

Carpentry Blueprint

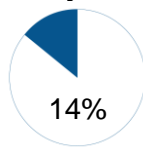
This Blueprint contains the subject matter content for the Career Essentials - Assessment.

Note: To fully prepare for the [Carpentry](#) SkillsUSA Championships contest, refer to the current year's SkillsUSA Championships Technical Standard, now included with your SkillsUSA Professional Membership. If you need help in accessing this benefit, contact the SkillsUSA Customer Care Team at 844-875-4557 or customercare@skillsusa.org.

Standards and Competencies

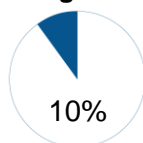
Competencies are weighted throughout the assessment. The percent shown is the weight of the competency. There are 50 questions per assessment.

Safety



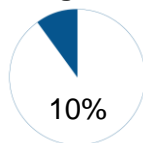
- Identify common causes of construction accidents.
- Explain the role of OSHA and the 10-hour certification.
- Explain fall protection, ladder, stair, and scaffold procedures and requirements.
- Recognize hazard recognition and risk assessment techniques.
- Identify struck-by hazards and demonstrate safe working procedures and requirements.
- Identify caught-in-between hazards and demonstrate safe working procedures and requirements.
- Define safe work procedures to use around electrical hazards.
- Demonstrate the use and care of appropriate personal protective equipment (PPE).
- Explain the importance of hazard communications (HazCom) and Material Safety Data Sheets (MSDSs).
- Identify other construction hazards on your job site, including hazardous material exposures, environmental elements, welding and cutting hazards, confined spaces, and fires.

Using and maintaining hand tools



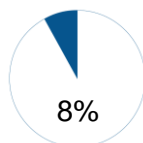
- Recognize and identify some of the basic hand tools and their proper uses in the construction trade.
- Visually inspect hand tools to determine if they are safe to use.
- Safety use hand tools.
- Utilize measurement devices.

Using and maintaining power tools



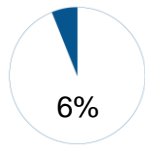
- Identify power tools commonly used in the construction trades.
- Use power tools safely.
- Explain how to maintain power tools properly.

Read and interpret plans and elevations from blueprints



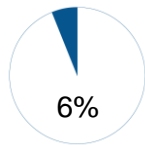
- Recognize and identify basic construction drawing terms, components, and symbols.
- Relate information on construction drawings to actual locations on the print.
- Recognize different classifications of construction drawings.
- Interpret and use drawing dimensions.

Understanding material handling



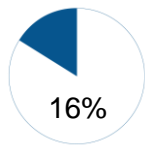
- Use proper materials-handling techniques.
- Choose appropriate materials-handling equipment for the task.
- Recognize hazards and follow safety procedures required for materials handling.

Understand concrete, reinforcing materials, and forms



- Identify the properties and composition of cement and concrete.
- Perform volume estimates for concrete.
- Identify types of concrete reinforcement materials.
- Identify various types of footings and forms.
- Erect, plumb, and brace a simple concrete form with reinforcement.

Identify and understand floor, wall, and ceiling systems



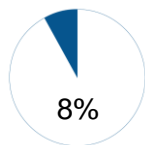
Understand floor systems.

- Read and interpret drawings and specifications to determine floor system requirements.
- Identify floor and sill framing and support members.
- List and recognize different types of floor joists.
- List and recognize different types of bridging.
- List and recognize different types of flooring materials.
- Match selected fasteners used in floor framing to their correct uses.
- Estimate the amount of material needed to frame a floor assembly.
- Demonstrate the ability to lay out and construct a floor assembly.
- Demonstrate the ability to install bridging.
- Demonstrate the ability to install a subfloor using butt-joint and tongue and groove installation techniques.

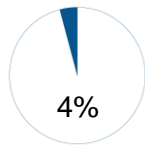
Understand wall and ceiling systems.

- Identify the components of a wall and ceiling layout.
- Describe the procedure for laying out, assembling, erecting, and bracing an exterior wall.
- Identify the common materials and methods used for installing sheathing on walls.
- Identify tools used in the construction of cold formed steel framing.
- Describe the correct procedure for laying out, cutting and installing ceiling joists.

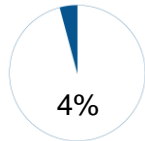
Understand roof framing



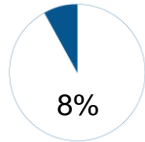
- Understand the terms associated with roof framing.
- Identify the roof framing members used in gable and hip roofs.
- Identify the methods used to calculate the length of the rafter.
- Identify the various types of trusses used in roof framing.
- Demonstrate the usage of a rafter framing square and speed square in laying out a roof.
- Identify various types of sheathing used in roof construction.
- Identify the parts of a common rafter.
- Frame a roof opening.
- Erect a gable roof using trusses.
- Estimate the materials used in framing and sheathing a roof.

Understand exterior finishes

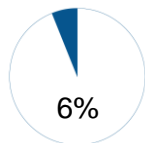
- Describe the purpose of wall insulation and flashing.
- Describe the types and styles of siding.
- Describe the types and styles of veneer finishes.

Understand drywall installation

- Identify the different types of drywall and their uses.
- Measure, cut and install gypsum board.
- Select fasteners for drywall installation.
- Estimate square footage for materials needed in drywall installation.

Understand stair systems

- Identify the types of stairs.
- Identify the various stair parts, including railing.
- Calculate rise and run for stair stringers.
- Layout and cut stringers, risers, and treads.
- Identify the types of material used in stair construction.

Understand the installation of windows and doors

- Identify the styles of doors and windows.
- Identify the parts of a window and door.
- Install a pre-hung door.
- Install a pre-hung window.
- Identify the hardware needed for door installation.
- Identify various types of flashings.

Demonstrate professional development skills in a simulated customer service or employment situation. Examples may include:

- Job interview
- Customer service scenario
- Communications
- Decision making, problem solving and/or critical thinking

Committee Identified Academic Skills

The SkillsUSA national technical committee has identified that the following academic skills are embedded in the carpentry training program and assessment:



Math Skills

- Use fractions to solve practical problems
- Use proportions and ratios to solve practical problems
- Measure angles
- Find surface area and perimeter of two dimensional objects
- Apply transformations (rotate or turn, reflect or flip, translate or slide, and dilate or scale) to geometric figures
- Construct three-dimensional models
- Apply Pythagorean Theorem
- Make comparisons, predictions and inferences using graphs and charts
- Find slope of a line
- Solve practical problems involving complementary, supplementary and congruent angles
- Solve problems involving symmetry and transformation

Science Skills

- Use knowledge of work, force, mechanical advantage, efficiency and power
- Use knowledge of simple machines, compound machines, powered vehicles, rockets and restraining devices

Language Arts Skills

- Provide information in conversations and in group discussions
- Provide information in oral presentations
- Demonstrate use of nonverbal communication skills, such as eye contact, posture and gestures using interviewing techniques to gain information
- Demonstrate comprehension of a variety of informational texts
- Use text structures to aid comprehension
- Identify words and phrases that signal an author's organizational pattern to aid comprehension
- Understand source, viewpoint, and purpose of texts

Connections to National Standards

State-level academic curriculum specialists identified the following connections to national academic standards.

Math Standards

- | | |
|---------------------------------|-------------------|
| • Numbers and operations | • Problem Solving |
| • Geometry | • Communication |
| • Measurement | • Connections |
| • Data analysis and probability | • Representation |

Source: NCTM Principles and Standards for School Mathematics. To view high school standards, visit: <http://www.nctm.org/standards/content.aspx?id=16909>.

Science Standards

- Understands the structure and function of cells and organisms
- Understands relationships among organisms and their physical environment
- Understands the sources and properties of energy
- Understands forces and motion
- Understands the nature of scientific inquiry

Source: McREL compendium of national science standards. To view and search the compendium, visit: www.mcrel.org/standards-benchmarks/.



Language Arts Standards

- Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes
- Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge

Source: IRA/NCTE Standards for the English Language Arts. To view the standards, visit: www.readwritethink.org/standards/index.html.