

CURRICULUM RELATIONSHIPS

WS	SCIENCE CONCEPTS	STUDENT OBJECTIVES	PROCESS SKILLS	WORKSHOP SUMMARY
1	Molecular Structure, Force, Stress, Properties	<ul style="list-style-type: none"> Identify three types of stress: tensile, compression and shearing. Identify three kinds of load: static, impact and repetitive 	Observing, Inferring	After reading descriptions of three types of stress and three kinds of load, students label stress and load points on diagrams of a bike, a basketball backboard and a canoe.
2	Properties of Materials, Force, Mass, Predicting, Testing, Measuring	<ul style="list-style-type: none"> Test materials and conclude that the characteristic of one property in a material does not necessarily indicate the characteristic of another 	Observing, Inferring	Students predict and experiment with wood boards to determine if the quality of one property predicts the quality of another property in a given material.
3	Properties of Metals, Force Mass, Predicting, Testing, Measuring	<ul style="list-style-type: none"> Test materials and conclude that aluminum compounds generally are less able than brass to resist impact loads but better able to resist repetitive loads. 	Observing, Inferring	Students predict and experiment to determine if brass and aluminum have the same resistance to impact loads and if a metal that has a high resistance to impact loads also has a high resistance to repetitive loads.
4	Engineering, Testing, Comparing	<ul style="list-style-type: none"> Identify similarities in tests from workshops 2 and 3 with tests engineers make. 	Observing, Relating, Comparing	After reading descriptions of tests used by professionals to determine the properties of materials, students label diagrams of testing equipment and compare the tests they have done to the professional tests.
5	Construction of Objects and Structures, Joints, Stress, Load	<ul style="list-style-type: none"> Identify characteristics of objects with and without joints. Identify appropriate means of joining pieces depending on materials and intended use. 	Categorizing, Applying	Students label diagrams of a hammer, cooking pan and shovel as being of one-piece or joined-pieces construction. They apply information from previous workshops to label points of stress.
6	Models, Building to Specification, Measurements, Five Basic Joints	<ul style="list-style-type: none"> Identify the five basic types of joints. Follow working drawings to create models built to specification. Check measurements on models for adherence to specifications. 	Observing, Measuring	Students follow specifications for building balsa wood models of the five basic joints and check adherence to specifications on the models built by others.
7	Vibrations, Wave Motion, the Structure of Matter	<ul style="list-style-type: none"> Demonstrate that force acting on one part of a structure can cause stress in other parts. 	Observing, Inferring	Students demonstrate that stress applied directly to one part of a structure can affect other parts.
8	Force, the Structure of Matter, Mass, Engineering	<ul style="list-style-type: none"> Demonstrate that altering the shape and structure of an object can alter its resistance to stress. Gather and analyze experimental data. 	Relating, Inferring	Students predict and experiment to determine if plain, notched and drilled slats vary in their ability to withstand tensile stress.
9	Heat Conduction, Properties of Metal, Atoms, Gathering and Presenting Data	<ul style="list-style-type: none"> Demonstrate that not all metals have the same capacity to conduct heat. 	Ordering, Inferring	Students predict and experiment to rank aluminum, copper, steel, brass and glass according to efficiency in conducting heat.
10	Coalescence, Molecular Cohesion, Heat, Pressure, Welding, Modeling	<ul style="list-style-type: none"> Identify the characteristics of fusion welding and deformation bonding. Model fusion welding and deformation bonding. 	Applying, Inferring	Students use candles and paraffin blocks to model fusion welding and solid-state bonding.
11	Melting Point, Specific Heat	<ul style="list-style-type: none"> Define specific heat. Demonstrate differences in specific heats of aluminum, copper and steel. 	Ordering, Applying, Inferring, Communicating	Students predict and experiment to rank aluminum, copper, and steel according to their specific heats.
12	Scientific Methods And Processes, Designing Investigations, Predicting, Testing, Measuring, Presenting Data, Cooperative Learning, Teamwork	<ul style="list-style-type: none"> Work effectively as a team to plan, organize, carry out and report the results of a scientific inquiry. 	Applying, Ordering, Inferring, Communicating	Student teams plan, organize, carry out and report the results of an investigation to determine the ranking of the joint models made in Workshop 6 for ability to resist compression stress and tensile stress.