2.5 Fit For Space Activity 2.6 Stayin' Alive Project 2.7 Take Two!
3.5.6-8.CC Consider historical factors that have contributed to the development of technologies and human progress.	Activity 2.1 Explorers of the Universe
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Activity 1.1 Instant Design Challenge Activity 1.3 Test Flight Project 1.7 Cleared for Takeoff Project 2.7 Take Two! Problem 3.1 Mission to Mars

Energy and the Environment

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Standards	Activities, Projects, Problems
Physical Science 3.2.6-8.B Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	Activity 3.6 Heat Transfer Project 3.7 Penguin Dwellings Activity 3.8 Heat Transfer Post-Assessment
3.2.6-8.C Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	Activity 3.2 Product Life Cycle
3.2.6-8.M Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	Project 3.7 Penguin Dwellings
3.2.6-8.N Plan an investigation to determine the relationship among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	Project 3.7 Penguin Dwellings
Earth and Space Science 3.3.6-8.O Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	Activity 2.1 Why Are We Concerned? Project 3.7 Penguin Dwellings
3.3.6-8.M Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	Activity 2.1 Why Are We Concerned? Project 2.2 Energy Expo Project 2.3 Energy for Our Future Activity 3.1 Water Audit Activity 3.2 Product Life Cycle Activity 3.3 I Made A Difference Activity 3.4 Recycle City
3.3.6-8.N Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems	Activity 2.1 Why Are We Concerned? Project 2.3 Energy for Our Future Activity 3.4 Recycle City
Environmental Literacy and Sustainability 3.4.6-8.B Analyze and interpret data about how different societies (economic and social systems) and cultures use and manage natural resources differently.	Activity 2.1 Why Are We Concerned?
3.4.6-8.G Obtain and communicate information to describe how best resource management practices and environmental laws are designed to achieve environmental sustainability.	Activity 1.2 Energy Crossroads Activity 1.2.a The Next Frontier Activity 1.3 Using Energy Effeciently Activity 1.4.a Wind Energy Project 1.4 Measuring Energy Activity 2.1 Why Are We Concerned? Activity 3.2 Product Life Cycle Activity 3.3 I Made a Difference Activity 3.4 Recycle City

Energy and the Environment

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Standards	Activities, Projects, Problems
3.4.6-8.H Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.	Project 1.4 Measuring Energy Project 2.2 Energy Expo Project 2.3 Energy for Our Future Project 3.7 Penguin Dwellings
Technology and Engineering 3.5.6-8.A Research information from various sources to use and maintain technological products or systems.	Activity 1.4.a Wind Energy Project 2.2 Energy Expo Project 2.3 Energy for Our Future Activity 3.2 Product Life Cycle
3.5.6-8.B Use instruments to gather data on the performance of everyday products.	Activity 3.1: Water Audit Activity 3.6 Heat Transfer Project 3.7 Penguin Dwellings
3.5.6-8.D Analyze how the creation and use of technologies consumes renewable, nonrenewable, and inexhaustible resources; creates waste; and may contribute to environmental challenges.	Activity 1.3 Using Energy Effeciently Activity 3.1 Water Audit Activity 3.2 Product Life Cycle Activity 3.3 I Made A Difference Activity 3.4 Recycle City
3.5.6-8.E Consider the impacts of a proposed or existing technology and devise strategies for reducing, reusing, and recycling waste caused by its creation.	Activity 1.3 Using Energy Effeciently Activity 2.1 Why Are We Concerned? Activity 3.2 Product Life Cycle Activity 3.3 I Made A Difference Activity 3.4 Recycle City
3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate.	Activity 1.2 Energy Crossroads Activity 1.2.a The Next Frontier Activity 2.1 Why are We Concerned? Project 2.2 Energy Expo
3.5.6-8.G Analyze how an invention or innovation was influenced by the context and circumstances in which it is developed.	Activity 1.2 Energy Crossroads Activity 1.2.a The Next Frontier Activity 1.4.a Wind Energy
3.5.6-8.I Examine the ways that technology can have both positive and negative effects at the same time.	Activity 1.2.a The Next Frontier Activity 1.4.a Wind Energy Project 1.4 Measuring Energy Project 2.2 Energy Expo Project 2.3 Energy for Our Future Activity 3.1 Water Audit
3.5.6-8.L Design methods to gather data about technological systems.	Activity 3.1 Water Audit
3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Project 2.2 Energy Expo Project 2.3 Energy for Our Future Activity 3.6 Heat Transfer Project 3.7 Penguin Dwellings

Energy and the Environment

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Standards	Activities, Projects, Problems
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.	Project 1.4 Measuring Energy Project 2.2 Energy Expo Project 2.3 Energy for Our Future Activity 3.6 Heat Transfer Project 3.7 Penguin Dwellings
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	Project 1.4 Measuring Energy Project 2.2 Energy Expo Project 2.3 Energy for Our Future Project 3.7 Penguin Dwellings
3.5.6-8.Q Apply a technology and engineering design thinking process.	Project 1.4 Measuring Energy Project 2.2 Energy Expo Project 2.3 Energy for Our Future Project 3.7 Penguin Dwellings
3.5.6-8.R Develop innovative products and systems that solve problems and extend capabilities based on individual or collective needs and wants.	Project 1.4 Measuring Energy Project 2.2 Energy Expo
3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.	Project 1.4 Measuring Energy Project 2.2 Energy Expo Project 3.7 Penguin Dwellings
3.5.6-8.V Refine design solutions to address criteria and constraints.	Project 1.4 Measuring Energy Project 2.2 Energy Expo Project 3.7 Penguin Dwellings
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.	Activity 1.2 Energy Crossroads Activity 1.2.a The Next Frontier Activity 1.3 Using Energy Efficiently Activity 1.4.a Wind Energy Project 2.2 Energy Expo Project 2.3 Energy for Our Future Activity 3.1 Water Audit Activity 3.2 Product Life Cycle Activity 3.3 I Made a Difference Activity 3.4 Recycle City
3.5.6-8.X Defend decisions related to a design problem.	Project 1.4 Measuring Energy Project 2.2 Energy Expo Project 2.3 Energy for Our Future Project 3.7 Penguin Dwellings
3.5.6-8.Z Analyze how different technological systems often interact with economic, environmental, and social systems.	Activity 1.2 Energy Crossroads Activity 2.1 Why Are We Concerned? Project 2.3 Energy for Our Future Activity 3.1 Water Audit
3.5.6-8.AA Adapt and apply an existing product, system, or process to solve a problem in a different setting.	Activity 3.3 I Made a Difference

Energy and the Environment

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Standards	Activities, Projects, Problems
3.5.6-8.BB Demonstrate how knowledge gained from other content areas affects the development of technological products and systems.	Project 1.4 Measuring Energy Activity 3.1 Water Audit
3.5.6-8.CC Consider historical factors that have contributed to the development of technologies and human progress.	Activity 1.2 Energy Crossroads Activity 2.1 Why Are We Concerned?
3.5.6-8.DD Engage in a research and development process to simulate how inventions and innovations have evolved through systematic tests and refinements.	Project 2.2 Energy Expo Project 2.3 Energy for Our Future
3.5.6-8.HH Create a closed-loop system that has a feedback path and requires no human intervention.	Project 1.4 Measuring Energy
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Project 1.4 Measuring Energy Project 2.2 Energy Expo Project 2.3 Energy for Our Future Project 3.7 Penguin Dwellings

Green Architecture

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Standards	Activities, Projects, Problems
Environmental Literacy and Sustainability 3.4.6-8.B Analyze and interpret data about how different societies (economic and social systems) and cultures use and manage natural resources differently.	Activity 2.1.a Rebuilding Greensburg Activity 2.1.b Rebuilding Greensburg (AA)
3.4.6-8.G Obtain and communicate information to describe how best resource management practices and environmental laws are designed to achieve environmental sustainability.	Activity 1.10 Reading a Floor Plan Activity 2.1.a Rebuilding Greensburg Activity 2.1.b Rebuilding Greensburg (AA) Activity 2.2 Green Vocabulary Activity 2.3 Why Recycle? Activity 2.4 Save the Earth Comic Strip Activity 2.5 Indoor Air Quality Activity 2.6 Building Green
3.4.6-8.H Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.	Activity 1.6 Estimating Flooring Materials Activity 1.11 Bedroom Using Revit Optional Project 1.12.a Bedroom Remodeling Budget Optional Project 1.12.b Dream Bedroom Suite Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House
Technology and Engineering 3.5.6-8.D Analyze how the creation and use of technologies consumes renewable, nonrenewable, and inexhaustible resources; creates waste; and may contribute to environmental challenges.	Activity 2.3 Why Recycle?
3.5.6-8.E Consider the impacts of a proposed or existing technology and devise strategies for reducing, reusing, and recycling waste caused by its creation.	Activity 2.3 Why Recycle?
3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Project 3.3 Why Insulate? Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House
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.	Project 3.3 Why Insulate? Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House
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	Activity 1.11 Bedroom Using Revit Optional Project 1.12.a Bedroom Remodeling Budget Optional Project 1.12.b Dream Bedroom Suite Project 3.3 Why Insulate? Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House

Green Architecture

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Standards	Activities, Projects, Problems
3.5.6-8.Q Apply a technology and engineering design thinking process.	Optional Project 1.12.b Dream Bedroom Suite Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House
3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.	Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House
3.5.6-8.V Refine design solutions to address criteria and constraints.	Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House
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.	Activity 1.5 Using Autodesk Revit- Creating Your Classroom Tutorial Activity 1.6 Estimating Flooring Materials Activity 1.7 Bedroom Floor Plan Activity 2.1a: Rebuilding Greensburg Activity 2.1b Rebuilding Greensburg (AA) Activity 2.5 Indoor Air Quality Activity 3.2.a Building a Shed (Balsa Wood) Activity 3.2.b Building a Shed (Complete Insulated Construction Project Kit) Project 3.3 Why Insulate? Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House
3.5.6-8.X Defend decisions related to a design problem.	Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House
3.5.6-8.BB Demonstrate how knowledge gained from other content areas affects the development of technological products and systems.	Activity 3.2.a Building a Shed (Balsa Wood) Activity 2.3.b Building a Shed (Complete Insulated Construction Project Kit) Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House
3.5.6-8.HH Create a closed-loop system that has a feedback path and requires no human intervention.	Activity 2.3 Why Recycle?
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Activity 2.6 Building Green Problem 3.4 Shipping Container Home Optional Problem 3.4 Tiny House

Magic of Electrons

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Standards	Activities, Projects, Problems
Environmental Literacy and Sustainability 3.4.6-8.H Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.	Project 1.6 Generators (optional) Activity 2.6 Capacitors
Technology and Engineering 3.5.6-8.A Research information from various sources to use and maintain technological products or systems.	Activity 2.2 Switches, Diodes, and Light Emitting Diodes
3.5.6-8.B Use instruments to gather data on the performance of everyday products.	Activity 1.2 Conductivity
3.5.6-8.C Hypothesize what alternative outcomes (individual, cultural, and/or environmental) might have resulted had a different technological solution been selected.	Activity 2.5 Capacitors Activity 2.6 Transistors
3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate.	Activity 2.1 Circuit Design Activity 2.2 Switches, Diodes, and Light Emitting Diodes Activity 2.5 Capacitors Activity 2.6 Transistors
3.5.6-8.H Evaluate trade-offs based on various perspectives as part of a decision process that recognizes the need for careful compromises among competing factors.	Activity 2.1 Circuit Design
3.5.6-8.I Examine the ways that technology can have both positive and negative effects at the same time.	Activity 2.2 Switches, Diodes, and Light Emitting Diodes
3.5.6-8.J Use tools, materials, and machines to safely diagnose, adjust, and repair systems.	Activity 2.1 Circuit Design Activity 2.2 Switches, Diodes, and Light Emitting Diodes Activity 2.3.a More Resistors Activity 2.5 Capacitors
3.5.6-8.K Use devices to control technological systems.	Activity 2.2 Switches, Diodes, and Light Emitting Diodes
3.5.6-8.L Design methods to gather data about technological systems.	Activity 1.3 Static and Current Electricty
3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Problem 3.4 Logic Problems
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.	Problem 3.4 Logic Problems

Magic of Electrons

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Standards	Activities, Projects, Problems
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	Activity 1.5 DC Motor Construction Project 1.6 Generators (Optional) Problem 3.4 Logic Problems
3.5.6-8.Q Apply a technology and engineering design thinking process.	Activity 1.4 Electromagnets Activity 1.5 DC Motor Construction Project 1.6 Generators (Optional) Activity 2.1 Circuit Design Activity 2.2 Switches, Diodes, and Light Emitting Diodes Activity 2.3 Resistance Activity 2.3.a More Resistors Activity 2.4 Ohm's Law Activity 2.5 Capacitors Activity 2.6 Transistors Activity 3.3 Transistors to Gates Problem 3.4 Logic Problems
3.5.6-8.R Develop innovative products and systems that solve problems and extend capabilities based on individual or collective needs and wants.	Activity 1.5 DC Motor Construction Project 1.6 Generators (Optional) Activity 2.1 Circuit Design Problem 3.4 Logic Problems
3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.	Activity 1.5 DC Motor Construction Project 1.6 Generators (Optional) Activity 2.1 Circuit Design
3.5.6-8.V Refine design solutions to address criteria and constraints.	Activity 1.5 DC Motor Construction Project 1.6 Generators (Optional) Activity 2.3.a More Resistors
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.	Activity 1.5 DC Motor Construction Project 1.6 Generators (Optional) Activity 2.1 Circuit Design Activity 2.6 Transistors Problem 3.4 Logic Problems
3.5.6-8.X Defend decisions related to a design problem.	Activity 1.5 DC Motor Construction Project 1.6 Generators (Optional) Problem 3.4 Logic Problems
3.5.6-8.BB Demonstrate how knowledge gained from other content areas affects the development of technological products and systems.	Activity 1.5 DC Motor Construction Activity 2.3 Resistance Activity 2.4 Ohm's Law Activity 3.3 Transistors to Gates
3.5.6-8.CC Consider historical factors that have contributed to the development of technologies and human progress.	Activity 2.6 Transistors

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Standards	Activities, Projects, Problems
3.5.6-8.HH Create a closed-loop system that has a feedback path and requires no human intervention.	Activity 2.1 Circuit Design Activity 2.3.a More Resistors Activity 2.4 Ohm's Law Activity 2.6 Transistors Activity 3.3 Transistors to Gates Problem 3.4 Logic Problems
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Activity 1.4 Electromagnets Activity 1.5 DC Motor Construction Project 1.6 Generators (Optional) Activity 2.1 Circuit Design Activity 2.2 Switches, Diodes, and Light Emitting Diodes Activity 2.3 Resistance Activity 2.3.a More Resistors Activity 2.4 Ohm's Law Activity 2.5 Capacitors Activity 2.6 Transistors Activity 3.3 Transistors to Gates Problem 3.4 Logic Problems

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Standards	Activities, Projects, Problems
Technology and Engineering 3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Activity 1.1 Foot Orthosis Instant Design Challenge Activity 1.4 Skimmer Statistics Project 2.4 Puzzle Cube Design Challenge Problem 3.1 Therapeutic Toy Design
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.	Activity 1.1 Foot Orthosis Instant Design Challenge Activity 1.4 Skimmer Statistics Project 2.4 Puzzle Cube Design Challenge Problem 3.1 Therapeutic Toy Design
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	Activity 1.1 Foot Orthosis Instant Design Challenge Project 1.6 Investigate the Inside Activity 2.3 It's For the Birds Project 2.4 Puzzle Cube Design Challenge Problem 3.1 Therapeutic Toy Design
3.5.6-8.Q Apply a technology and engineering design thinking process.	Activity 1.1 Foot Orthosis Instant Design Challenge Activity 1.3 Measuring Matters Project 1.6 Investigate the Inside Activity 2.3 It's For the Birds Project 2.4 Puzzle Cube Design Challenge Problem 3.1 Therapeutic Toy Design
3.5.6-8.R Develop innovative products and systems that solve problems and extend capabilities based on individual or collective needs and wants.	Activity 1.1 Foot Orthosis Instant Design Challenge Activity 2.3 It's For the Birds Project 2.4 Puzzle Cube Design Challenge Problem 3.1 Therapeutic Toy Design
3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.	Activity 1.1 Foot Orthosis Instant Design Challenge Project 1.6 Investigate the Inside Problem 3.1 Therapeutic Toy Design
3.5.6-8.V Refine design solutions to address criteria and constraints.	Activity 1.1 Foot Orthosis Instant Design Challenge Project 1.6 Investigate the Inside Activity 2.3 It's For the Birds Project 2.4 Puzzle Cube Design Challenge Problem 3.1 Therapeutic Toy Design

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Standards	Activities, Projects, Problems
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.	Activity 1.1 Foot Orthosis Instant Design Challenge Project 2.4 Puzzle Cube Design Challenge Problem 3.1 Therapeutic Toy Design
3.5.6-8.X Defend decisions related to a design problem.	Activity 1.1 Foot Orthosis Instant Design Challenge Problem 3.1 Therapeutic Toy Design
3.5.6-8.BB Demonstrate how knowledge gained from other content areas affects the development of technological products and systems.	Activity 1.2 A Picture is Worth a Thousand Words Activity 1.3 Measuring Matters Activity 1.4 Skimmer Statistics Activity 1.5 Dialed In Activity 1.6 Investigate the Inside Activity 2.1 Taking Modeling to Another Dimension Activity 2.2 For Good Measure Activity 2.3 It's For the Birds Problem 3.1 Therapeutic Toy Design
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Activity 1.1 Foot Orthosis Instant Design Challenge Activity 1.3 Measuring Matters Project 1.6 Investigate the Inside Activity 2.3 It's For the Birds Problem 3.1 Therapeutic Toy Design

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Standards	Activities, Projects, Problems
Technology and Engineering 3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate.	Activity 1.2 On the Move Activity 1.7 It Is Universal Activity 1.8 Bevel Up
3.5.6-8.J Use tools, materials, and machines to safely diagnose, adjust, and repair systems.	Activity 1.1 Welcome Interns! Activity 1.3 Rescue Mission Activity 1.4 Robot Shuffle Activity 1.5 Looping Shuffles Activity 1.6 Time to Switch Gears Activity 1.7 It Is Universal Activity 2.1 Makes Sense Activity 2.2 Color Coded Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills
3.5.6-8.K Use devices to control technological systems.	Activity 1.1 Welcome Interns! Activity 1.3 Rescue Mission Activity 1.4 Robot Shuffle Activity 1.5 Looping Shuffles Activity 1.7 It Is Universal Activity 2.1 Makes Sense Activity 2.2 Color Coded Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills
3.5.6-8.L Design methods to gather data about technological systems.	Activity 1.6 Time to Switch Gears
3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Project 1.9 Purposeful Design Project 2.5 Helping Hand
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.	Activity 1.8 Bevel up Project 1.9 Purposeful Design Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills
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	Activity 1.8 Bevel up Project 1.9 Purposeful Design Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills

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Standards	Activities, Projects, Problems
3.5.6-8.Q Apply a technology and engineering design thinking process.	Activity 1.2 On the Move Activity 1.3 Rescue Mission Activity 1.4 Robot Shuffle Activity 1.5 Looping Shuffles Activity 1.6 Time to Switch Gears Activity 1.7 It Is Universal Activity 1.8 Bevel Up Project 1.9 Purposeful Design Activity 2.1 Makes Sense Activity 2.2 Color Coded Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills
3.5.6-8.R Develop innovative products and systems that solve problems and extend capabilities based on individual or collective needs and wants.	Activity 1.2 On the Move Activity 1.3 Rescue Mission Activity 1.4 Robot Shuffle Activity 1.5 Looping Shuffles Activity 1.7 It Is Universal Activity 1.8 Bevel Up Project 1.9 Purposeful Design Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills
3.5.6-8.S Illustrate the benefits and opportunities associated with different approaches to design.	Project 1.9 Purposeful Design
3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.	Project 1.9 Purposeful Design Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills
3.5.6-8.V Refine design solutions to address criteria and constraints.	Activity 1.3 Rescue Mission Activity 1.4 Robot Shuffle Activity 1.5 Looping Shuffles Activity 1.6 Time to Switch Gears Project 1.9 Purposeful Design Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills

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Standards	Activities, Projects, Problems
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.	Activity 1.7 It Is Universal Activity 1.8 Bevel up Project 1.9 Purposeful Design Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills
3.5.6-8.X Defend decisions related to a design problem.	Activity 1.8 Bevel up Project 1.9 Purposeful Design Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills
3.5.6-8.BB Demonstrate how knowledge gained from other content areas affects the development of technological products and systems.	Activity 1.4 Robot Shuffle Activity 1.5 Looping Shuffle
3.5.6-8.CC Consider historical factors that have contributed to the development of technologies and human progress.	Activity 1.3 Rescue Mission
3.5.6-8.EE Differentiate between inputs, processes, outputs, and feedback in technological systems.	Activity 1.1 Welcome Interns! Activity 1.2 On the Move
3.5.6-8.FF Demonstrate how systems thinking involves considering relationships between every part, as well as how the systems interact with the environment in which it is used.	Activity 1.1 Welcome Interns! Activity 1.2 On the Move Activity 1.3 Rescue Mission Activity 1.4 Robot Shuffle Activity 1.7 It Is Universal Activity 1.8 Bevel Up Activity 2.1 Makes Sense Activity 2.2 Color Coded Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Activity 1.2 On the Move Activity 1.3 Rescue Misson Activity 1.4 Robot Shuffle Activity 1.5 Looping Shuffles Activity 1.7 It Is Universal Activity 1.8 Bevel Up Project 1.9 Purposeful Design Activity 2.1 Makes Sense Activity 2.2 Color Coded Activity 2.3 Follow Me Activity 2.4 End of the Line Project 2.5 Helping Hand Problem 3.1 Show Your Skills

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Standards	Activities, Projects, Problems
Technology and Engineering 3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate.	Activity 1.1 The Brain Activity 2.1 Need Input
3.5.6-8.J Use tools, materials, and machines to safely diagnose, adjust, and repair systems.	Activity 1.3 How to Do It Activity 1.4 Crush the Bug Project 1.5 The Blinking Message Activity 2.1 Need Input Activity 2.2 Responding Output Activity 2.3 Get Connected Project 2.4 Secrets and Safes Problem 3.1 Interactions
3.5.6-8.K Use devices to control technological systems.	Activity 1.3 How to Do It Project 1.5 The Blinking Message Activity 2.1 Need Input Activity 2.2 Responding Output Activity 2.3 Get Connected Project 2.4 Secrets and Safes Problem 3.1 Interactions
3.5.6-8.L Design methods to gather data about technological systems.	Activity 2.3 Get Connected
3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Project 2.4 Secrets and Safes Problem 3.2 Interactions
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.	Project 2.4 Secrets and Safes Problem 3.2 Interactions
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.	Project 1.5 The Blinking Message Project 2.4 Secrets and Safes Problem 3.2 Interactions
3.5.6-8.Q Apply a technology and engineering design thinking process.	Activity 1.3 How to Do It Project 1.5 The Blinking Message Activity 2.1 Need Input Activity 2.2 Responding Output Activity 2.3 Get Connected Project 2.4 Secrets and Safes Activity 3.1 Clean Up Your Code Problem 3.2 Interactions
3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.	Project 2.4 Secrets and Safes Problem 3.2 Interactions
3.5.6-8.V Refine design solutions to address criteria and constraints.	Activity 2.2 Responding Output Project 2.4 Secrets and Safes Problem 3.2 Interactions

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Standards	Activities, Projects, Problems
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.	Project 2.4 Secrets and Safes Problem 3.2 Interactions
3.5.6-8.X Defend decisions related to a design problem.	Project 2.4 Secrets and Safes Problem 3.2 Interactions
3.5.6-8.EE Differentiate between inputs, processes, outputs, and feedback in technological systems.	Activity 1.3 How to Do It Activity 2.1 Need Input Activity 2.2 Responding Output Activity 2.3 Get Connected Project 2.4 Secrets and Safes
3.5.6-8.FF Demonstrate how systems thinking involves considering relationships between every part, as well as how the systems interact with the environment in which it is used.	Activity 2.1 Need Input Activity 2.2 Responding Output Activity 2.3 Get Connected Project 2.4 Secrets and Safes Problem 3.2 Interactions
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Activity 1.4 Crush the Bug Project 1.5 The Blinking Message Activity 2.1 Need Input Activity 2.2 Responding Output Activity 2.3 Get Connected Project 2.4 Secrets and Safes Activity 3.1 Clean Up Your Code Problem 3.2 Interactions
3.5.6-8.LL Compare how different technologies involve different sets of processes.	Activity 1.2 What to Do

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Standards	Activities, Projects, Problems
Technology and Engineering 3.5.6-8.F Analyze examples of technologies that have changed the way people think, interact, live, and communicate.	Activity 1.4 Coding with Conditions
3.5.6-8.K Use devices to control technological systems.	Activity 1.3 The Germ Guide App Activity 1.4 Coding wtih Conditions Activity 1.5 Decision Time Activity 1.6 Bug Blaster Activity 1.7 Game Time Project 1.8 Build an Apps Game Design Activity 2.2 Loop Me In Activity 2.3 Making the List Activity 2.4 Game Plan Project 2.5 That's My Jam Next Level Activity 2.1 Keep Me in the Loop Activity 2.2 Programming with Procedures Activity 2.3 Playing with Lists Activity 2.4 Disease Tracker Activity 2.4 Extension: Persistent Data Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge
3.5.6-8.L Design methods to gather data about technological systems.	Next Level Activity 2.4 Disease Tracker Activity 2.4 Extension: Persistent Data
3.5.6-8.M (ETS) Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	Activity 1.5 Decision Time Project 1.8 Build an App Game Design Project 2.5 That's My Jam Next Level Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge
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.	Problem 3.1 The Great App Challenge
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	Activity 1.5 Decision Time Project 1.8 Build an App Game Design Project 2.5 That's My Jam Next Level Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge

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Standards	Activities, Projects, Problems
3.5.6-8.Q Apply a technology and engineering design thinking process.	Activity 1.3 The Germ Guide App Activity 1.4 Coding wtih Conditions Activity 1.5 Decision Time Activity 1.6 Bug Blaster Activity 1.7 Game Time Project 1.8 Build an Apps Game Design Activity 2.2 Loop Me In Activity 2.3 Making the List Activity 2.4 Game Plan Project 2.5 That's My Jam Next Level Activity 2.1 Keep Me in the Loop Activity 2.2 Programming with Procedures Activity 2.3 Playing with Lists Activity 2.4 Disease Tracker Activity 2.4 Extension: Persistent Data Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge
3.5.6-8.R Develop innovative products and systems that solve problems and extend capabilities based on individual or collective needs and wants.	Activity 1.7 Game Time Project 1.8 Build an App Game Design Project 2.5 That's My Jam Next Level Activity 2.4 Extension: Persistent Data Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge
3.5.6-8.T Create solutions to problems by identifying and applying human factors in design.	Game Design Activity 2.2 Loop Me In Activity 2.4 Game Plan Project 2.5 That's My Jam Next Level Activity 2.4 Disease Tracker Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge
3.5.6-8.U Evaluate and assess the strengths and weaknesses of various design solutions given established principles and elements of design.	Activity 1.3 The Germ Guide App Activity 1.4 Coding with Conditions Game Design Project 2.5 That's My Jam Next Level Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge

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Standards	Activities, Projects, Problems
3.5.6-8.V Refine design solutions to address criteria and constraints.	Project 1.8 Build an App Game Design Project 2.5 That's My Jam Next Level Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge
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.	Activity 1.1 The App Revolution Activity 1.5 Decision Time Game Design Project 2.5 That's My Jam Next Level Activity 2.4 Disease Tracker Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge
3.5.6-8.X Defend decisions related to a design problem.	Project 1.8 Build an App Game Design Project 2.5 That's My Jam Next Level Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge
3.5.6-8.CC Consider historical factors that have contributed to the development of technologies and human progress.	Activity 1.1 The App Revolution Game Design Activity 2.1 Game Time
3.5.6-8.JJ Apply informed problem-solving strategies to the improvement of existing devices or processes or the development of new approaches.	Activity 1.3 The Germ Guide App Activity 1.4 Coding wtih Conditions Activity 1.5 Decision Time Activity 1.6 Bug Blaster Activity 1.7 Game Time Project 1.8 Build an App Game Design Activity 2.2 Loop Me In Activity 2.3 Making the LIst Activity 2.4 Game Plan Project 2.5 That's My Jam Next Level Activity 2.1 Keep Me in the Loop Activity 2.2 Programming with Procedures Activity 2.3 Playing with Lists Activity 2.4 Disease Tracker Activity 2.4 Extension: Persistent Data Project 2.5 Fitness Challenge App Problem 3.1 The Great App Challenge