

Building Iowa's Future

*Presented by the Iowa Clearinghouse for Work-Based Learning
and the Home Builders Association of Iowa*

Standards Guide

Home Design Challenge: Grades K-5 & 6-8 Project Overview

Students in grades K-5 and 6-8 are invited to build a model home – with toy plastic construction bricks, wood blocks, popsicle sticks or a variety of other materials of their choice – that demonstrates building excellence. Please note, however, that prefabricated construction kits will not be allowed.

Each team must have at least two members. After a team finishes building a home, their teacher will upload their essay (up to 400 words maximum K-5 and up to 800 words maximum 6-8) written by one or more of the team members describing:

- the home's quality and design specifications;
- why the home would be a great place to live;
- what students learn in school that connects to specific careers involved in the project.

In addition, teachers will upload at least one photo of the home and up to two other artifacts – including photos, videos or other items – that showcase the work students have done.

Materials needed: toy plastic construction bricks, wood blocks, popsicle sticks or a variety of other materials.

Example Standards

*Please note that this learning activity may include other standards and connections. These are just ideas to support educators in placing the project **to enhance and/or support learning** Iowa Core Standards.

Collaborative projects such as the Home Design Challenge will include a degree skill building in *Iowa's Universal Constructs: Essential for 21st Century Success* found at: <https://iowacore.gov/content/universal-constructs-essential-21st-century-success-0>

Grade	Math	ELA	Science
K	Geometry: Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres). (K.G.A)	Writing Standards: Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (W.K.2)) (DOK 1)	K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.* <i>(This might be a great prompt into talking about home design to protect humans in severe weather to then connect to the Engineering</i>

			<p><i>Design Standards)</i></p> <p>K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>
1st	<p>Measurement & Data:</p> <p>Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1.MD.A.1) (DOK 2,3)</p> <p>Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. <i>Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.</i> (1.MD.A.2) (DOK 1,2)</p> <p>Geometry</p> <p>Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. (1.G.A.1) (DOK 2)</p>	<p>Writing Standards:</p> <p>Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure. (W.1.2) (DOK 2)</p> <p>With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. (W.1.6) (DOK 2)</p>	<p>1-LS1-1. Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.*</p> <p>K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>
2nd	Measurement and Data	Writing Standards:	2-PS1-2. Analyze data obtained from testing

	<p>Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. (2.MD.A.1) (DOK 1)</p>	<p>With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing. (W.2.5) (DOK 2,3)</p>	<p>different materials to determine which materials have the properties that are best suited for an intended purpose.*</p> <p>2-PS1-3. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.</p> <p>K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p>K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.</p>
3rd	<p>Measurement & Data:</p> <p>Geometric measurement: understand concepts of area and relate area to multiplication and to addition. (3.MD.C)</p> <p>Recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <ul style="list-style-type: none"> a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units. (3.MD.C.5) (DOK 1,2) <p>Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units). (3.MD.C.6) (DOK 1,2)</p> <p>Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between</p>	<p>Writing Standards:</p> <p>Write opinion pieces on topics or texts, supporting a point of view with reasons. a. Introduce the topic or text they are writing about, state an opinion, and create an organizational structure that lists reasons. b. Provide reasons that support the opinion. c. Use linking words and phrases (e.g., because, therefore, since, for example) to connect opinion and reasons. d. Provide a concluding statement or section. (W.3.1) (DOK 3,4)</p>	<p>3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.* <i>(This might be a great prompt into talking about home design to protect humans in severe weather to then connect to the Engineering Design Standards)</i></p> <p>3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p>

	<p>linear and area measures. (3.MD.D)</p> <p>Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters. (3.MD.D.8) (DOK 1,2)</p>		
4th	<p>Measurement & Data:</p> <p>Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. (4.MD.A)</p> <p>Apply the area and perimeter formulas for rectangles in real world and mathematical problems. <i>For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor. (4.MD.A.3) (DOK 1,2)</i></p>	<p>Writing Standards:</p> <p>Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose. b. Provide reasons that are supported by facts and details. c. Link opinion and reasons using words and phrases (e.g., for instance, in order to, in addition). d. Provide a concluding statement or section related to the opinion presented. (W.4.1) (DOK 3,4)</p>	<p>4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*</p> <p>3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p>
5th	<p>Measurement & Data:</p> <p>Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. (5.MD.C)</p> <p>Recognize volume as an attribute of solid figures and understand concepts of volume measurement.</p> <p>a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of</p>	<p>Writing Standards:</p> <p>Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which ideas are logically grouped to support the writer's purpose. b. Provide logically ordered reasons that are supported by facts and details. c. Link opinion and reasons using words, phrases, and clauses (e.g., consequently, specifically). d. Provide a concluding statement or</p>	<p>5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. <i>(Possibly discussing materials homes are made of / sustainable homebuilding).</i></p> <p>3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p>

	<p>volume, and can be used to measure volume.</p> <p>b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. (5.MD.C.3) (DOK 1)</p> <p>Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. (5.MD.C.4) (DOK 1,2)</p>	<p>section related to the opinion presented. (W.5.1) (DOK 3,4)</p>	
6th	<p>Geometry:</p> <p>Solve real-world and mathematical problems involving area, surface area, and volume. (6.G.A)</p> <p>Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. (6.G.A.1) (DOK 1,2)</p> <p>Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l w h$ and $V = b h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. (6.G.A.2) (DOK 1,2)</p> <p>Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world</p>	<p>Writing Standards:</p> <p>Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization and analysis of relevant content. a. Introduce a topic; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from the information or explanation presented. (W.6.2) (DOK 3,4)</p>	<p>MS-ETS1-1. 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>and mathematical problems. (6.G.A.3) (DOK 1,2)</p> <p>Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. (6.G.A.4) (DOK 1,2)</p>		
7th	<p>Geometry:</p> <p>Draw, construct, and describe geometrical figures and describe the relationships between them. (7.G.A)</p> <p>Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. (7.G.A.1) (DOK 1,2)</p> <p>Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. (7.G.B)</p> <p>Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.B.6) (DOK 1,2)</p>	<p>Writing Standards:</p> <p>Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information, using strategies such as definition, classification, comparison/contrast, and cause/effect; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented. (W.7.2) (DOK 3,4)</p>	<p>MS-ETS1-1. 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>
8th	Geometry	Writing Standards:	MS-PS1-3. Gather and make sense of

	<p>Understand and apply the Pythagorean Theorem. (8.G.B)</p> <p>Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. (8.G.B.7) (DOK 1,2)</p>	<p>Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to inform about or explain the topic. e. Establish and maintain a formal style. f. Provide a concluding statement or section that follows from and supports the information or explanation presented. (W.8.2) (DOK 3,4)</p>	<p>information to describe that synthetic materials come from natural resources and impact society.</p> <p>MS-ETS1-1. 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>
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Iowa Dream & Design Challenge: 9-12 Project Overview

Student teams in grades 9-12 are invited to improve their community by identifying the need for a project, such as a school athletic equipment storage facility, a ramp for a disabled person, a garden shed, a neighborhood mini-library or a birdhouse for a park or prairie, among other possibilities. Students are not expected to build the actual project, but to explore whether it is doable

Each team must have at least two members. After a team finishes designing their project and other required components, their teacher will upload their essay (up to 800 words maximum) written by one or more team members describing:

- the project's quality, including design specifications, and a detailed cost analysis;
- the impact project could have locally;
- feedback from school and community partners or individuals who would be affected, including whether they think the project is viable; and
- what students learn in school that connects to specific careers involved in the project.

In addition, their teacher will upload no more than three artifacts – such as photos, screen shots and design files – to the challenge portal on the Clearinghouse website to showcase the work students have done.

Materials needed: Access to a device for creation from paper and pencil to design software, among other things.

Example Standards

*Please note that this learning activity may include other standards and connections. These are just ideas to support educators in placing the project to enhance and/or support learning Iowa Core Standards.

Collaborative projects such as the Iowa Dream & Design Challenge will include a degree skill building in *Iowa's Universal Constructs: Essential for 21st Century Success* found at: <https://iowacore.gov/content/universal-constructs-essential-21st-century-success-0>

Grade	Math	ELA	CTE	Social Studies
9th-12th	Mathematics High School—Modeling Modeling links classroom mathematics and statistics to everyday life, work, and decision-making. Modeling is the process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions. Quantities and their relationships in	<u>Writing Standards 9-10</u> Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content. a. Introduce a topic; organize complex ideas, concepts, and information to make important connections and	<u>Iowa K-12 21st Century Skills and Iowa CTE Universal Core Standards</u> ES.1 Communicate and work productively with others, incorporating different perspectives and cross-cultural understanding, to increase innovation and the quality of	Inquiry Anchor Standard: Taking Informed Action SS.9-12.11. Use disciplinary and interdisciplinary lenses to understand the characteristics and causes of local, regional, and global problems; instances of such

	<p>physical, economic, public policy, social, and everyday situations can be modeled using mathematical and statistical methods. When making mathematical models, technology is valuable for varying assumptions, exploring consequences, and comparing predictions with data.</p> <p>A model can be very simple, such as writing total cost as a product of unit price and number bought, or using a geometric shape to describe a physical object like a coin. Even such simple models involve making choices. It is up to us whether to model a coin as a three-dimensional cylinder, or whether a two-dimensional disk works well enough for our purposes. Other situations—modeling a delivery route, a production schedule, or a comparison of loan amortizations—need more elaborate models that use other tools from the mathematical sciences. Real-world situations are not organized and labeled for analysis; formulating tractable models, representing such models, and analyzing them is appropriately a creative process. Like every such process, this depends on acquired expertise as well as creativity.</p> <p>Modeling with Geometry G-MG Apply geometric concepts in modeling situations (G-MG.A)</p> <p>Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). ★ (G-MG.A.1) (DOK 1,2)</p> <p>Apply concepts of density based on area</p>	<p>distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p>b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.</p> <p>c. Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.</p> <p>d. Use precise language and domain-specific vocabulary to manage the complexity of the topic.</p> <p>e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p> <p>f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). (W.9-10.2) (DOK 3,4)</p> <p>Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.</p> <p>a. Engage and orient the reader by setting out a problem, situation, or observation, establishing one or multiple point(s) of view, and introducing a narrator and/or characters; create a smooth progression of experiences or events.</p> <p>b. Use narrative techniques, such as</p>	<p>work. U-1.4</p> <p>TL.1 Demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology. U-3.1, U-3.3</p> <p>TL.3 Apply digital tools to gather, evaluate and use information.</p> <p>U-3.2 TL.4 Demonstrate critical thinking skills using appropriate tools and resources to plan and conduct research, manage projects, solve problems and make informed decisions. U-3.3, U3.4, U-5.5, U-5.6, U-5.7</p> <p>State Standards – Iowa, 2019 Business, Finance, Marketing and Management</p> <p>2.5.4 Write professional emails.</p> <p>4.5 Analyze cost/profit relationships to guide business decision making</p> <p>7.1.5 Explain the time value of money.</p> <p>7.2.2 Set financial goals.</p> <p>7.2.3 Develop budgets for personal and business uses.</p> <p>Applied Sciences, Technology, Engineering and Manufacturing Standards</p> <p>Construction</p>	<p>problems in multiple contexts; and challenges and opportunities faced by those trying to address these problems over time place.</p> <p>Inquiry Anchor Standard: Gathering and Evaluating Sources</p> <p>SS.9-12.3. Gather relevant information from multiple sources representing a wide range of views while using the origin, authority, structure, context, and corroborative value of the sources to guide the selection.</p> <p>Iowa History</p> <p>SS-Gov.9-12.28. Identify local and state issues in Iowa and evaluate formal or informal courses of action used to affect policy.</p>
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	<p>and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).★ (G-MG.A.2) (DOK 1,2)</p> <p>Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).★ (G-MG.A.3) (DOK 2,3,4)</p>	<p>dialogue, pacing, description, reflection, and multiple plot lines, to develop experiences, events, and/or characters.</p> <p>c. Use a variety of techniques to sequence events so that they build on one another to create a coherent whole.</p> <p>d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.</p> <p>e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative. (W.9-10.3) (DOK 3,4)</p> <p><u>Writing Standards 11-12</u></p> <p>Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.</p> <p>a. Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p>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.</p>	<p>Students understand and apply measurement systems in the planning and layout process used in the residential construction industry.</p> <p>1.1 Identify design solutions for residential construction problems. 1.2 Calculate required materials for residential construction applications. 1.3 Convert scaled blueprint drawing measurements to full dimensions for a given construction project. 1.4 Apply conventional construction measurement processes accurately (geometric and trigonometric functions). 1.5 Know the use of conventional construction formulas to determine production requirements.</p> <p>Drafting and Design</p> <p>1. Students recognize historical and current events related to engineering design and their effects on society. 1.1 Know historical and current events that have relevance to engineering design. 1.2 Understand the development of graphical language in relation to engineering design. 2. Students understand the effective use of engineering design equipment. 2.1 Use the appropriate methods and techniques for employing all engineering design equipment.</p>	
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		<p>tone and outcome (e.g., a sense of mystery, suspense, growth, or resolution).</p> <p>d. Use precise words and phrases, telling details, and sensory language to convey a vivid picture of the experiences, events, setting, and/or characters.</p> <p>e. Provide a conclusion that follows from and reflects on what is experienced, observed, or resolved over the course of the narrative.</p> <p>(W.11-12.3) (DOK 3,4)</p> <p><u>Speaking and Listening Standards</u> <u>9-10th Grade</u></p> <p>Comprehension and Collaboration SL.9-10.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.</p> <p>Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues,</p>	<p>engineering drawings. 5.2 Know the various object-altering techniques. 5.3 Know the CAD components and the operational functions of CAD systems. 5.4 Apply two-dimensional and three-dimensional CAD operations in creating working and pictorial drawings, notes, and notations. 5.5 Understand how to determine properties of drawing objects. Students understand and apply proper dimensioning to drawings. 6.1 Know a variety of drafting applications and understand the proper dimensioning styles for each. 6.2 Apply dimensioning to various objects and features. 6.3 Edit a dimension by using various editing methods. 7. Students understand sectional view applications and functions. 7.1 Understand the function of sectional views. 7.2 Use a sectional view and appropriate cutting planes to clarify hidden features of an object. 8. Students understand the tolerance relationships between mating parts. 8.1 Understand what constitutes mating parts in engineering design. 8.2 Use tolerancing in an engineering drawing. 8.3 Interpret geometric tolerancing symbols in a drawing. 9. Students understand the methods of inserting text into a drawing. 9.1 Understand the processes of lettering and text editing. 9.2 Develop</p>	
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		<p>presentation of alternate views), clear goals and deadlines, and individual roles as needed.</p> <p>Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.</p> <p>Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.</p> <p>Presentation of Knowledge and Ideas SL.9-10.4</p> <p>Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.</p> <p>SL.9-10.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.</p> <p>Listening and Speaking Standards 11th-12th Grade</p>	<p>drawings using notes and specifications. 9.3 Understand the methods of title block creation. 10. Students understand the sketching process used in concept development. 10.1 Understand the process of producing proportional two- and three-dimensional sketches and designs. 10.2 Use sketching techniques as they apply to a variety of architectural and engineering models. 10.3 Use freehand graphic communication skills to represent conceptual ideas, analysis, and design concepts.</p>	
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		<p>Comprehension and Collaboration SL. 11-12.1</p> <p>Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.</p> <p>Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.</p> <p>Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.</p> <p>Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.</p> <p>Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is</p>		
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		<p>required to deepen the investigation or complete the task.</p> <p>Presentation of Knowledge and Ideas</p> <p>SL.11-12.4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.</p> <p>SL.11-12.5 Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.</p>		
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