

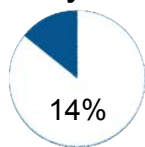
# Carpentry Blueprint

This Blueprint contains the subject matter content of this Skill Connect Assessment. This Blueprint does **NOT** contain the information one would need to fully prepare for a SkillsUSA Championships contest. Please refer to the *SkillsUSA Championships Technical Standards* CD-ROM for the current year or purchase and download the relevant "Contest Singles." Both are available through [www.skillsusa.org](http://www.skillsusa.org) > Shop > Educational Materials Catalog.

## Standards and Competencies

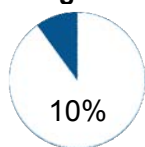
Competencies are weighted throughout the assessment. The percent shown is the weight of the competency. There are 50 questions per assessment.

### Safety



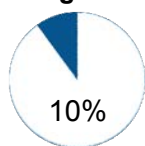
- Identify common causes of construction accidents.
- Explain the role of OSHA and the 10 hour certification.
- Explain fall protection, ladder, stair, and scaffold procedures and requirements.
- Recognize hazard recognition and risk assessment techniques.
- Identify struck-by hazards and demonstrate 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



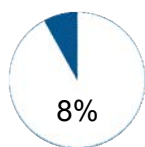
- Recognize and identify some of the basic hand tools and their proper uses in the construction trade.
- Visually inspect hand tools to determine if they are safe to use.
- Safely use hand tools.
- Utilize measurement devices.

### Using and maintaining power tools



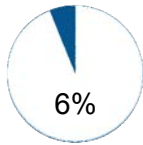
- Identify power tools commonly used in the construction trades.
- Use power tools safely.
- Explain how to maintain power tools properly.

### Read and interpret plans and elevations from blueprints



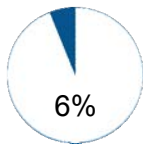
- Recognize and identify basic construction drawing terms, components, and symbols.
- Relate information on construction drawings to actual locations on the print.
- Recognize different classifications of construction drawings.
- Interpret and use drawing dimensions.

### Understanding material handling



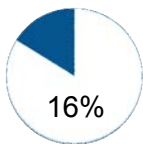
- Use proper materials-handling techniques.
- Choose appropriate materials-handling equipment for the task.
- Recognize hazards and follow safety procedures required for materials handling.

### 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



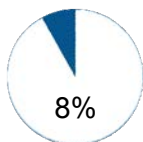
#### Understand floor systems.

- 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.

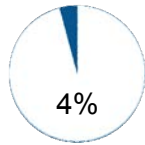
- Identify the components of a wall and ceiling layout.
- Describe the procedure for laying out, assembling, erecting, and bracing an exterior wall.
- Identify the common materials and methods used for installing sheathing on walls.
- Identify tools used in the construction of cold formed steel framing.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

### Understand roof framing



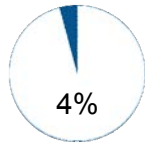
- Understand the terms associated with roof framing.
- Identify the roof framing members used in gable and hip roofs.
- Identify the methods used to calculate the length of the rafter.
- Identify the various types of trusses used in roof framing.
- Demonstrate the usage of a rafter framing square and 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



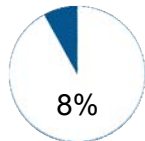
- Describe the purpose of wall insulation and flashing.
- Describe the types and styles of siding.
- Describe the types and styles of veneer finishes.

### Understand drywall installation



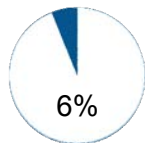
- Identify the different types of drywall and their uses.
- Measure, cut and install gypsum board.
- Select fasteners for drywall installation.
- Estimate square footage for materials needed in drywall installation.

### 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/](http://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](http://www.readwritethink.org/standards/index.html).