

Teacher: Charlotte Brown	Course: Design Process – Block Course	Grade Level: 7 th Grade
Length of Time: 3 Weeks	Topic 1: Who Done It	
Content/Big Ideas (What topics the students should be familiar with)	<ul style="list-style-type: none"> • Design Attributes • Engineering Design • R&D, Invention & Innovation, Experimentation/Problem Solving and Troubleshooting • Applying the Design Process • Using and Maintaining Technological Systems • Assessing Impact of Products and Systems 	
Essential Questions (Important questions that students should be able to answer at the end of a lesson/unit)	<ul style="list-style-type: none"> • How does an escape room work? • How can the components of an escape room be designed? • How can the engineering design process be used to design, test, and adapt an escape room? 	
Skills (What students will do during the unit in order to answer the essential questions)	<ul style="list-style-type: none"> • Students will <i>evaluate</i> a model escape room. • Students will <i>design</i> their own escape room. • Students will <i>analyze</i> their escape room using the engineering design process. 	
Activities & Assessments (How the students will be held accountable for their learning)	<ul style="list-style-type: none"> • Independent Problem Solving • Group Projects 	
Standards/Benchmarks (PA Academic Standards)	<ul style="list-style-type: none"> • 3.4.7.C1 – Describe how design, as a creative planning process, leads to useful products and systems. • 3.4.7.C2 – Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions. • 3.4.7.C3 – Describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system. • 3.4.7.D1 – Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem. • 3.4.7.D2 – Select and safely use appropriate tools, products and system for specific tasks. • 3.4.7.D3 – Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology. 	
Technology/Supplemental Materials/Resources (What the students will use during the lesson/unit)	<ul style="list-style-type: none"> • Class Notes • Teams • Internet • Basic Building Materials and Craft Supplies 	

Length of Time: 1 Week	Topic 2: Magically Move It	
Content/Big Ideas (What topics the students should be familiar with)	<ul style="list-style-type: none"> • Design Attributes • Engineering Design • R&D, Invention & Innovation, Experimentation/Problem Solving and Troubleshooting • Applying the Design Process • Using and Maintaining Technological Systems • Assessing Impact of Products and Systems 	
Essential Questions (Important questions that students should be able to answer at the end of a lesson/unit)	<ul style="list-style-type: none"> • How do forces act on gliders to keep them in the air? • How can a glider be built to travel 100 feet and land on a target? • How can the engineering design process be used to design, test, and adapt a model glider? 	
Skills (What students will do during the unit in order to answer the essential questions)	<ul style="list-style-type: none"> • Students will <i>identify</i> the forces acting on gliders. • Students will <i>build</i> model gliders designed to travel 100 feet and land on a target. • Students will <i>analyze</i> their gliders using the engineering design process. 	
Activities & Assessments	<ul style="list-style-type: none"> • Independent Problem Solving 	

(How the students will be held accountable for their learning)	<ul style="list-style-type: none"> • Group Projects
Standards/Benchmarks (PA Academic Standards)	<ul style="list-style-type: none"> • 3.4.7.C1 – Describe how design, as a creative planning process, leads to useful products and systems. • 3.4.7.C2 – Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions. • 3.4.7.C3 – describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system. • 3.4.7.D1 – Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem. • 3.4.7.D2 – Select and safely use appropriate tools, products and system for specific tasks. • 3.4.7.D3 – Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.
Technology/Supplemental Materials/Resources (What the students will use during the lesson/unit)	<ul style="list-style-type: none"> • Class Notes • Teams • Internet • Basic Building Materials and Craft Supplies

Length of Time: 4 Weeks	Topic 3: We Built a Zoo
Content/Big Ideas (What topics the students should be familiar with)	<ul style="list-style-type: none"> • Design Attributes • Engineering Design • R&D, Invention & Innovation, Experimentation/Problem Solving and Troubleshooting • Applying the Design Process • Using and Maintaining Technological Systems • Assessing Impact of Products and Systems
Essential Questions (Important questions that students should be able to answer at the end of a lesson/unit)	<ul style="list-style-type: none"> • How can scale models be used to represent large objects? • How can a zoo enclosure be designed to scale? • How can the engineering design process be used to design, test, and adapt a scale model zoo enclosure?
Skills (What students will do during the unit in order to answer the essential questions)	<ul style="list-style-type: none"> • Students will <i>solve</i> problems relating to area of irregular shapes, percentages, and scaling. • Students will <i>build</i> scale model zoo enclosures to fit the needs of their animal. • Students will <i>analyze</i> their zoo enclosures using the engineering design process.
Activities & Assessments (How the students will be held accountable for their learning)	<ul style="list-style-type: none"> • Independent Problem Solving • Group Projects
Standards/Benchmarks (PA Academic Standards)	<ul style="list-style-type: none"> • 3.4.7.C1 – Describe how design, as a creative planning process, leads to useful products and systems. • 3.4.7.C2 – Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions. • 3.4.7.C3 – describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system. • 3.4.7.D1 – Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem. • 3.4.7.D2 – Select and safely use appropriate tools, products and system for specific tasks. • 3.4.7.D3 – Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.
Technology/Supplemental Materials/Resources (What the students will use during the lesson/unit)	<ul style="list-style-type: none"> • Class Notes • Teams • Internet • Basic Building Materials and Craft Supplies

Length of Time: 1 Week	Topic 4: Land Yachts Ahoy
Content/Big Ideas (What topics the students should be familiar with)	<ul style="list-style-type: none"> • Design Attributes • Engineering Design • R&D, Invention & Innovation, Experimentation/Problem Solving and Troubleshooting • Applying the Design Process • Using and Maintaining Technological Systems • Assessing Impact of Products and Systems
Essential Questions (Important questions that students should be able to answer at the end of a lesson/unit)	<ul style="list-style-type: none"> • How do forces act on land yachts to keep them moving? • How can a model land yacht be built to travel 15 feet to deposit supplies at a drop point powered only by wind? • How can the engineering design process be used to design, test, and adapt a model land yacht?
Skills (What students will do during the unit in order to answer the essential questions)	<ul style="list-style-type: none"> • Students will <i>identify</i> the forces acting on land yachts. • Students will <i>build</i> model land yachts designed to travel 15 feet to deposit supplies at a drop point powered only by wind. • Students will <i>analyze</i> their model land yachts using the engineering design process.
Activities & Assessments (How the students will be held accountable for their learning)	<ul style="list-style-type: none"> • Independent Problem Solving • Group Projects
Standards/Benchmarks (PA Academic Standards)	<ul style="list-style-type: none"> • 3.4.7.C1 – Describe how design, as a creative planning process, leads to useful products and systems. • 3.4.7.C2 – Explain how modeling, testing, evaluating, and modifying are used to transform ideas into practical solutions. • 3.4.7.C3 – describe how troubleshooting as a problem-solving method may identify the cause of a malfunction in a technological system. • 3.4.7.D1 – Identify and collect information about everyday problems that can be solved by technology and generate ideas and requirements for solving a problem. • 3.4.7.D2 – Select and safely use appropriate tools, products and system for specific tasks. • 3.4.7.D3 – Use data collected to analyze and interpret trends in order to identify the positive or negative effects of a technology.
Technology/Supplemental Materials/Resources (What the students will use during the lesson/unit)	<ul style="list-style-type: none"> • Class Notes • Teams • Internet • Basic Building Materials and Craft Supplies