Individual Test Item Specifications

8720310- Building Construction Technologies 1

2015

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Table of Contents

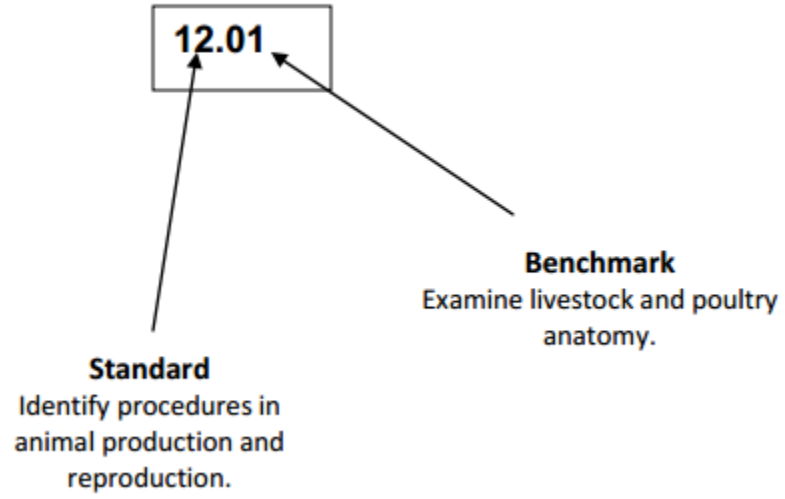
I. Guide to the Individual Benchmark Specifications

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.

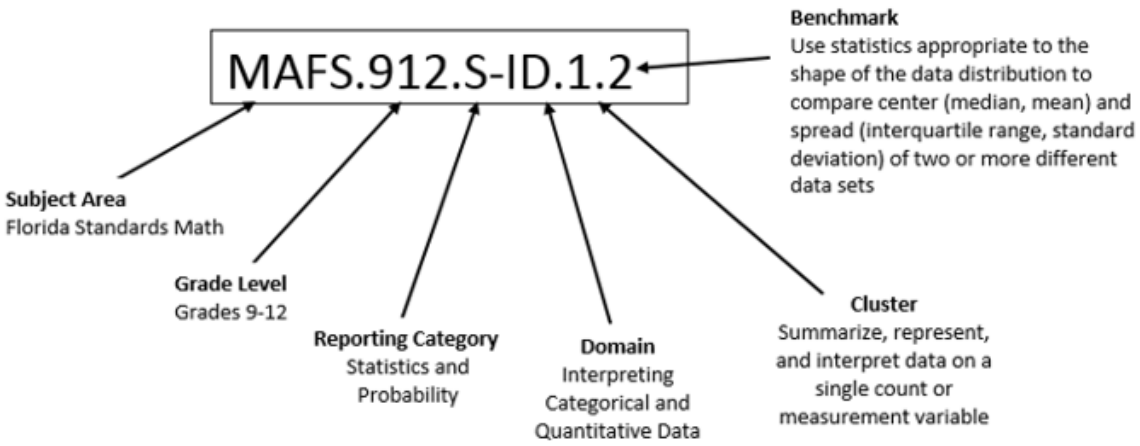
An example, from Agritechnology 1:



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	04.0 Demonstrate the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
Benchmark	04.01 Comply with all applicable Occupational Safety and Health Administration (OSHA) rules and regulations.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M
Benchmark Clarification	The student will demonstrate knowledge, make observations or comply with all applicable Occupational Safety and Health Administration (OSHA) rules and regulations.
Content Focus	OSHA, Occupational Safety and Health Administration, rules and regulations, regulatory, environmental management, regulatory compliance, protection, supervisor, work comp, management
Content Limits	The content limits will include, but not be limited to components of complying with all applicable Occupational Safety and Health Administration (OSHA) rules and regulations. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What does the acronym OSHA stand for? A. Occupational Safety and Health Administration B. Occupational Skills for Hiring Advancements C. Outstanding Safeguards in Health Alliances D. Outstanding Safety and Health Agency Answer: A

Standard	04.0 Demonstrate the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
Benchmark	04.02 Identify and locate the Material Safety Data Sheets (MSDS) and follow the procedures as necessary.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify and locate the Material Safety Data Sheets (MSDS) and follow the procedures as necessary.
Content Focus	MSDS, emergency response, hospital, OSHA, Occupational Safety and Health Administration, rules and regulations, regulatory, environmental management, regulatory compliance, protection, supervisor, work comp, management
Content Limits	The content limits will include, but not be limited to components of identifying and locating the Material Safety Data Sheets (MSDS) and following the procedures as necessary. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which document would you refer to in order to locate emergency procedures in the event that you splash bleach in your eyes at your workplace? A. chemical protection sheet B. EMT sheet C. MSDS sheet D. RFRA sheet Answer: C

Standard	04.0 Demonstrate the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
Benchmark	04.03 Describe "Right-to-Know" Law as recorded in (29 CFR-1910.1200).
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	H
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe "Right-to-Know" Law as recorded in (29 CFR-1910.1200).
Content Focus	Right to Know, Hazcom, OSHA,MSDS, emergency response, hospital, Occupational Safety and Health Administration, rules and regulations, regulatory, environmental management, regulatory compliance, protection, supervisor, work comp, management
Content Limits	The content limits will include, but not be limited to components of describing "Right-to-Know" Law as recorded in (29 CFR-1910.1200). Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What is one of the requirements of the Florida "Right-to-Know" Law? A. Construction jobs must be public record. B. All past owners of properties must be revealed. C. Inspection records must be posted on the construction site. D. Employers must maintain a list of all hazardous products known to be in the workplace. Answer: D

Standard	04.0 Demonstrate the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
Benchmark	04.04 Identify and use safety equipment.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify and use safety equipment.
Content Focus	Ladder, job safety analysis, task safety analysis, evacuation procedures, hazard, Right to Know, Hazcom, OSHA,MSDS, emergency response, hospital, Occupational Safety and Health Administration, rules and regulations, regulatory, environmental management, regulatory compliance, protection, supervisor, work comp, management
Content Limits	The content limits will include, but not be limited to components of identifying and using safety equipment. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What is the most important required piece of safety equipment to be worn on the premises of most construction sites? A. boots B. gloves C. hard hat D. safety glasses Answer: C

Standard	04.0 Demonstrate the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
Benchmark	04.05 Describe personal and jobsite safety rules and regulations that maintain safe and healthy work environments.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe personal and jobsite safety rules and regulations that maintain safe and healthy work environments.
Content Focus	Risk management,record keeping, job safety analysis, task safety analysis, evacuation procedures, hazard, Right to Know, Hazcom, OSHA,MSDS, emergency response, hospital, Occupational Safety and Health Administration, rules and regulations, regulatory, environmental management, regulatory compliance, protection, supervisor, work comp, management,
Content Limits	The content limits will include, but not be limited to components of describing personal and jobsite safety rules and regulations that maintain safe and healthy work environments. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What must subcontractors do after they complete their job on a construction site? A. Clean up extra debris. B. Leave any extra materials on site. C. Replace old tools with new ones. D. Tuck a completion invoice on the job sign. Answer: A

Standard	04.0 Demonstrate the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
Benchmark	04.06 Explain emergency procedures to follow in response to workplace accidents.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	M
Benchmark Clarification	The student will demonstrate knowledge, make observations to explain emergency procedures to follow in response to workplace accidents.
Content Focus	Report accident, experience MOD, compliance, accidents,risk management,record keeping, job safety analysis, task safety analysis, evacuation procedures, hazard, Right to Know, Hazcom, OSHA,MSDS, emergency response, hospital, Occupational Safety and Health Administration, rules and regulations, regulatory, environmental management, regulatory compliance, protection, supervisor, work comp, management
Content Limits	The content limits will include, but not be limited to components of explaining emergency procedures to follow in response to workplace accidents. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	When an injury occurs from working on the job, what should you do? A. Report it to a co-worker. B. Report it to your supervisor immediately. C. Report it to your supervisor within one week. D. Wait to see if the injury heals on its own before letting anyone know about it. Answer: B

Standard	04.0 Demonstrate the importance of health, safety and environmental management systems in organizations and their importance to organizational performance and regulatory compliance.
Benchmark	04.07 Create a disaster and/or emergency response plan.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	H
Benchmark Clarification	The student will demonstrate knowledge, make observations or create a disaster and/or emergency response plan.
Content Focus	Disaster and emergency response plan, report accident, experience MOD, compliance, accidents,risk management,record keeping, job safety analysis, task safety analysis, evacuation procedures, hazard, Right to Know, Hazcom, OSHA,MSDS, emergency response, hospital, Occupational Safety and Health Administration, rules and regulations, regulatory, environmental management, regulatory compliance, protection, supervisor, work comp, management
Content Limits	The content limits will include, but not be limited to components of creating a disaster and/or emergency response plan. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Every commercial job in the state of Florida should have what type of plan available due to the nature of weather patterns in the state? A. Dust Storm Relief Plan B. Hurricane Evacuation Plan C. Sun/Heat Overexposure Plan D. Thunderstorm Evacuation Plan Answer: B

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.01 Describe the development of construction technology, its impact on the built environment and the impact of growth on the construction industry.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe the development of construction technology, its impact on the built environment and the impact of growth on the construction industry.
Content Focus	Construction technology, built environment, growth, construction industry, management system, development, EPA, LEED, green council, OSHA, geo positioning system, BIM, modeling
Content Limits	The content limits will include, but not be limited to components of describing the development of construction technology, its impact on the built environment and the impact of growth on the construction industry. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which of the following is the most recent improvement in surveying technology? A. Global Positioning System B. laser C. megaphone D. tripod Answer: A

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.02 Describe the benefits of the construction industry on health and safety, communication, transportation and the economy.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe the benefits of the construction industry on health and safety, communication, transportation and the economy.
Content Focus	Construction technology, built environment, growth, construction industry, management system, development, EPA, LEED, green council, OSHA, geo positioning system, BIM, modeling
Content Limits	The content limits will include, but not be limited to components of describing the benefits of the construction industry on health and safety, communication, transportation and the economy. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	How has the construction industry improved transportation between states? A. construction of toll booths B. construction of water taxi routes C. construction of county roadways D. construction of interstate freeways Answer: D

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.03 Demonstrate an understanding of the relationship between construction and the environment.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	H
Benchmark Clarification	The student will demonstrate knowledge, make observations or demonstrate an understanding of the relationship between construction and the environment.
Content Focus	Construction technology, built environment, growth, construction industry, management system, development, EPA, LEED, green council, OSHA, geo positioning system, BIM, modeling
Content Limits	The content limits will include, but not be limited to components of demonstrating an understanding of the relationship between construction and the environment. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which of the following in an acronym for the organization that promotes a positive relationship between construction and environmental concerns? A. CPE B. FEEP C. LEAD D. PTEC Answer: C

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.04 Describe the role of trade unions in the construction industry.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	M
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe the role of trade unions in the construction industry.
Content Focus	Role of trade unions, construction industry, pay rates, insurance, organization, democratic society, protect workers, negotiate, journeyman, apprentice, assistance, workers
Content Limits	The content limits will include, but not be limited to components of describing the role of trade unions in the construction industry. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What is the organization that bargains for various work related issues on behalf of its members? A. bargaining management B. OSHA C. trade unions D. wage units Answer: C

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.05 Research apprenticeship opportunities.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	H
Benchmark Clarification	The student will demonstrate knowledge, make observations or research apprenticeship opportunities.
Content Focus	Apprenticeship, laborer, foreman, supervisors, training, benefits, organized, role of trade unions, construction industry, pay rates, insurance, organization, democratic society, protect workers, negotiate, journeyman, apprentice, assistance, workers
Content Limits	The content limits will include, but not be limited to components of researching apprenticeship opportunities. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Job training that involves being trained by a master of a trade is considered what? A. apprenticeship B. journey C. laborer reassignment D. supervisory detail Answer: A

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.06 Identify the different classifications of construction projects.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify the different classifications of construction projects.
Content Focus	Classifications of construction projects, residential, commercial, industrial, agricultural, surveyors, site contractor, plumber, electrician, framer, carpenter, concrete contractor, drywall, cabinet maker, finish contractor, cleaning company, hardscape, landscape
Content Limits	The content limits will include, but not be limited to components of identifying the different classifications of construction projects. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which of the following classifications is not one you would find on a construction project? A. appliance repair B. electrician C. framer D. plumber Answer: A

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.07 Define the roles and responsibilities of the general contractor, specialty contractor, construction management and design build firms.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	H
Benchmark Clarification	The student will demonstrate knowledge, make observations or define the roles and responsibilities of the general contractor, specialty contractor, construction management and design build firms.
Content Focus	General contractor, specialty contractor, design build, architect, planner, contract, classifications of construction projects, residential, commercial, industrial, agricultural, surveyors, site contractor, plumber, electrician, framer, carpenter, concrete contractor, drywall, cabinet maker, finish contractor, cleaning company, hardscape, landscape
Content Limits	The content limits will include, but not be limited to components of defining the roles and responsibilities of the general contractor, specialty contractor, construction management and design build firms. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which contractor is responsible for overseeing the entire construction project? A. concrete contractor B. general contractor C. plumbing contractor D. roofing contractor Answer: B

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.08 Research construction trade occupations and the roles and responsibilities of each craft.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	H
Benchmark Clarification	The student will demonstrate knowledge, make observations or research construction trade occupations and the roles and responsibilities of each craft.
Content Focus	Craft, occupation, construction trade, general contractor, specialty contractor, design build, architect, planner, contract, classifications of construction projects, residential, commercial, industrial, agricultural, surveyors, site contractor, plumber, electrician, framer, carpenter, concrete contractor, drywall, cabinet maker, finish contractor, cleaning company, hardscape, landscape
Content Limits	The content limits will include, but not be limited to components of researching construction trade occupations and the roles and responsibilities of each craft. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which contractor is responsible for the preparation of a building's footings and foundations? A. concrete contractor B. building inspector C. drywall contractor D. painter Answer: A

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.09 Research construction management occupations and the roles and responsibilities of each.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	H
Benchmark Clarification	The student will demonstrate knowledge, make observations or research construction management occupations and the roles and responsibilities of each.
Content Focus	Project manager, construction manager, supervisor, craft, occupation, construction trade, general contractor, specialty contractor, design build, architect, planner, contract, classifications of construction projects, residential, commercial, industrial, agricultural, surveyors, site contractor, plumber, electrician, framer, carpenter, concrete contractor, drywall, cabinet maker, finish contractor, cleaning company, hardscape, landscape
Content Limits	The content limits will include, but not be limited to components of researching construction management occupations and the roles and responsibilities of each. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which position within an organization is responsible for a particular job? A. bid manager B. office coordinator C. project manager D. general manager Answer: C

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.10 Identify design and engineering occupations and the roles and responsibilities of each.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify design and engineering occupations and the roles and responsibilities of each.
Content Focus	Corps of engineers, engineer, civil engineer, structural engineer, mechanical engineer, project manager, construction manager, supervisor, craft, occupation, construction trade, general contractor, specialty contractor, design build, architect, planner, contract, classifications of construction projects, residential, commercial, industrial, agricultural, surveyors, site contractor, plumber, electrician, framer, carpenter, concrete contractor, drywall, cabinet maker, finish contractor, cleaning company, hardscape, landscape
Content Limits	The content limits will include, but not be limited to components of identifying design and engineering occupations and the roles and responsibilities of each. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which type of engineer designs the air conditioning/ heating ventilation system for a structure? A. design engineer B. electrical engineer C. mechanical engineer D. structural engineer Answer: C

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.11 Explain the relationship between construction and the economy.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)=X (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or explain the relationship between construction and the economy.
Content Focus	Construction, economy, economic opportunity,corps of engineers, engineer, civil engineer, structural engineer, mechanical engineer, project manager, construction manager, supervisor, craft, occupation, construction trade, general contractor, specialty contractor, design build, architect, planner, contract, classifications of construction projects, residential, commercial, industrial, agricultural, surveyors, site contractor, plumber, electrician, framer, carpenter, concrete contractor, drywall, cabinet maker, finish contractor, cleaning company, hardscape, landscape
Content Limits	The content limits will include, but not be limited to components of explaining the relationship between construction and the economy. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	When there is a down turn in the economy, which industry is immediately affected? A. construction B. education C. medical D. oil Answer: A

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.12 Describe the process of applying for building permits and variances.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe the process of applying for building permits and variances.
Content Focus	Building permits, application, zoning, variances, public hearing, corps of engineers, engineer, civil engineer, structural engineer, mechanical engineer, project manager, construction manager, supervisor, craft, occupation, construction trade, general contractor, specialty contractor, design build, architect, planner, contract, classifications of construction projects, residential, commercial, industrial, agricultural, surveyors, site contractor, plumber, electrician, framer, carpenter, concrete contractor, drywall, cabinet maker, finish contractor, cleaning company, hardscape, landscape,
Content Limits	The content limits will include, but not be limited to components of describing the process of applying for building permits and variances. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	If you approach the local jurisdiction with an attempt to change the zoning on a particular piece of property, what will you need to apply for? A. approval B. extension C. permit D. variance Answer: D

Standard	05.0 Investigate the construction industry and explore related occupations.
Benchmark	05.13 Demonstrate an understanding of zoning requirements.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or demonstrate an understanding of zoning requirements.
Content Focus	Building permits, application, zoning, variances, public hearing, corps of engineers, engineer, civil engineer, structural engineer, mechanical engineer, project manager, construction manager, supervisor, craft, occupation, construction trade, general contractor, specialty contractor, design build, architect, planner, contract, classifications of construction projects, residential, commercial, industrial, agricultural, surveyors, site contractor, plumber, electrician, framer, carpenter, concrete contractor, drywall, cabinet maker, finish contractor, cleaning company, hardscape, landscape
Content Limits	The content limits will include, but not be limited to components of demonstrating an understanding of zoning requirements. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	In which type of zoning would a box retailer be found? A. commercial B. industrial C. residential D. single-family residential Answer: A

Standard	06.0 Select and use basic hand tools.
Benchmark	06.01 Use a claw hammer to drive and pull out nails.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or use a claw hammer to drive and pull out nails.
Content Focus	Safety glasses, hammer, claw hammer, framing hammer, drive a nail, types of nails, face of hammer, draw back, light tap, start nail, weight forward hammer, pull nail, under nail head, pull hard, apply pressure, force
Content Limits	The content limits will include, but not be limited to components of using a claw hammer to drive and pull out nails. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which type of hammer is best used to pull out a nail? A. ball peen hammer B. claw hammer C. slaghammer D. sledgehammer Answer: B

Standard	06.0 Select and use basic hand tools.
Benchmark	06.02 Use handsaws to cut boards.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or use handsaws to cut boards.
Content Focus	Cut boards, hand saw, back saw, coping saw, hacksaw, hand saw, drywall saw, compass saw, romans, keyhole saw, rip saw, kerf, emery cloth, safety, safety glasses,saw teeth
Content Limits	The content limits will include, but not be limited to components of using hand saws to cut boards. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which tool is best used to cut a board? A. hammer B. saw C. screwdriver D. wrench Answer: B

Standard	06.0 Select and use basic hand tools.
Benchmark	06.03 Use screwdrivers to drive in screws.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or use screwdrivers to drive in screws.
Content Focus	Screwdrivers, handle, shank, blade, slatted, phillips, clutch drive, allen, robertson, torx, tapered, centered, tighten, remove, different types
Content Limits	The content limits will include, but not be limited to components of using screwdrivers to drive in screws. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	The portion of the screwdriver between the handle and the blade is called what? A. blade B. center C. punch D. shank Answer: D

Standard	06.0 Select and use basic hand tools.
Benchmark	06.04 Drill holes with hand-powered drills.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or drill holes with hand-powered drills.
Content Focus	Safety glasses, electric drill, cordless drill, hammer drill, pneumatic drills, auger, masonry, paddle bit, drill bit, forstner, twist, chuck, power drills, screwdrivers, handle, shank, blade, slatted, phillips, clutch drive, allen, robertson, torx, tapered, centered, tighten, remove, different types
Content Limits	The content limits will include, but not be limited to components of drilling holes with hand-powered drills. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which drill is most commonly used to drill a hole in concrete? A. cordless drill B. hammer drill C. sheet metal drill D. tapered drill Answer: B

Standard	06.0 Select and use basic hand tools.
Benchmark	06.05 Select and use various types of wrenches, pipe wrenches and plumbing tools, chisels, staple guns, wood planes, woodworking files, spirit levels, socket wrench sets, hand or block sanders and carpenters' squares.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or select and use various types of wrenches, pipe wrenches and plumbing tools, chisels, staple guns, wood planes, woodworking files, spirit levels, socket wrench sets, hand or block sanders and car
Content Focus	Squares, t square, wrenches, pipe wrench, plumbing tool, chisels, files, levels, socket wrench, sanders, open end, box end, kex key, combination, pipe wrench, spud wrench, adjustable wrench, jaw,striking surface, torque, metric and standard, ratchets, sockets
Content Limits	The content limits will include, but not be limited to components of selecting and using various types of wrenches, pipe wrenches and plumbing tools, chisels, staple guns, wood planes, woodworking files, spirit levels, socket wrench sets, hand or block sanders and carpenters' squares. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which type of pliers can clamp like a vice? A. groove pliers B. locking pliers C. lineman pliers D. needlenose pliers Answer: B

Standard	07.0 Select and use power tools and describe their proper operation.
Benchmark	07.01 Identify power tools including sanders, drills, screwdrivers, saws (hand-held, reciprocating, radial-arm, table, band, and miter), drill presses, planes and electric routers.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify power tools including sanders, drills, screwdrivers, saws (hand-held, reciprocating, radial-arm, table, band, and miter), drill presses, planes and electric routers.
Content Focus	Routers, sanders, power tools, radial arm, miter box, miter saw, band saw, compressor, table saw, drill press, scroll saw, reciprocating saw, circular saw, jointer, lathe, tool box, cut off saw, soft cut saw
Content Limits	The content limits will include, but not be limited to components of identifying power tools including sanders, drills, screwdrivers, saws (hand-held, reciprocating, radial-arm, table, band, and miter), drill presses, planes and electric routers. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which type of saw can be used to make a compound cut? A. band saw B. circular saw C. hand saw D. miter saw Answer: D

Standard	07.0 Select and use power tools and describe their proper operation.
Benchmark	07.02 Describe the proper operation of power tools and equipment.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe the proper operation of power tools and equipment.
Content Focus	Safety glasses, ground, proper operation, power tools, routers, sanders, power tools, radial arm, miter box, miter saw, band saw, compressor, table saw, drill press, scroll saw, reciprocating saw, circular saw, jointer, lathe, tool box, cut off saw, soft cut saw
Content Limits	The content limits will include, but not be limited to components of describing the proper operation of power tools and equipment. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	When operating a power tool, which of the following items should always be worn? A. gloves B. hard hat C. safety glasses D. steel toe boots Answer: C

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.01 Solve job-related problems by adding, subtracting, multiplying and dividing numbers, using fractions, decimals and whole numbers.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or solve job-related problems by adding, subtracting, multiplying and dividing numbers, using fractions, decimals and whole numbers.
Content Focus	Construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of solving job-related problems by adding, subtracting, multiplying and dividing numbers, using fractions, decimals and whole numbers. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	You want to build an addition on a home measuring 10' x 15'. What is the total square feet for the new addition? A. 10sf B. 25sf C. 150sf D. 300sf Answer: C

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.02 Change numbers to percentages.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or change numbers to percentages.
Content Focus	Change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of changing numbers to percentages. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	A construction project is 2/3 complete. What is the total percentage left to be completed? A. 10% B. 25% C. 33% D. 75% Answer: C

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.03 Demonstrate knowledge of arithmetic operations.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or demonstrate knowledge of arithmetic operations.
Content Focus	Change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of demonstrating knowledge of arithmetic operations. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Supplies for a small residential remodel include $25.15 for screws, $350.00 for lumber, $18.76 for a drill bit, and $29.99 for a level. What is the total cost of these supplies? A. $279.32 B. $423.90 C. $500.00 D. $767.10 Answer: B

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.04 Read a ruler and a tape measure.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or read a ruler and a tape measure.
Content Focus	Tape measure, ruler, inches, feet, increments, change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of reading a ruler and a tape measure. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	A thin, flexible, metal ruler that can be rolled up is known as what? A. measuring wheel B. ruler C. tape measure D. yardstick Answer: C

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.05 Compute feet, inches and yards.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or compute feet, inches and yards.
Content Focus	Compute feet, compute inches, compute yards, compute cubic yards, tape measure, ruler, inches, feet, increments, change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of computing feet, inches and yards. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	How many inches are in a board that is 10' long? A.22" B.50" C.100" D.120" Answer: D

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.06 Change hours and minutes to decimals, fractions and mixed numbers.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or change hours and minutes to decimals, fractions and mixed numbers.
Content Focus	Man hours, hours, minutes, mixed numbers, algebra, geometry, compute feet, compute inches, compute yards, compute cubic yards, tape measure, ruler, inches, feet, increments, change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of changing hours and minutes to decimals, fractions and mixed numbers. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	A laborer's timesheet shows that he worked a total of 38.75 hours in one week. What is the total amount of time in hours and minutes he worked? A. 38 hours 75 minutes B. 38 hours 45 minutes C. 38 hours 55 minutes D. 75 hours 38 minutes Answer: B

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.07 Construct charts/tables/graphs using functions and data.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or construct charts/tables/graphs using functions and data.
Content Focus	Analyze data, apply data, graphs, documents, charts, tables graphs, functions, data, man hours, hours, minutes, mixed numbers, algebra, geometry, compute feet, compute inches, compute yards, compute cubic yards, tape measure, ruler, inches, feet, increments, change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of constructing charts/tables/graphs using functions and data. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	A chart is created showing the percentage of work completed each day during a given week. This information will best be displayed in which type of graph? A. bar graph B. function chart C. pie chart D. table Answer: A

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.09 Determine ratios and proportions.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or determine ratios and proportions.
Content Focus	Determine ratios, proportions, interpret documents, solve problems, apply data, analyze data, apply data, graphs, documents, charts, tables graphs, functions, data, man hours, hours, minutes, mixed numbers, algebra, geometry, compute feet, compute inches, compute yards, compute cubic yards, tape measure, ruler, inches, feet, increments, change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of determining ratios and proportions. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	If a cement mixture calls for 3 parts cement mix and 1 part water, what is the ratio of cement mix to water? A. 1:1 B. 2:1 C. 3:2 D. 3:1 Answer: D

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.10 Convert measurements from the English to the metric system and from the metric to the English system.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or convert measurements from the English to the metric system and from the metric to the English system.
Content Focus	Metric, english, convert measurements, english to metric, metric to english, determine ratios, proportions, interpret documents, solve problems, apply data, analyze data, apply data, graphs, documents, charts, tables graphs, functions, data, man hours, hours, minutes, mixed numbers, algebra, geometry, compute feet, compute inches, compute yards, compute cubic yards, tape measure, ruler, inches, feet, increments, change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre,
Content Limits	The content limits will include, but not be limited to components of converting measurements from the English to the metric system and from the metric to the English system. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	One yard is equal to .9 meters. What is the length of a football field in meters? A. 90 meters B. 100 meters C. 190 meters D. 1000 meters Answer: A

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.11 Solve problems for volume, weight, area, circumference and perimeter measurements for rectangles, squares and cylinders.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or solve problems for volume, weight, area, circumference and perimeter measurements for rectangles, squares and cylinders.
Content Focus	Weight, circumference, perimeter, volume, rectangles, cylinders, squares, metric, english, convert measurements, english to metric, metric to english, determine ratios, proportions, interpret documents, solve problems, apply data, analyze data, apply data, graphs, documents, charts, tables graphs, functions, data, man hours, hours, minutes, mixed numbers, algebra, geometry, compute feet, compute inches, compute yards, compute cubic yards, tape measure, ruler, inches, feet, increments, change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of solving problems for volume, weight, area, circumference and perimeter measurements for rectangles, squares and cylinders. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What is the area of a living room measuring 20' x 20'? A. 40sf B. 80sf C. 400sf D. 4000sf Answer: C

Standard	08.0 Demonstrate mathematics knowledge and skills relevant to the construction industry.
Benchmark	08.12 Measure tolerance(s) on horizontal and vertical surfaces using millimeters, centimeters, feet and inches.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or measure tolerance(s) on horizontal and vertical surfaces using millimeters, centimeters, feet and inches.
Content Focus	Tolerances, horizontal and vertical surfaces, millimeters,centimeters, weight, circumference, perimeter, volume, rectangles, cylinders, squares, metric, english, convert measurements, english to metric, metric to english, determine ratios, proportions, interpret documents, solve problems, apply data, analyze data, apply data, graphs, documents, charts, tables graphs, functions, data, man hours, hours, minutes, mixed numbers, algebra, geometry, compute feet, compute inches, compute yards, compute cubic yards, tape measure, ruler, inches, feet, increments, change numbers to percentages, construction math, adding, subtracting, multiplying, fractions, decimals, whole numbers, square feet, cubic yards, lineal feet, board foot, shingle squares, acre
Content Limits	The content limits will include, but not be limited to components of measuring tolerance(s) on horizontal and vertical surfaces using millimeters, centimeters, feet and inches. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	If a site plan indicates a grade tolerance of 1/12 of 1 foot, how many inches is that equal to? A. 1/2 inch B. 1 inch C. 1 1/2 inches D. 12 inches Answer: B

Standard	09.0 Demonstrate carpentry skills.
Benchmark	09.01 Construct various types of concrete forms.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or construct various types of concrete forms.
Content Focus	Forms, wood forms, panel forms, tilt up, concrete forms, wall forms, slab forms, footing forms, structural engineer, rebar, form ties, scaffolding, cure time, form removal, specifications, building forms, form design, liners, bracing, bar ties, oils, form release, damage, point and patch, cat tracks, rock pockets, damaged concrete, boom pump, pour, bucket, crane, concrete, slurry, grout, primer, vibrator, reinforcement. Form oil, form release
Content Limits	The content limits will include, but not be limited to components of constructing various types of concrete forms. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What type of form is used when pouring both the building footing and the slab at the same time? A. cast-in-place form B. monolithic form C. styrofoam block form D. tilt-up Answer: B

Standard	09.0 Demonstrate carpentry skills.
Benchmark	09.02 Describe in-beds used in concrete formwork.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe in-beds used in concrete formwork.
Content Focus	In-beds, formwork, iron, buckets, seats, bar joist, steel stud, forms, wood forms, panel forms, tilt up, concrete forms, wall forms, slab forms, footing forms, structural engineer, rebar, form ties, scaffolding, cure time, form removal, specifications, building forms, form design, liners, bracing, bar ties, oils, form release, damage, point and patch, cat tracks, rock pockets, damaged concrete, boom pump, pour, bucket, crane, concrete, slurry, grout, primer, vibrator, reinforcement. Form oil, form release
Content Limits	The content limits will include, but not be limited to components of describing in-beds used in concrete formwork. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What is an in-bed placed in wet concrete at the top of a wall to anchor and support the bar joist called? A. cradle B. joist brace C. joist seat D. truss anchor Answer: C

Standard	09.0 Demonstrate carpentry skills.
Benchmark	09.03 Identify appropriate form stripping and handling techniques.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify appropriate form stripping and handling techniques.
Content Focus	Form stripping, form handling, carpenter, laborer, stacking, cleaning, oiling, lay down area, load and unload operation, in-beds, formwork, iron, buckets, seats, bar joist, steel stud, forms, wood forms, panel forms, tilt up, concrete forms, wall forms, slab forms, footing forms, structural engineer, rebar, form ties, scaffolding, cure time, form removal, specifications, building forms, form design, liners, bracing, bar ties, oils, form release, damage, point and patch, cat tracks, rock pockets, damaged concrete, boom pump, pour, bucket, crane, concrete, slurry, grout, primer, vibrator, reinforcement. Form oil, form release
Content Limits	The content limits will include, but not be limited to components of identifying appropriate form stripping and handling techniques. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What type of heavy equipment is used to install and remove concrete table forms? A. backhoe B. concrete pump C. crane D. dragline Answer: C

Standard	09.0 Demonstrate carpentry skills.
Benchmark	09.04 Layout and install framing members for a structure.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or layout and install framing members for a structure.
Content Focus	Layout, bracing, install framing, methods of framing, platform frame, braced framing, hip, gable, bridging, joist, rafter, stud, plate, subfloor, soleplate, girder, sheathing, foundation, plywood, lumber, sill, sealant, anchor bolts, nails, screws, straps, corner post, balloon frame, post and beam frame, ceiling joist, partition, firestop, cap, sill plate, sill, ledger, ribbon, bottom plate, beams, roofing, ceiling, post and beam framing, truss, purlin
Content Limits	The content limits will include, but not be limited to components of layouts and installing framing members for a structure. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which material is installed as soon as the roof framing is complete? A.header B.rafter C.sheathing D.trimmer Answer: C

Standard	09.0 Demonstrate carpentry skills.
Benchmark	09.05 Dry in a structure.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations, or dry in a structure.
Content Focus	Tar paper, dry in, waterproofing, flashing, shingles, soffit, facia, pitch, valley, gable, hip, mansard, shed, gambrel, layout, bracing, install framing, methods of framing, platform frame, braced framing, hip, gable, bridging, joist, rafter, stud, plate, subfloor, soleplate, girder, sheathing, foundation, plywood, lumber, sill, sealant, anchor bolts, nails, screws, straps, corner post, balloon frame, post and beam frame, ceiling joist, partition, firestop, cap, sill plate, sill, ledger, ribbon, bottom plate, beams, roofing, ceiling, post and beam framing, truss, purlin
Content Limits	The content limits will include, but not be limited to components of drying in a structure. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which material is installed on top of the sheathing? A. drywall B. felt underlayment C. H-clips D. metal drip edge Answer: B

Standard	10.0 Read and interpret construction drawings.
Benchmark	10.01 Identify basic construction drawing terms, components and symbols.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify basic construction drawing terms, components and symbols.
Content Focus	Title block, blueprints, drawings, construction drawing, terms on drawings, symbols, components, border, drawing area, revision blocks, legend, legality, civil plans, architectural drawings, plans, BIM, structural plan, electrical plan, plumbing plan, mechanical plan, hardscape plan, landscape plan, site plan, arrows, outlets, cabinets, toilets, sinks, masonry units
Content Limits	The content limits will include, but not be limited to components of identifying basic construction drawing terms, components and symbols. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which drawings would a site contractor use to develop the roadways on a construction project? A. architectural plan B. civil plan C. mechanical plan D. structural plan Answer: B

Standard	10.0 Read and interpret construction drawings.
Benchmark	10.02 Locate sections, elevations and details to their location on the plan view.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or locate sections, elevations and details to their location on the plan view.
Content Focus	Sections, elevations, plan view, typical detail, scale, cut through, title block, blueprints, drawings, construction drawing, terms on drawings, symbols, components, border, drawing area, revision blocks, legend, legality, civil plans, architectural drawings, plans, BIM, structural plan, electrical plan, plumbing plan, mechanical plan, hardscape plan, landscape plan, site plan, arrows, outlets, cabinets, toilets, sinks, masonry units
Content Limits	The content limits will include, but not be limited to components of locating sections, elevations and details to their location on the plan view. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	The portion of the drawing that indicates how the concrete footer will attach to the masonry wall is found where? A. architectural detail B. HVAC detail C. plan elevation D. typical wall detail Answer: D

Standard	10.0 Read and interpret construction drawings.
Benchmark	10.03 Use drawing dimensions to layout a construction project.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M.H
Benchmark Clarification	The student will demonstrate knowledge, make observations or use drawing dimensions to layout a construction project.
Content Focus	Layout project, drawing dimensions, survey, surveyor, GPS, transit, coordinates, sections, elevations, plan view, typical detail, scale, cut through, title block, blueprints, drawings, construction drawing, terms on drawings, symbols, components, border, drawing area, revision blocks, legend, legality, civil plans, architectural drawings, plans, BIM, structural plan, electrical plan, plumbing plan, mechanical plan, hardscape plan, landscape plan, site plan
Content Limits	The content limits will include, but not be limited to components of using drawing dimensions to layout a construction project. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which portion of the blueprint is used to layout a construction project? A. architectural plan B. hardscape plan C. landscape plan D. site plan Answer: D

Standard	10.0 Read and interpret construction drawings.
Benchmark	10.04 Read architectural scales.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or read architectural scales.
Content Focus	Architectural scale, engineering scale, compute, define, proper scale, layout project, drawing dimensions, survey, surveyor, GPS, transit, coordinates, sections, elevations, plan view, typical detail, scale, cut through, title block, blueprints, drawings, construction drawing, terms on drawings, symbols, components, border, drawing area, revision blocks, legend, legality, civil plans, architectural drawings, plans, BIM, structural plan, electrical plan, plumbing plan, mechanical plan, hardscape plan, landscape plan, site plan, arrows
Content Limits	The content limits will include, but not be limited to components of reading architectural scales. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Using the following architectural scale from a blueprint of 1/4"=1', if the blueprint indicates the length of a retaining wall is 7", how long is the actual wall? A. 6 feet B. 28 feet C. 28 inches D. 100 inches Answer: B

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.01 Identify floor and sill framing and support members.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify floor and sill framing and support members.
Content Focus	Floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking
Content Limits	The content limits will include, but not be limited to components of identifying floor and sill framing and support members. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What is the portion of the floor that is applied directly to the floor joists called? A. bridging B. subfloor C. truss D. web Answer: B

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.02 Name the methods used to fasten sills to the foundation.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or name the methods used to fasten sills to the foundation.
Content Focus	Anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws
Content Limits	The content limits will include, but not be limited to components of naming the methods used to fasten sills to the foundation. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which type of bolt is used to fasten a sill to a foundation? A. anchor bolt B. C-bolt C. straight bolt D. U-bolt Answer: A

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.03 Select the proper girder/beam and joist size from a list, given specific floor load and span data.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or select the proper girder/beam and joist size from a list, given specific floor load and span data.
Content Focus	Girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems
Content Limits	The content limits will include, but not be limited to components of selecting the proper girder/beam and joist size from a list, given specific floor load and span data. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	The term LVL beam is also known as which of the following? A. laminated veneer lumber B. latch vice leveling C. ling volt lining D. lock valve linking Answer: A

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.04 Identify different types of floor joists.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify different types of floor joists.
Content Focus	Open web, light gauge steel, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types
Content Limits	The content limits will include, but not be limited to components of identifying different types of floor joists. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	A joist constructed of steel used in commercial construction projects is called what? A.bar joist B.light gate steel joist C.post joist D.wood joist Answer: A

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.05 Identify different types of bridging.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify different types of bridging.
Content Focus	Bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging
Content Limits	The content limits will include, but not be limited to components of identifying different types of bridging. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What is used to make the floor frame of a structure stiffer and help avoid deflection? A. bridging B. chord C. ductwork D. plate Answer: A

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.06 Identify different types of flooring materials.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify different types of flooring materials.
Content Focus	Plywood flooring, carpet, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials
Content Limits	The content limits will include, but not be limited to components of identifying different types of flooring materials. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which of the following is not a type of flooring material? A. carpet B. linoleum C. shingle D. tile Answer: C

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.07 Explain the purposes of subflooring and underlayment.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or explain the purposes of subflooring and underlayment.
Content Focus	Subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment
Content Limits	The content limits will include, but not be limited to components of explaining the purposes of subflooring and underlayment. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which material is typically an underlayment? A. carpet B. plywood C. tile D. vinyl Answer: B

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.08 Match selected fasteners used in floor framing to their correct uses.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or match selected fasteners used in floor framing to their correct uses.
Content Focus	H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment
Content Limits	The content limits will include, but not be limited to components of matching selected fasteners used in floor framing to their correct uses. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which product is widely used for subflooring in residential construction? A. carpet B. tile C. tongue and groove plywood D. vinyl laminate Answer: C

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.09 Estimate the amount of material needed to frame a floor assembly.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or estimate the amount of material needed to frame a floor assembly.
Content Focus	Material estimate, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities
Content Limits	The content limits will include, but not be limited to components of estimating the amount of material needed to frame a floor assembly. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	A sheet of plywood is 4' x 8'. How many sheets would be needed for subflooring in a room with an area of 320 square feet? A. 1 sheet B. 4 sheets C. 8 sheets D. 32 sheets Answer: C

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.10 Demonstrate the ability to lay out and construct a floor assembly.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or demonstrate the ability to lay out and construct a floor assembly.
Content Focus	Layout and construct floor, floor members, material estimate, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, full sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, material estimate, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities ripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities
Content Limits	The content limits will include, but not be limited to components of demonstrating the ability to lay out and construct a floor assembly. Text and vocabulary will be grade appropriate.

Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Who determines what size girders and joists are used? A. civil engineer B. electrical engineer C. mechanical engineer D. structural engineer Answer: D

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.10 Demonstrate the ability to install bridging.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or demonstrate the ability to install bridging.
Content Focus	Layout and construct floor, floor members, material estimate, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, full sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, material estimate, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities ripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities
Content Limits	The content limits will include, but not be limited to components of demonstrating the ability to install bridging. Text and vocabulary will be grade appropriate.

Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Code requires how many rows of bridging in spans over 8 foot and less than 16 feet in length? A. 1 row B. 8 rows C. 16 rows D. 24 rows Answer: A

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.10 Demonstrate the ability to install joists for a cantilever floor.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or demonstrate the ability to install joists for a cantilever floor.
Content Focus	Install joist, metal joist, bar joist, in beds, cantilever floor install, install bridging, demonstrate installation of bridging, material estimate, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, types of floor joist and beams
Content Limits	The content limits will include, but not be limited to components of demonstrating the ability to install joists for a cantilever floor. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.

Sample Item	What would be an example of a cantilever floor? A. bathroom B. bedroom C. deck D. kitchen Answer: C

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.10 Demonstrate the ability to install a subfloor using butt-joint plywood/OSB panels.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or demonstrate the ability to install a subfloor using butt-joint plywood/OSB panels.
Content Focus	OSB, butt joist, plywood sub floors, install joist, metal joist, bar joist, in beds, cantilever floor install,install bridging, demonstrate installation of bridging, material estimate, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used
Content Limits	The content limits will include, but not be limited to components of demonstrating the ability to install a subfloor using butt-joint plywood/OSB panels Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.

Sample Item	What is tongue-and-groove plywood designed to do at each seam? A. bite B. interlock C. hang D. pinch Answer: B

Standard	11.0 Frame floor systems based on drawing and specification requirements.
Benchmark	11.10 Demonstrate the ability to install a single floor system using tongue-and-groove plywood/OSB panels.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or demonstrate the ability to install a single floor system using tongue-and-groove plywood/OSB panels.
Content Focus	Install a floor system, elevated floor system, elevated concrete floor deck, OSB, butt joist, plywood sub floors, install joist, metal joist, bar joist, in beds, cantilever floor install,install bridging, demonstrate installation of bridging, material estimate, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood
Content Limits	The content limits will include, but not be limited to components of demonstrating the ability to install a single floor system using tongue-and-groove plywood/OSB panels. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.

Sample Item	Structures projecting from the building such as porches and decks are considered what types of floors? A. cantilever floors B. decking C. joist layout D. common floors Answer: A

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.01 Identify the components of a wall and ceiling layout.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify the components of a wall and ceiling layout.
Content Focus	Chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, identify components of the structure
Content Limits	The content limits will include, but not be limited to components of identifying the components of a wall and ceiling layout. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.

Sample Item	What is the frame member that connects to the foundation of a structure called? A. header B. sill plate C. sole plate D. top plate Answer: C

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.02 Lay out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing and firestops.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or lay out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing and firestops.
Content Focus	Frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall
Content Limits	The content limits will include, but not be limited to components of laying out a wood frame wall, including plates, corner posts, door and window openings, partition Ts, bracing and firestops. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.

Sample Item	What do you refer to when you need to determine the rough frame opening of a door? A. door schedule B. header schedule C. window schedule D. yard schedule Answer: A

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.03 Describe the correct procedure for assembling and erecting an exterior wall.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe the correct procedure for assembling and erecting an exterior wall.
Content Focus	Various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering
Content Limits	The content limits will include, but not be limited to components of describing the correct procedure for assembling and erecting an exterior wall. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.

Sample Item	The portion of the wall located between the top plate and sole plate is which frame member? A. header B. joist C. stud D. truss Answer: C

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.04 Identify the common materials and methods used for installing sheathing on walls.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify the common materials and methods used for installing sheathing on walls.
Content Focus	Common materials, sheathing installation, various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering, various types of wall sheathing and wall coverings,
Content Limits	The content limits will include, but not be limited to components of identifying the common materials and methods used for installing sheathing on walls. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.

Sample Item	Carpenters prefer to attach sheathing to a wall when it is what? A. erected B. lying down C. standing up D. vertical Answer: B

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.05 Lay out, assemble, erect and brace exterior walls for a frame building.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or lay out, assemble, erect and brace exterior walls for a frame building.
Content Focus	Brace exterior walls, exterior wall construction, common materials, sheathing installation, various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering, various types of wall sheathing and wall coverings, layout and assemble a wall via demonstration
Content Limits	The content limits will include, but not be limited to components of laying out, assembling, erecting and bracing exterior walls for a frame building. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.

Sample Item	During construction, what must be done to the exterior walls to keep them from blowing over? A. brace B. elevate C. frame D. sheath Answer: A

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.06 Describe wall framing techniques used in masonry construction.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or describe wall framing techniques used in masonry construction.
Content Focus	Truss anchor, header brace, masonry units, in bed placement, brace exterior walls, exterior wall construction, common materials, sheathing installation, various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering, various types of wall sheathing and wall coverings, layout and assemble a wall via demonstration, common masonry construction types,
Content Limits	The content limits will include, but not be limited to components of describing wall framing techniques used in masonry construction. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.

Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What framing material is used to attach Rmax insulation to a masonry wall? A. furring strip B. header C. sill D. truss Answer: A

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.07 Explain the use of metal studs in wall framing.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or explain the use of metal studs in wall framing.
Content Focus	Metal studs, metal stud uses, light gauge steel, steel truss, truss anchor, header brace, masonry units, in bed placement, brace exterior walls, exterior wall construction, common materials, sheathing installation, various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering, various types of wall sheathing and wall coverings, layout and assemble a wall via demonstration, common masonry construction types, steel frame uses and cost effective measures
Content Limits	The content limits will include, but not be limited to components of explaining the use of metal studs in wall framing. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.

Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	What kind of stud is used to replace wooden ones in traditional framing techniques? A. carbon B. metal C. plastic D. steel Answer: B

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.08 Demonstrate correct procedure for laying out ceiling joists.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or demonstrate correct procedure for laying out ceiling joists.
Content Focus	Joist lay out, metal studs, metal stud uses, light gauge steel, steel truss, truss anchor, header brace, masonry units, in bed placement, brace exterior walls, exterior wall construction, common materials, sheathing installation, various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, T's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering, various types of wall sheathing and wall coverings, layout and assemble a wall via demonstration, common masonry construction types, steel frame uses and cost effective measures, demonstrate ceiling joist install
Content Limits	The content limits will include, but not be limited to components of demonstrating correct procedure for laying out ceiling joists. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.

Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	After installing a ceiling joist, which item must be installed to prevent twisting or bowing? A. brace B. header C. strongback D. studs Answer: C

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.09 Cut and install ceiling joists on a wood frame building.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or cut and install ceiling joists on a wood frame building.
Content Focus	Cut and install ceiling joist, frame a building, elements of a framed ceiling, joist lay out, metal studs, metal stud uses, light gauge steel, steel truss, truss anchor, header brace, masonry units, in bed placement, brace exterior walls, exterior wall construction, common materials, sheathing installation, various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering, various types of wall sheathing and wall coverings, layout and assemble a wall via demonstration, common masonry construction types, steel frame uses and cost effective measures, demonstrate ceiling joist install
Content Limits	The content limits will include, but not be limited to components of cutting and installing ceiling joists on a wood frame building. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.

Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	A strongback provides support for the joist at which portion of the span? A. axis B. center C. end D. top Answer: B

Standard	12.0 Frame walls and ceilings based on drawing and specification requirements.
Benchmark	12.10 Estimate the materials required to frame walls and ceilings.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or estimate the materials required to frame walls and ceilings.
Content Focus	Estimate materials for ceilings, cut and install ceiling joist, frame a building, elements of a framed ceiling, joist lay out, metal studs, metal stud uses, light gauge steel, steel truss, truss anchor, header brace, masonry units, in bed placement, brace exterior walls, exterior wall construction, common materials, sheathing installation, various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering, various types of wall sheathing and wall coverings, layout and assemble a wall via demonstration, common masonry construction types, steel frame uses and cost effective measures, demonstrate ceiling joist install, ceiling and wall construction
Content Limits	The content limits will include, but not be limited to components of estimating the materials required to frame walls and ceilings. Text and vocabulary will be grade appropriate.

Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	How many sheets of 4'x10' drywall will it take to complete a ceiling that is 400 square feet? A. 4 sheets B. 10 sheets C. 14 sheets D. 40 sheets Answer: B

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.01 Define the terms associated with roof framing.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or define the terms associated with roof framing.
Content Focus	Estimate materials for ceilings, cut and install ceiling joist, frame a building, elements of a framed ceiling, joist lay out, metal studs, metal stud uses, light gauge steel, steel truss, truss anchor, header brace, masonry units, in bed placement, brace exterior walls, exterior wall construction, common materials, sheathing installation, various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering, various types of wall sheathing and wall coverings, layout and assemble a wall via demonstration, common masonry construction types, steel frame uses and cost effective measures, demonstrate ceiling joist install, ceiling and wall construction
Content Limits	The content limits will include, but not be limited to components of defining the terms associated with roof framing. Text and vocabulary will be grade appropriate.

Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which of the following is not a term associated with roof framing? A. gable B. hip C. sole D. valley Answer: C

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.02 Identify the roof framing members used in gable and hip roofs.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify the roof framing members used in gable and hip roofs.
Content Focus	Gable members, hip roof members, valley, rafters, estimate materials for ceilings, cut and install ceiling joist, frame a building, elements of a framed ceiling, joist lay out, metal studs, metal stud uses, light gauge steel, steel truss, truss anchor, header brace, masonry units, in bed placement, brace exterior walls, exterior wall construction, common materials, sheathing installation, various wall assemblies, erection of walls, exterior wall framing, procedures for framing, frame a wood wall,install corner post, doors and windows, partitions, t's, install fire stops, chalk lines, wall openings, ceiling layout, wall components and ceiling components, demonstrate, sill plates, header plates, board feet, lineal feet, H clips, subfloor, subfloor design, felt underlayment, dry and smooth, drip edge, waterproof underlayment, plywood flooring, tile, vinyl, gypcrete, stamped concrete, stained concrete, bridging, wood cross bridging, solid wood bridging, steel cross bridging, sub floor, half sheet, whole sheet, full sheet, platform, types of joist, braced, balloon, concrete, elevated deck, joist bracing, girder, beams, joist load, glulam, steel I beam, solid beam, laminated beam, LVL beam, supports, column, post caps, post anchors, proper sizing, charts, load calculations, anchor bolts, pins, j bolts, redheads, notching, hangers, anchors, floor framing, support members, subfloor, components of a wall, sill framing, common stud, cripple stud, partition walls, sole plate, rough opening, trimmer stud, header, top plate, rough sill, king stud, blocking, nails, screws, floor systems, types of floor systems, joist hanger types, bridging bracing and types of bridging, types of flooring materials, subfloors and underlayment, floor assembly details and quantities, bridging types and braces used, osb panel installation and clips and hardware used, floor systems using tongue and grooved plywood, components of a wall, exterior wall construction and covering, various types of wall sheathing and wall coverings, layout and assemble a wall via demonstration, common masonry construction types, steel frame uses and cost effective measures, demonstrate ceiling joist install, ceiling and wall construction, framing members in gable and hip roof framing structures.
Content Limits	The content limits will include, but not be limited to components of identifying the roof framing members used in gable and hip roofs. Text and vocabulary will be grade appropriate.

Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which framing member runs from the hip rafters to the top plate? A. hip jack B. hip rafter C. hip joist D. hip plate Answer: A

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.03 Calculate the length of a rafter using various methods.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or calculate the length of a rafter using various methods.
Content Focus	Rafter, splice, top chord, rafter brace, strongback, brace plate, collar beam, truss, angle, gable, hip, speed square, plum cut, bridge cut, tail cut
Content Limits	The content limits will include, but not be limited to components of calculating the length of a rafter using various methods. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which tool is used for laying out a hip rafter? A. level B. ruler C. speed square D. truss gauge Answer: C

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.04 Identify the various types of trusses used in roof framing.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify the various types of trusses used in roof framing.
Content Focus	Truss, single slope, scissor, king post, queen, pratt, howe, double fink, fan, fink, bow string, gambrel, broken pitch, peak, tension web
Content Limits	The content limits will include, but not be limited to components of identifying the various types of trusses used in roof framing. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which is not a type of roof truss? A. common B. hip C. main D. valley Answer: C

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.05 Use a rafter framing square, speed square and calculator in laying out a roof.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or use a rafter framing square, speed square and calculator in laying out a roof.
Content Focus	Rafter, splice, top chord, rafter brace, strongback, brace plate, collar beam, truss, angle, gable, hip, speed square, plum cut, bridge cut, tail cut, rafter framing square
Content Limits	The content limits will include, but not be limited to components of using a rafter framing square, speed square and calculator in laying out a roof. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which item is not needed to lay out a roof? A. calculator B. rafter framing square C. speed square D. transit Answer: D

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.06 Identify various types of sheathing used in roof construction.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or identify various types of sheathing used in roof construction.
Content Focus	OSB plywood, tongue and groove, rafter, splice, top chord, rafter brace, strongback, brace plate, collar beam, truss, angle, gable, hip, speed square, plum cut, bridge cut, tail cut, rafter framing square
Content Limits	The content limits will include, but not be limited to components of identifying various types of sheathing used in roof construction. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which type of framing material is used to sheath a roof? A. ASM B. HTL C. OSB D. TLC Answer: C

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.07 Frame a gable roof with vent openings.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or frame a gable roof with vent openings.
Content Focus	Gable, roof, roofing, vent, opening, top stud, ridge vent, attic vent, vent opening, truss, rafter, sheathing, waterproof, underlayment
Content Limits	The content limits will include, but not be limited to components of framing a gable roof with vent openings. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which type of roof is ridged and enclosed by sloping ends? A. gable B. hip C. mansard D. shed Answer: A

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.08 Frame a roof opening.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or frame a roof opening.
Content Focus	Splice, bottom chord, tension web, slope, gable, roof, roofing, vent, opening, top stud, ridge vent, attic vent, vent opening, truss, rafter, sheathing, waterproof, underlayment
Content Limits	The content limits will include, but not be limited to components of framing a roof opening. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	A framed structure that protrudes or projects out from a sloped roof is called what? A. dormer B. porch C. shed D. valley Answer: A

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.09 Erect a gable roof using trusses.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or erect a gable roof using trusses.
Content Focus	Splice, bottom chord, tension web, slope, gable, roof, roofing, vent, opening, top stud, ridge vent, attic vent, vent opening, truss, rafter, sheathing, waterproof, underlayment
Content Limits	The content limits will include, but not be limited to components of erecting a gable roof using trusses. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	Which term does not identify a member of a truss? A. bottom chord B. heel C. peak D. queen Answer: D

Standard	13.0 Frame a roof based on drawing and specification requirements.
Benchmark	13.10 Estimate the materials used in framing and sheathing a roof.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate knowledge, make observations or estimate the materials used in framing and sheathing a roof.
Content Focus	Estimating, estimate sheathing, splice, bottom chord, tension web, slope, gable, roof, roofing, vent, opening, top stud, ridge vent, attic vent, vent opening, truss, rafter, sheathing, waterproof, underlayment
Content Limits	The content limits will include, but not be limited to components of estimating the materials used in framing and sheathing a roof. Text and vocabulary will be grade appropriate.
Stimulus Attributes	Question stem, vocabulary, video, graphs, diagrams, pictures, performance task, selection, demonstrations and oral explanations via media clips.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, or charts. Student created written responses or computer generated responses may be used.
Sample Item	How many 4' x 8' sheets of sheathing will be required to deck 1600 sf of roof? A. 20 sheets B. 50 sheets C. 100 sheets D. 320 sheets Answer: B