

Anoka-Hennepin Secondary Curriculum Unit Plan

Department:	Technical Education	Course:	Design and Manufacturing	Unit Title:	Measurement	Grade Level(s):	8
Assessed Trimester:		Pacing:		Date Created:	2/28/2013	Last Revision Date:	6/28/2013

Course Understandings: *Students will understand that:*

- A technologically literate person understands the significance of technology in everyday life
- The use of technology has impacts and consequences both desirable and undesirable
- Inventions and innovations from various times in history effect technological development in society and history
- Manufacturing requires safe and responsible use of technology
- That the attributes of design are necessary components to the development of a product
- Learning about design and manufacturing technologies will introduce students to career opportunities
- Manufacturing requires safe and responsible use of technology
- Scientific and mathematical concepts increase an individuals technological literacy

DESIRED RESULTS (Stage 1) - WHAT WE WANT STUDENT TO KNOW AND BE ABLE TO DO?

Established Goals

Standard and Benchmark Mastery

- **Standard STL #12** Students will develop the abilities to use and maintain technological products and systems.
- **Standard STL #19** Students will develop an understanding of and be able to select and use manufacturing technologies.
- **Standard STL #8** Students will develop an understanding of the attributes of design.
- **Standard STL #11** Students will develop abilities to apply the design process
- **High Priority** – Students must know:
 - 12-H** Students will understand that information is provided in manuals or experienced individuals to understand how things work.
 - 19-H** Students will understand that manufacturing will include the designing, developing, and producing products and systems.
 - 8-G** Students will understand that requirements for design are made up of criteria and constraints.
 - 11-I** Students will understand that the design has specific criteria and constraints.
 - 11-J** Students will understand that a model, sketch, or drawing are representations of the designed solution
- **Medium Priority** – Students should know:
 - 19-F** Students will understand that manufacturing systems and processes change the form of materials.
 - 8-F** Students will understand that there is no perfect design
 - 11-L** Students will understand that documentation of the solution is needed in order to make a product or system
 - 11-K** Students will understand that tests and evaluations improve the design solution
 - 8-E** Students will understand that creative planning leads to useful products and systems.
- **Low Priority** – It is nice for students to know:
 - 12-I** Students will understand that tools, materials, and machines are to be used safely.
 - 12-J** Students will understand that computers and calculators are used in numerous applications.
 - 19-G** Students will understand that manufactured goods may be classified as durable and non-durable

11-H Students will understand that the design process is used to solve problems.	
Transfer	
Students will be able to independently use their learning to: (product, high order reasoning) <ul style="list-style-type: none">12-M Apply information to project construction12-M Utilizing different materials to construct a project.	
Meaning	
Unit Understanding(s): Students will understand that: <ul style="list-style-type: none">Accuracy is importantWe are using the conventional system of measurementTransferring measurement is important	Essential Question(s): Students will keep considering: <ul style="list-style-type: none">I can measure to the nearest 16thI can use the conventional system of measurementI can transfer the measurement from my plans to my project
Acquisition	
Knowledge - Students will: <ul style="list-style-type: none">8-M Understand written and verbal instructions /constraints11-M Recognize that designs need to be tested and evaluated12-M Understand information obtained from manuals or experienced people12-M Understand tools machines and materials19-M Understand that manufacturing systems and processes change the form of materials19-M Understand that manufactured goods may be classified as durable and non-durable19-M Understand that manufacturing will include design, developing and producing products and systems Reasoning - Students will: <ul style="list-style-type: none">11-M Mentally layout for most efficient use of materials12-M Interpret information required from manuals and experienced people12-M Understand how tools and machines operate19-M Organize manufacturing through design, developing and producing products and systems	Skills - Students will: <ul style="list-style-type: none">11-M Apply design measurements to the appropriate material11-M Accurately layout materials12-M Utilize information read from manuals12-M Apply different materials in project construction12-M Carry out computations through the use of computer or calculator.19-M Carry out manufacturing through designing, developing and producing products and systems

Common Misunderstandings <ul style="list-style-type: none">Fractions to decimalsEnglish measurement NOT metricRuler divisionsFinding zero on a rulerChoosing the correct measuring tool	Essential new vocabulary <ul style="list-style-type: none">NumeratorDenomorter16th or 8thLCDWhole numbersTolerance
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