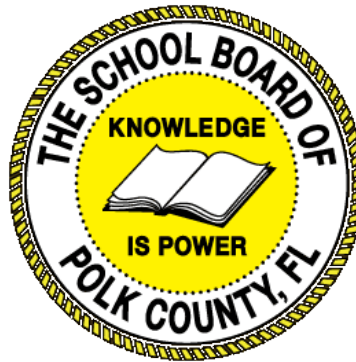




Individual Test Item Specifications

8401120- Applied Engineering Technology 2

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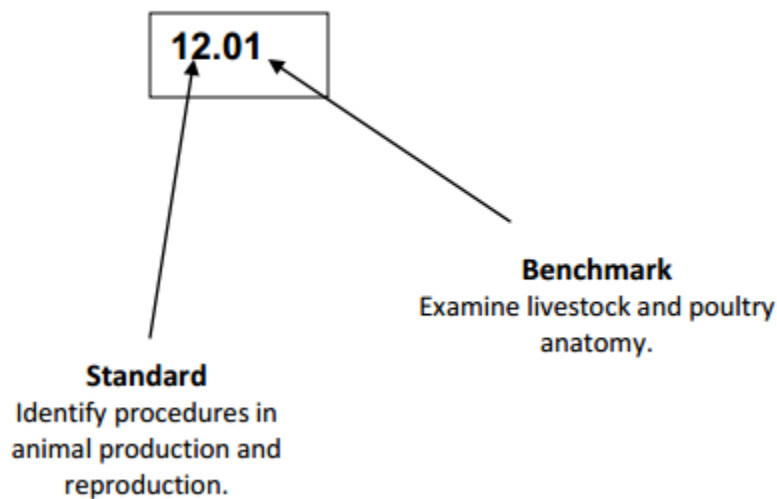
I. Guide to the Individual Benchmark Specifications

Content specific guidelines are given in the *Individual Benchmark Specifications* for each course. The *Specifications* contains specific information about the alignment of items with the Florida Standards. It identifies the manner in which each benchmark is assessed, provides content limits and stimulus attributes for each benchmark, and gives specific information about content, item types, and response attributes.

Benchmark Classification System

- Each Career and Technical Education course has its own set of course standards. The benchmarks are organized numerically, with two numbers separated by a decimal point. The first number is the standard number, and the second number is the benchmark number. You will see these numbers on the Item Specifications for each course.

An example, from Agritechnology 1:



The image above describes the components of a Career and Technical Education Standard and Benchmark classification system.

Each MAFS benchmark is labeled with a system of letters and numbers.

- The four letters in the *first position* of the label identify the **Subject**.
- The number(s) in the *second position* represents the **Grade Level**.
- The letter(s) in the *third position* represents the **Category**.
- The number in the fourth position shows the **Domain**.
- The number in the *fifth position* identifies the **Cluster**.
- The number in the last position identifies the specific **Benchmark**.



The image above describes the components of a Florida Standard and Benchmark classification system.

Definitions of Benchmark Specifications

The *Individual Benchmark Specifications* provides standard-specific guidance for assessment item development for the Florida Department of Education Career and Technical Education item banks. For each benchmark assessed, the following information is provided.

Reporting Category	is a grouping of related benchmarks that can be used to summarize and report achievement.
Standard	refers to the standard statement presented in the Florida Standards.
Benchmark	refers to the benchmark statement presented in the Florida Standards. In some cases, two or more related benchmarks are grouped together because the assessment of one benchmark addresses another benchmark.
Item Types	are used to assess the benchmark or group of benchmark.
Cognitive Complexity	ideal level at which item should be assessed.
Benchmark Clarifications	explain how achievement of the benchmark will be demonstrated by students. In other words, the clarification statements explain what the student will do when responding to questions.
Content Limits	define the range of content knowledge and that should be assessed in the items for the benchmark.
Stimulus Attributes	define the types of stimulus materials that should be used in the items, including the appropriate use of graphic materials and item context or content.
Response Attributes	define the characteristics of the answers that a student must choose or provide.
Content Focus	addresses the broad key terms and concepts associated with the examples found in the standards, benchmarks, or benchmark clarifications.
Sample Items	are provided for each type of question assessed. The correct answer for all sample items is provided.

II. Individual Benchmark Specifications

Standard	24 Demonstrate an understanding of the various approaches used in problem solving. – The student will be able to:
Benchmark	24.01Employ research and development processes to assess the functional, economic, and ethical viability of a product or prototype.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand the steps necessary to determine the viability of a product.
Content Focus	Concept development, product development, want, need, purpose, audience
Content Limits	The student will know how to determine if a product would be successful.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What should you do to determine the positive economic benefits of a product and typically involved cost/ benefits analysis? a. cultural feasibility b. economic feasibility assessment c. schedule feasibility d. technical feasibility Correct answer: b

Standard	24 Demonstrate an understanding of the various approaches used in problem solving. – The student will be able to:
Benchmark	24.02 Research a problem and determine the most appropriate problem-solving method to employ.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand different problem solving methods and how to choose the best one for the project.
Content Focus	Problem solving, outcome, abstraction, analog, brainstorming, hypothesis, divide and conquer, lateral thinking, trial and error
Content Limits	The student will know how to apply different problem solving strategies based on the need of the project.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What type of thinking do you use in problem solving that entails coming up with alternatives? a. convergent b. deductive c. divergent d. isomorphic Correct answer: c

Standard	25 Demonstrate the abilities to apply the design process. – The student will be able to:
Benchmark	25.02 Identify the criteria and constraints associated with a design problem and select the most appropriate solution based on pre-determined factors.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand the concept of criteria and constraints and select the best design using these factors.
Content Focus	Criteria, constraints, efficiency, relationship, tradeoffs, goals, requirements, materials, cost, safety, reliability, performance, maintenance, ease of use, aesthetics, policies, Life Cycle Analysis
Content Limits	The student will know how to select the best design based on the project's criteria and constraints.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What is the work performed to deliver a product, service, or result with the specified features and functions called? a. control scope b. plan scope c. product scope d. project scope Correct answer: d

Standard	26 Demonstrate proficiency in using presentation software. – The student will be able to:
Benchmark	26.01 Describe presentation software and the ways in which it may be used.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand the different ways presentation software can be used.
Content Focus	Presentation, prezi, powerpoint, movie, direct, remote,
Content Limits	The student will know how to use presentation software in different ways.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: Most presentation software has the ability to remotely present the presentation by sending a link to your audience. What is this feature called? a. broadcast slide show b. publish slide show c. share slideshow d. simulcast slideshow Correct answer: a

Standard	27 Perform advanced study and technical skills related to engineering technology. – The student will be able to:
Benchmark	27.01 Identify an engineering problem or product for improvement using engineering design methodology.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand scientific knowledge and mathematical applications to evaluate designs and suggest improvements.
Content Focus	Scientific knowledge, mathematical applications, conceptual models, physical models, mathematical models, design considerations,
Content Limits	The student will know how to use conceptual, physical, and mathematical models to evaluate design and make changes.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: You have created a prototype of a machine part. What is the next step in the engineering process? a. communicate the design b. develop possible solutions c. research the problem d. test and evaluate Correct answer: d

Standard	28 Demonstrate fundamental math and science knowledge and skills for mechanical systems. – The student will be able to:
Benchmark	28.01 Define and calculate quantities using Hooke's Law of Elasticity.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand Hooke's Law of Elasticity and calculate quantities.
Content Focus	Hooke's Law of Elasticity, elastic limit, plasticity, compression, tension, brittle
Content Limits	The student will know how to calculate quantities using the appropriate information and formula for Hooke's Law of Elasticity.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What measurement is spring tension measured in? a. amp b. joules c. load d. Newton's Correct answer: c

Standard	28 Demonstrate fundamental math and science knowledge and skills for mechanical systems. – The student will be able to:
Benchmark	28.02 Assemble, operate, and identify the parts of a mechanical system.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand how to construct and operate a mechanical system.
Content Focus	Lever, fulcrum, load, joule, efficiency, inclined plane, mechanical advantage, gears, ratio, pulley, energy, hydraulic, pneumatic
Content Limits	The student will know how to label and combine parts to create a mechanical system.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: Which is not a mechanical system? a. control system b. hydraulic system c. information system d. project system Correct answer: d

Standard	28 Demonstrate fundamental math and science knowledge and skills for mechanical systems. – The student will be able to:
Benchmark	28.04 Calculate the mechanical advantage of a mechanical system
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand the concept of a mechanical advantage and how to calculate using industry formulas.
Content Focus	Simple machines, power, joule, energy, efficiency
Content Limits	The student will know how to measure the mechanical advantage of a mechanical system.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What formula determines the ideal mechanical advantage of a ramp? a. input length from fulcrum over output length from fulcrum b. length of incline over height of incline c. length of thread over height of screw d. sloping side over thickness Correct answer: a

Standard	29 Demonstrate technical knowledge and skills for fluid systems. – The student will be able to:
Benchmark	29.01 Define and calculate quantities using Boyle's Law.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand Boyle's Law and how to calculate using industry formulas.
Content Focus	Volume, temperature, gas, liquid, solid, pressure
Content Limits	The student will know how to measure quantities of Boyle's Law.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What law states if the temperature is constant, as the pressure of a gas increases the volume decreases? a. Bernoulli's Law b. Boyle's Law c. Hooke's Law d. Pascal's Law Correct answer: b

Standard	29 Demonstrate technical knowledge and skills for fluid systems. – The student will be able to:
Benchmark	29.02 Assemble, operate, and identify the parts of a fluid system.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand how to construct and operate a fluid system.
Content Focus	Fluid system, accumulator, actuator, Bernoulli's law, centrifugal, Charles' Law, displacement, fluid, hydraulic, energy,
Content Limits	The student will know how to label and combine parts to create a fluid system.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: Squeezing a toothpaste tube, hoses and tap water are all examples of what type of fluid system? a. constructed b. hydraulic c. pneumatic d. pressure Correct answer: b

Standard	29 Demonstrate technical knowledge and skills for fluid systems. – The student will be able to:
Benchmark	29.04 Compute the mechanical advantage of a fluid system.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand mechanical advantage and how to calculate using industry formulas.
Content Focus	Pascal's principle, pressure, force, volume
Content Limits	The student will know how to measure quantities of mechanical advantages.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: Mechanical advantage is the amount by which the machine multiplies the force. To compute mechanical advantage you need which measurements? a. force, density, and volume b. force, displacement, and volume c. force, mass, and density d. force, displacement, and mass Correct answer: c

Standard	30 Demonstrate technical knowledge and skills for thermal systems. – The student will be able to:
Benchmark	30.01 Define and calculate quantities of heat and temperature.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand heat and temperature and how to calculate using industry formulas.
Content Focus	Thermal system, energy, temperature, heat, celsius, fahrenheit, transfer, coolant, convection, conduction
Content Limits	The student will know how to measure quantities of heat and temperature.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: Boiling water, frozen material thawing and hot air balloons use what type of heat transfer? a. conduction b. convection c. radiation d. thermal expansion Correct answer: a

Standard	30 Demonstrate technical knowledge and skills for thermal systems. – The student will be able to:
Benchmark	30.02 Assemble, operate, and identify the parts of a thermal system.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand the parts of a thermal system and how to operate it.
Content Focus	Thermal system, energy, temperature, heat, celsius, fahrenheit, transfer, coolant, convection, conduction
Content Limits	The student will know how to put together and operate a thermal system.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What is the study of the relationship between thermal energy, heat and work called? a. Isolated Heat Systems b. Thermal Energy c. Thermodynamics d. Thermostatic Correct answer: c

Standard	30 Demonstrate technical knowledge and skills for thermal systems. – The student will be able to:
Benchmark	30.04 Compute the efficiency of a thermal system.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand and calculate the concept of efficiency in a thermal system.
Content Focus	Efficiency, energy, gases, heat, temperature, thermodynamic, net work, work input, work output
Content Limits	The student will know how to calculate the efficiency of a thermal system.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: A heat engine gives out 400 J of heat energy and is 40% efficient. What is the energy given to it as input? a. 40 J b. 600J c. 1000 J d. 1600 J Correct answer: c

Standard	30 Demonstrate technical knowledge and skills for thermal systems. – The student will be able to:
Benchmark	30.05 Explain the steps in a PV diagram including the phases where work is done.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand how to collect the information and create a pressure volume diagram.
Content Focus	Gas laws such as Boyle's, Charles', Gay-Lussac's, and the ideal gas law, Thermodynamic processes, isothermal; isobaric; isomeric; pressure; volume; temperature
Content Limits	The student will know how to obtain the information needed to create a pressure volume diagram.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: When creating a pressure volume graph with an isochoric curve what shape is the graph? a. circular b. horizontal c. triangular d. vertical Correct answer: b

Standard	31 Demonstrate technical knowledge and skills associated with the design of electrical and electronic systems. – The student will be able to:
Benchmark	31.01 Assemble, operate, and identify the parts of an electrical system.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand how to put together and operate an electrical system.
Content Focus	Current, circuit, resistor, amps, voltage, resistance, ohms, conductor, capacity, energy
Content Limits	The student will know how to operate and assemble electrical systems.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What protects the circuit wires from an overcurrent condition? a. amps b. circuits c. electrical coil d. fuses Correct answer: d

Standard	31 Demonstrate technical knowledge and skills associated with the design of electrical and electronic systems. – The student will be able to:
Benchmark	31.03 Understand the connectivity between the major components. Identify Address and data buses, power signals and peripheral devices.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand how major components connect and identify address and data buses, power signals and peripheral devices.
Content Focus	Address and data buses, power signals, peripheral devices
Content Limits	The student will know how to connect major components such as Address and data buses, power signals and peripheral devices.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What allows you to connect multiple PCs to a single set of input/output devices? a. GBIC switch b. KVM switch c. OSI switch d. SFP switch Correct answer: b

Standard	31 Demonstrate technical knowledge and skills associated with the design of electrical and electronic systems. – The student will be able to:
Benchmark	31.04 Recognize the schematic symbols for basic electronic components (e.g., resistors, capacitors, inductors, transistors, and black box components such as microprocessors).
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand standard industry symbols.
Content Focus	Drafting, symbols, diagrams, dimensions
Content Limits	The student will know industry drafting symbols.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What is the symbol for High Voltage, Field Wired? a. heavy blank line b. heavy broken line c. low voltage, factory wired d. low voltage, field wired Correct answer: b

Standard	31 Demonstrate technical knowledge and skills associated with the design of electrical and electronic systems. – The student will be able to:
Benchmark	31.05 Describe basic logic devices (e.g., AND, NAND, OR, NOR) and their role in the design of electrical/electronic systems.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand basic logic terms and their effects on an electrical system.
Content Focus	AND, NAND, OR, NOR, boolean algebra,
Content Limits	The student will know how basic logic terms work when used in electrical systems.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What effect does the digital circuit that implements the AND operation have on the output if all the inputs are HIGH? a. output of this circuit is HIGH b. output of this circuit is LOW c. output of this circuit is NOR d. output of this circuit is NAND Correct answer: a

Standard	31 Demonstrate technical knowledge and skills associated with the design of electrical and electronic systems. – The student will be able to:
Benchmark	31.07 Identify electrical connections between devices on an electrical schematic.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand how to identify connections on electrical plans.
Content Focus	Plugs, jacks, cable, terminal, size, contact resistance, insulation between pins, ruggedness and resistance, terminal blocks, posts, plug and socket, blade, ring and spade
Content Limits	The student will understand how to read and identify electrical connections on a drawing.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: What type of electrical connector can be used in DC applications where connections are broken repeatedly? a. alligator clip b. banana connector c. crimp connector d. dock connector Correct answer: c

Standard	32 Demonstrate safe and appropriate use of basic tools and machines. – The student will be able to:
Benchmark	32.01 Select appropriate tools, procedures, and/or equipment.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand how to select the proper tools and equipment for the project.
Content Focus	Hand tools, levers, wheel and axle, pulley, wedge, inclined plane, electronic machines, optical tools, microscopes, lasers, CNC, natural materials, synthetics
Content Limits	The student will know how to choose the correct tools and equipment for the project.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: To determine the current in an item, what tool should you use? a. amp meter b. multimeter c. ohms meter d. volt meter Correct answer: b

Standard	32 Demonstrate safe and appropriate use of basic tools and machines. – The student will be able to:
Benchmark	32.02 Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand how to safely use tools and operate equipment.
Content Focus	Eye protection, faulty or defective, accidents, hazardous materials, clean up, dust mask, closed toed shoes
Content Limits	The student will know how to safely use tools and equipment when operating equipment.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: When operating power tools, what should you not wear? a. closed toed shoes b. eye protection c. hearing protection d. gloves Correct answer: d

Standard	32 Demonstrate safe and appropriate use of basic tools and machines. – The student will be able to:
Benchmark	32.03 Follow laboratory safety rules and procedures.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand and use safe laboratory practices.
Content Focus	Eye protection, faulty or defective, accidents, hazardous materials, clean up, dust mask, closed toed shoes
Content Limits	The student will know how to safely use the laboratory.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: When sanding wood, what protective gear should you wear? a. dust mask b. gloves c. hair not tied back d. loose clothes Correct answer: a

Standard	32 Demonstrate safe and appropriate use of basic tools and machines. – The student will be able to:
Benchmark	32.06 Explain fire prevention and safety precautions and practices for extinguishing fires.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand fire safety protocols and practices.
Content Focus	Protocols, procedures, practices, sprinklers, smoke detectors, fire extinguishers, safety colors, flammable, combustible, class
Content Limits	The student will know how to prevent and put out fires.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: Before changing a blade on a jigsaw, what safety precautions should you take? a. buy a blade protector b. turn it on c. unplug the machine d. wear a loose shirt Correct answer: c

Standard	32 Demonstrate safe and appropriate use of basic tools and machines. – The student will be able to:
Benchmark	32.07 Identify harmful effects/potential dangers of familiar hazardous substances/devices to people and the environment.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low
Benchmark Clarification	The student will understand what is hazardous and its effects on people and the environment.
Content Focus	Hazardous, symptoms, effects, dangers, environment, harmful,
Content Limits	The student will know how hazardous materials will affect people and the environment.
Stimulus Attributes	Worksheets, observations, hands on assignments, examples and non examples, simulations, role playing
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	Multiple Choice: How do you dispose of a battery that is leaking acid properly? a. Bag damaged batteries in polyethylene plastic bags that are at least six millimeters in thickness. b. Clean the battery and throw away in the garbage. c. Double-bag damaged batteries in polyethylene plastic bags that are at least six millimeters in thickness. d. Put in the recycle bin. Correct answer: c