

Individual Test Item Specifications

8601010 Communications Technology 1

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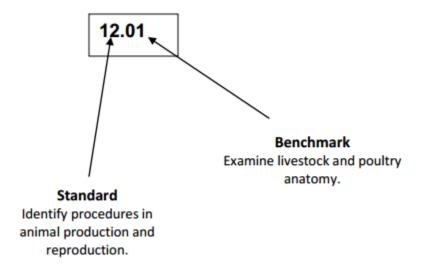
I. Guide to the Individual Benchmark Specifications

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.

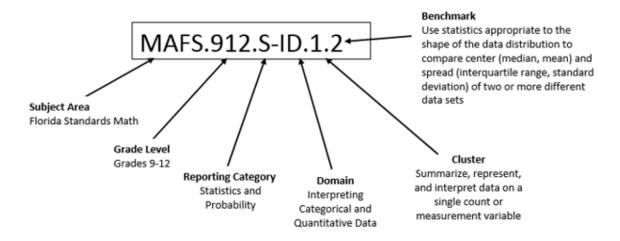
An example, from Agritechnology 1:



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 is a grouping of related benchmarks that can be used to

Category 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 idea
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	5.0 Demonstrate an understanding of the core concepts of technology.
Benchmark	05.05 Describe the criteria and constraints of a solution and how they affect the final result.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Moderate, High
Benchmark Clarification	The student will describe the criteria and constraints of a solution and describe how they affect the final result.
Content Focus	Requirements, Constraints, Criteria, Need, Problem, Solution, Technology
Content Limits	Items will not address emerging technologies such as 3D printing, projection mapping or organic LED (OLED) technologies.
Stimulus Attributes	Scenarios will be placed in the context of existing technologies. (Examples: cellular, html, java, php, etc.)
Response Attributes	Documents, checklists, design briefs, project scope, feedback, performance rubrics, simulations, examples
Sample Item	A prominent mobile wireless service provider is planning to release three new products for teenaged mobile customers for the current fiscal year. Additionally, the Federal Communications Commission (FCC) has announced a voluntary commitment among participating mobile wireless service providers to unlock cell phones within one year of service activation. Explain three criteria and constraints that should be addressed by the designers of the new mobile products based on the passage. How might these criteria and constraints affect the final solution?
	Rubric 2 Points- The student provides 3 criteria or constrains and describes how this affects the final solution. 1Point- The student provides 2 to 3 criteria 0 Points-

Standard	6.0 Demonstrate an understanding of the relationships among technologies and the connection between technology and other fields of study.
Benchmark	o6.03 Outline the process of patenting to protect technological ideas.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Low, Moderate
Benchmark Clarification	The student will distinguish among the steps involved in applying for a patent.
Content Focus	Patent; steps; filing process; deadlines; application; classification
Content Limits	Items are limited to the process of patenting technological ideas.
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	You have created a new type of rose seedling. What type of patent should you apply for? a. design patent b. horticulture patent c. plant patent d. utility patent Correct answer: a

Standard	8.0 Demonstrate an understanding of the design process
Benchmark	08.02 Describe the sequence of steps and associated activities involved in applying the design process.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Moderate, High
Benchmark Clarification	The student will identify and describe the steps involved in the design process.
Content Focus	Design process
Content Limits	Items are limited to sequential events associated with the design process.
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	Once you have searched the Patent Full-Text and Full-Page Image Databases and determined there were no existing patents, what is your next step? a. determine filing strategy b. decide on the type of application c. file an expedited examination d. pay the fee to obtain the application Correct answer: b

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Standard	9.0 Demonstrate an understanding of and be able to select and use information and communication technologies.
Benchmark	09.01 Describe and give examples of the essential elements of a communication system.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Moderate, High
Benchmark Clarification	The student will identify and describe elements of the basic communications system.
Content Focus	Inputs; processes; outputs
Content Limits	Items are limited to essential elements of a communication 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	What type of channel is an essential element of every communication system? a. client to server b. communication c. peer to peer d. wireless Correct answer: b

Standard	9.0 Demonstrate an understanding of and be able to select and use information and communication technologies.
Benchmark	09.04 Identify components of a communications system, including source, encoder, transmitter, receiver, decoder, storage, retrieval, and destination.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Moderate, High
Benchmark Clarification	The student will identify the communication system including but not limited to the source, encoder, and decoder.
Content Focus	Source; encoder; transmitter; receiver; decoder; storage; retrieval; destination
Content Limits	Items are limited to components of a communication 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	What piece of radio communications equipment has both the transmitter and receiver in one device? a. decoder b. encoder c. media device d. transceiver Correct answer: d

Standard	10.0 Demonstrate safe and appropriate use of tools, machines, and materials in communications technology.
Benchmark	10.01 Select appropriate tools, procedures, and/or equipment.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	Low, Moderate
Benchmark Clarification	The student will select the appropriate tools and/or equipment to complete a task.
Content Focus	Central Processing Unit; Monitor; Printer; Mouse; USB; Internet; Ethernet; Cables; Connect; Disconnect
Content Limits	Items are limited to commonly used tools, procedures, and equipment that are utilized in communication technology.
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	You need to set up a meeting between you and a colleague to review the project's data. You live in Florida and your colleague lives in Tokyo. What would be the best way to hold this meeting? a. cloud computing b. teleconferencing c. video conferencing d. webcams Correct answer: c

Standard	10.0 Demonstrate safe and appropriate use of tools, machines, and materials in communications technology.
Benchmark	10.06 Explain fire prevention and safety precautions and appropriate 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, Moderate
Benchmark Clarification	The student will identify proper fire prevention and safety precautions for extinguishing fires.
Content Focus	Safety Rules; Violations; Precautions; Regulations; Protocol
Content Limits	Items are limited to fire safety protocols and procedures.
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	You have a lab fire and you have gotten the fire extinguisher to put it out. How far should you be from the fire? a. 2-3 feet b. 4-5 feet c. 6-7 feet d. as far as possible Correct answer: c

Standard	11.0 Demonstrate technical knowledge and skills in the area of product design
Benchmark	11.04 Develop specifications for a particular job
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Low, Moderate
Benchmark Clarification	The student will develop specifications for a particular job.
Content Focus	Bidding, criteria, constraints, reference, materials, resources, blueprints, specification, equipment limits and abilities
Content Limits	Items are limited to the different methods of accomplishing a job and how to communicate them.
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	What is one factor that will determine a product's specifications for the design of a new package for a frozen pizza? a. audience b. cost to make the product c. marketing plan d. product ingredients Correct answer: b

Standard	12.0 Perform layout, design, and measurement activities associated with desktop publishing.
Benchmark	12.04 Demonstrate familiarity with terms associated with desktop publishing
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low, Moderate,
Benchmark Clarification	The student will identify key desktop publishing terms.
Content Focus	Leading, kerning, tracking, baseline shift, ligature, line spacing
Content Limits	Items are limited to vocabulary concerning desktop publishing.
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	In desktop publishing, what is the adjustment of space between pairs of letters to make them more visually appealing? a. gutter b. kerning c. leading d. typography Correct answer: c

Standard	12.0 Perform layout, design, and measurement activities associated with desktop publishing.
Benchmark	12.07 Compare and contrast methods of measurement used in desktop publishing.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Moderate, High
Benchmark Clarification	The student will describe the difference between units of measurement used in desktop publishing.
Content Focus	in, cm, mm, points, picas
Content Limits	Items are limited to measurement methods associated with desktop publishing.
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	What is the unit of measurement used in desktop design? a. inches b. millimeter c. pixel d. point Correct answer: d

Standard	12.0 Perform layout, design, and measurement activities associated with desktop publishing.
Benchmark	12.12 Create various print and digital publications
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	High
Benchmark Clarification	The student will create a variety of publications including but not limited to business cards, brochures, and newsletters.
Content Focus	Business cards, letterheads, flyers, brochures, newsletters, posters, programs and calendars.
Content Limits	Items are limited to print and digital publications.
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	What is NOT a pro of print publications? a. easy to pay b. easy to use c. limited area d. yours forever Correct answer: c

Standard	14.0 Identify computer components and their functions.
Benchmark	14.02 Identify various computer input devices and describe their use.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low, Moderate
Benchmark Clarification	The student will identify various computer input devices and their functions.
Content Focus	Mouse, keyboard, phone, camera
Content Limits	Items are limited to commonly used computer input 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	What input device technology uses your fingerprint to access your computer and files? a. biometric b. biofeedback c. parameter d. print meter Correct answer: a

Standard	14.0 Identify computer components and their functions.
Benchmark	14.03 Identify various computer output devices and describe their use.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Low, Moderate
Benchmark Clarification	The student will identify various computer output devices and their functions.
Content Focus	Monitor, printer, phone
Content Limits	Items are limited to commonly used output computer 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	What is an example of a peripheral device on a laptop computer? a. digital card reader b. touchpad c. keyboard d. monitor Correct answer: a

Standard	17.0 Demonstrate proficiency using the Internet to locate information
Benchmark	17.01 Identify and use web terminology.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	Low, Moderate
Benchmark Clarification	The student will identify basic web terminology including knowing the difference between browsers and search engines.
Content Focus	World Wide Web; IP Address; Browser; Firefox; Google; Chrome; Yahoo
Content Limits	Items are limited to key vocabulary employed to describe elements and procedures on the internet.
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	What is a unique string of numbers that identifies each computer attached to the internet called? a. ISP b. IP c. LAN d. WAN Correct answer: b

Standard	19.0 Develop and apply word processing and document manipulation skills.
Benchmark	19.01 Apply and adjust margins, tabs, line spacing and paragraph indents.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	High
Benchmark Clarification	The student will complete the folLowing document changes: the margins; the line spacing; and the paragraph indents. The student will set tabs accordingly.
Content Focus	Ribbons; Groups; Margins; Tables; Condensed; Expanded; Single Line Spacing; Double Line Spacing; Tabs
Content Limits	Items are limited to functions within commonly used word processors.
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	In word processing, what is the Keyboard command to move up a level from an indented level? a. Shift/Tab/ + sign/Enter b. Shift/Tab/+ sign c. Shift/Tab after pressing enter d. Shift/Tab before pressing enter Correct answer: b

Standard	19.0 Develop and apply word processing and document manipulation skills.
Benchmark	19.02 Insert and manipulate text, graphics/images, and WordArt
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	High
Benchmark Clarification	The student will insert graphics including WordArt and format those graphics.
Content Focus	Inserting; resizing; rotating; formatting
Content Limits	Items are limited to the manipulation of text, graphics, and WordArt in commonly used word processors.
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	What format is WordArt inserted as? a. clipart b. object c. shape d. text Correct answer: d

Standard	19.0 Develop and apply word processing and document manipulation skills.
Benchmark	19.09 Create bulleted and numbered lists.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	High
Benchmark Clarification	The student will create bulleted lists and numbered lists in a word processing software program.
Content Focus	Bulleted lists; numbered lists; ordered lists; unordered lists
Content Limits	Items are limited to commonly used functions to create bullets and lists in word processors.
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	What type of list should you use if the order of the data is not important? a. bulleted b. decimal c. drop down d. numbered Correct answer: a

Standard	19.0 Develop and apply word processing and document manipulation skills.
Benchmark	19.10 Create a table - Inserting, moving and entering data.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	High
Benchmark Clarification	The student will create a table with several rows and columns and enter data in the cells.
Content Focus	Tables; cells; columns; rows; inserting; formatting
Content Limits	Items are limited to creating tables in commonly used word processors.
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	What command alLows text to be on multiple lines in a table cell? a. text art b. text effect c. text style d. text wrap Correct answer: d

Standard	20.0 Develop and apply fundamental spreadsheet skills.
Benchmark	20.02 Identify the parts of the spreadsheet display.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	Low, Moderate
Benchmark Clarification	The student will identify the different parts of the spreadsheet interface.
Content Focus	Ribbons; groups; cells; columns; rows; worksheet; workbook; interface
Content Limits	Items are limited to the components found in commonly used spreadsheet software.
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	What is the cell in a spreadsheet called that shows location in spreadsheet and what was typed in the cell? a. cell chart b. cell range c. data entry bar d. formula cell Correct answer: c

Standard	21.0 Demonstrate an understanding of color theory and its role in communications design.
Benchmark	21.05 Compare and contrast the RGB and CMYK color models as used in communications design.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Moderate, High
Benchmark Clarification	The student will describe the difference between RGB color models and CMYK color models.
Content Focus	RGB; CMYK; Hexadecimal code
Content Limits	Items are limited to common applications of RGB and CMYK color models in communications design.
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	What is the color mixing method for the RGB color model? a. additive b. sampling c. saturation d. subtractive Correct answer: a

Standard	22.0 Demonstrate an understanding of the elements and principles of graphic design.
Benchmark	22.01 Describe the elements of graphic design.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Low, Moderate
Benchmark Clarification	The student will identify the elements of graphic design including but not limited to line, shape, and color.
Content Focus	Line, shape, mass, texture, color, lighting.
Content Limits	Items are limited to commonly used components in graphic design.
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	What element of design is created when a canvas uses two different elements? a. contrast b. pattern c. scale d. texture Correct answer: d

Standard	22.0 Demonstrate an understanding of the elements and principles of graphic design.
Benchmark	22.02 Describe the principles of graphic design.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)=X (SA)=X (P)= (ER)=X
Cognitive Complexity Level	Low, Moderate
Benchmark Clarification	The student will identify the elements of graphic design including but not limited to line, shape, and color.
Content Focus	Balance, unity, contrast, rhythm, proportion, scaling
Content Limits	Items are limited to commonly employed principles in graphic design.
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	What is NOT a principle of design? a. balance is b. focal point c. proportion d. scale Correct answer: d

Standard	25.0 Demonstrate proficiency in using a software application for digital imaging.
Benchmark	25.05 Create and edit image/photographs using digital imaging software.
Item Types (MC)-Multiple Choice (SA)-Short Answer (P)-Performance (ER)-Extended Response	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	High
Benchmark Clarification	The student will take a photo with a digital camera and edit the photo using digital imaging software.
Content Focus	Digital camera; USB cable; resize; rotate; adjust color
Content Limits	Items assessing image editing are limited to commonly used photo editing software.
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	What term means to change the size of an image in digital editing? a. crop b. cut c. resize d. vignette Correct answer: c