

SOUTHERN LEHIGH SCHOOL DISTRICT  
STEM Essentials

<b>Grade ( 6)</b>	<b>(Subject) STEM</b>
	<b>(Goal Area) Measuring Basics</b>
	<p><b>Pennsylvania Academic Standards:</b>  <b>M6.B.2.1.1:</b> Use or read a ruler to measure to the nearest 1/16 inch or millimeter.  <b>M6.B.2.1.2:</b> Choose the more precise measurement of a given object (e.g., smaller measurements are more precise).</p>
	<p><b>Essential Understandings:</b>  Review how to measure 1", 1/2" , and 1/4".  Review how to measure with different measuring devices.  Measure down to 1/8" and 1/16" accuracy</p>
	<p><b>Overarching and Essential Questions:</b>  Why do students have to measure?  How often do we use measuring?  Why do we need to measure smaller?</p>
	<p><b>Vocabulary:</b>  Measuring tape. Ruler. Yard Stick. Mile Marker. Micrometer</p>
	<p><b>Assessments: Performance Tasks, Projects</b>  Demonstrate measuring performance by using measuring tools  Measuring Quiz  Measuring Hunt- moving about the lab measuring items listed on a worksheet.</p>
	<p><b>Assessments: Quizzes, Tests and Academic Prompts</b>  1. Measuring Quiz                      3. Teacher assistance  2. Enlarged view of an inch        4. Hands on application</p>
	<p><b>Assessments: Other Evidence (e.g., observations, work samples, dialogues)</b>  1. Teacher observation.  2. Measuring Hunt worksheet.</p>
	<p><b>Assessments: Student Self-Assessment</b>  Students will use "Parts of an inch" reference page to check for accuracy  Students will "self check" answers using "Parts of an inch" page.</p>

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	<p><b>Students will need to know . . . (targeted understandings):</b>          Basic measuring skills down to 1/16” accuracy.          How to use different measuring tools to adapt and use the one most useful in each case.</p>
	<p><b>Students will be able to do . . . (targeted skills):</b>          Identify the parts of an inch (down to 1/16”)          Measure accurately down to 1/16”.</p>
	<p><b>Teaching and learning experiences:</b>          Cooperative learning environment- Students will feed off each others knowledge.          Differentiated instruction through different measuring stations.</p>
	<p><b>Materials and Resources:</b>          Measuring tools—tape measure, rulers of varying types.          Measuring worksheet- enlarged view of inch          Measuring “HUNT” worksheet</p>
	<p><b>Accommodations:</b>          Teacher assistance as needed.          Follow 504 plans and IEP requirements          Adapted instruction          Small group work          Frequent feedback on progress          Instruction clarification</p>
	<p><b>Enrichments:</b>          Challenge students to measure down to 1/16” accuracy          Additional challenging “inside” measurements.          “Guess-timating” measuring without a measuring device</p>
	<p><b>Time:</b>          3 days</p>
	<p><b>Teacher Name / Date curriculum was written</b>  <b>Scott Killino 6/10</b></p>

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<b>Grade ( 6)</b>	<b>(Subject) STEM</b>
	<b>(Goal Area) ACCUCAD drawing program</b>
	<p><b>Pennsylvania Academic Standards:</b>  <b>M6.B.2.1.1:</b> Use or read a ruler to measure to the nearest 1/16 inch or millimeter.  <b>M6.B.2.1.2:</b> Choose the more precise measurement of a given object (e.g., smaller measurements are more precise).  <b>3.4.6.A3:</b> Explain how knowledge from other fields of study (<b>STEM</b>) integrate to create new technologies  <b>3.4.6.C2:</b> Show how models are used to communicate and test design ideas and processes  <b>M6.C.1.2.1:</b> Identify, describe and/or label parallel, perpendicular or intersecting lines.</p>
	<p><b>Essential Understandings:</b>  Measuring ability down to 1/16”  Apply the concept of scale drawings.  To use proper terminology of ACCUCAD  To use ACCUCAD to develop multi view and isometric views of objects.</p>
	<p><b>Overarching and Essential Questions:</b>  Why are there different line type choices?  How do you edit your drawing?  How do you cancel a command?  How do you save and retrieve your work?</p>
	<p><b>Vocabulary:</b>  Scale, isometric, multi view, snap grid, dimension lines, object lines.</p>
	<p><b>Assessments: Performance Tasks, Projects</b>  Students complete 5 multi view drawings with dimensions.  Students complete 5 isometric drawings.</p>
	<p><b>Assessments: Quizzes, Tests and Academic Prompts</b>  1. Teacher observation    3. Class participation  2. Questions and answers.    4. Hands on application of instruction</p>
	<p><b>Assessments: Other Evidence (e.g., observations, work samples, dialogues)</b>  1. Teacher observation.</p>
	<p><b>Assessments: Student Self-Assessment</b>  Students will use rubric to compare their work with that which is required.</p>

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	<p><b>Students will need to know . . . (targeted understandings):</b> Basic measuring skills down to 1/16” accuracy. How to use different measuring tools. To learn the basic functions of ACCUCAD program. To apply basic drawing skills to generate graphic drawings.</p>
	<p><b>Students will be able to do . . . (targeted skills):</b> Perform screen set-ups before their drawing is started. Create basic graphic views of objects. Use a snap grid to draw with precision. Use edit functions to modify plans. Print out final copies of their completed corrected work.</p>
	<p><b>Teaching and learning experiences:</b> Students will learn to follow a timeline to keep up to date. Students will interact with each other while working on individual projects to assist in basic skill comprehension.</p>
	<p><b>Materials and Resources:</b> Measuring tools Computers (accucad program) Teacher generated rubric (examples of what student work should look like).</p>
	<p><b>Accommodations:</b> Teacher assistance as needed.                      Instruction clarification Follow 504 plans and IEP requirements                      Frequent feedback on progress Adapted instruction Small group instruction.</p>
	<p><b>Enrichments:</b> Advanced students may assist peers. Students choose advanced block to draw basic drawings. No teacher example exists for these blocks.</p>
	<p><b>Time:</b> 15 days</p>
	<p><b>Teacher Name / Date curriculum was written</b> <b>Scott Killino 6/10</b></p>

SOUTHERN LEHIGH SCHOOL DISTRICT  
STEM Essentials

Grade ( 6)	(Subject) STEM
	<b>(Goal Area) Bridge Building and Testing</b>
	<p><b>Pennsylvania Academic Standards:</b>  <b>M6.B.2.1.1:</b> Use or read a ruler to measure to the nearest 1/16 inch or millimeter.  <b>M6.B.2.1.2:</b> Choose the more precise measurement of a given object (e.g., smaller measurements are more precise).  <b>3.4.6.A3:</b> Explain how knowledge from other fields of study (<b>STEM</b>) integrate to create new technologies  <b>3.4.6.C1:</b> Recognize that requirements for a <b>design</b> include such factors as the desired elements and features of a product or <b>system</b> or the limits that are placed on the design.  <b>3.4.6.C2:</b> Show how models are used to communicate and test design ideas and processes  <b>3.4.6.C3:</b> Explain why some technological problems are best solved through experimentation.  <b>3.4.6.E7:</b> Explain how the type of structure determines the way the parts are put together.</p>
	<p><b>Essential Understandings:</b>  Measuring ability down to 1/16”  Following safe practices in the lab area.  Utilize materials in a conscience way.</p>
	<p><b>Overarching and Essential Questions:</b>  What safety rules apply?  Why conserve materials?  What is to be gained by testing bridges?</p>
	<p><b>Vocabulary:</b>  truss design, roadbed, load.</p>
	<p><b>Assessments: Performance Tasks, Projects</b>  Design and build a balsa wood bridge structure.  Demonstrate conservation methods of building.</p>
	<p><b>Assessments: Quizzes, Tests and Academic Prompts</b>  1. Bridge Construction project.    3. Teacher assistance  2. Laptop use for bridge design assistance.    4. Hands on application</p>
	<p><b>Assessments: Other Evidence (e.g., observations, work samples, dialogues)</b>  1. Teacher observation.  2. Worksheet on bridge weight vs. weight carried.</p>
	<p><b>Assessments: Student Self-Assessment</b>  Students will use computer for research of design.  Students will be self-driven in competition of max. weight carried by bridge.</p>

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	<p><b>Students will need to know . . . (targeted understandings):</b>          Basic measuring skills down to 1/16" accuracy.          How to use different measuring tools and simple hand tools.</p>
	<p><b>Students will be able to do . . . (targeted skills):</b>          Build a scale model of a bridge.          Construct a bridge using basic hand tools and supplies from lab.</p>
	<p><b>Teaching and learning experiences:</b>          Cooperative learning environment- Students will feed off each others knowledge.          Students will demonstrate safe use of tools and proper conservation measures.</p>
	<p><b>Materials and Resources:</b>          Measuring tools          Balsa wood (limited so students must conserve).          Wood glue.          Hot glue.          Basic bridge design on paper</p>
	<p><b>Accommodations:</b>          Teacher assistance as needed.          Follow 504 plans and IEP requirements          Adapted instruction          Small group work          Frequent feedback on progress          Instruction clarification</p>
	<p><b>Enrichments:</b>          Allowing students, if proficient, to build their own bridge design,</p>
	<p><b>Time:</b>          15 days</p>
	<p><b>Teacher Name / Date curriculum was written</b>  <b>Scott Killino 6/10</b></p>