Woodworking, Beginning

Exam Information	Description
Exam number **520** **Items** **37** **National Career Cluster** **Construction** **Certification available** **Yes**	The Woodworking, Beginning industry certification exam assesses learners' ability to apply technical knowledge and skills to lay out, shape, assemble, and finish projects. The exam emphasizes craftsmanship, a production sense, and design principles. Learners demonstrate their proficiency in the safe use of a variety of hand tools, power tools, and machinery.

Exam Blueprint and Performance Skills

Standard	Percentage of exam score
1. Safety Practices	10%
2. Explore Careers	4%
3. Basic Math	12%
4. Plan of Procedure	14%
5. Basic Properties of Wood	12%
6. Industry Relevant Machinery	24%
7. Join Wooden Boards	16%
8. Apply Wood Finish	8%

*Includes performance skill evaluation

Standard 1 - Safety Practices (10% of exam score)

Candidates will develop safe woodworking habits

Objective 1 Candidates will be aware of physical hazards present in a woodshop.

1. Sharp objects and cutting hazards.
2. Heavy objects and crushing hazards.
3. Kickback and potentially airborne objects.
4. Moving parts of machinery and applicable safety zones.
5. Excessive noise present in a woodshop.
6. Personal distractions (cell phones, headphones, etc.)

Objective 2 Candidates will be aware of chemical hazards present in a woodshop.

1. Common chemicals found in a woodshop (glue, finish, etc.).
2. Candidates will be aware of the dangers of sawdust.
3. Candidates will know what a Safety Data Sheet (SDS) is and where to find it.

Objective 3 Understand the importance of cleaning and organization in a woodshop and how that relates to safety.

Objective 4 Know what Personal Protective Equipment (PPE) is and when it should be used.

Objective 5 Candidates will be aware of clothing hazards present in a woodshop.

1. Loose or dangling items or pieces (including hair, draw strings, baggy clothing, etc.)
2. Open toed shoes
3. Jewelry

Performance Skill

1. Candidates will complete a basic safety test without errors (100%) before using any tools or equipment.
2. Consult with your school division's risk management department for specific policies or procedures.
3. Candidates will keep woodshops and classrooms clean and organized while working, after completing work, and when storing materials and projects.
4. Candidates will always wear safety glasses inside the woodshop.

Standard 2 - Explore Careers (4%)

Candidates will explore careers in woodworking and manufacturing.

Objective 1 Candidates will understand how this course fits into the Manufacturing Pathway.

Objective 2 Candidates will learn about woodworking jobs and careers in their local area, including how many jobs are available, how much they pay, and what education and training they require.

Objective 3 Candidates will learn about jobs and careers in different fields that use similar skills as the woodworking industry, such as job prospects, wages, and required education.

Objective 4 Learn about higher education opportunities for woodworking.

Standard 3 - Basic Math (12%)

Candidates will gain an understanding of measuring and the basic math needed when building with wood.

Objective 1 Use a measuring tape or ruler to make accurate measurements with 1/16 of an inch

Objective 2 Perform common, simple math calculations used in woodworking.

1. Candidates will be able to add, subtract, multiply, and divide whole numbers, mixed numbers, fractions, and decimals.
2. Candidates will be able to reduce fractions.
3. Candidates will be able to convert fractions to decimals.

Standard 4 - Plan of Procedure (14%)

Objective 1 Read, interpret, and understand scale drawings.

Objective 2 Read, interpret, and material lists and cut lists.

Objective 3 Read, interpret, understand, and follow a plan of procedure.

Performance Skill

1. Candidates can correctly identify the thickness, width, and length of a board from a cut list. (T”xW”xL”)
2. Candidates can determine the dimensions of a board based on a scale drawing.
3. Candidates can accurately follow a plan of procedure

Standard 5 - Basic Properties of Wood (12%)

Candidates will understand the basic properties of wood and how and why they must be considered when building with wood.

Objective 1 Understand wood grain.

1. Identify the face, edge, and end of a board.
2. Determine the thickness, width, and length of a board relative to the grain direction.

Objective 2 Identify common defects found in wood and how to use or mitigate them

1. Knots
2. Cracks
3. Bark inclusions
4. Warping

Objective 3 Differentiate between solid wood and sheet goods.

Objective 4 Understand wood movement and how it affects the way things are built.

Standard 6 - Industry Relevant Machinery (24%)

Candidates will learn how to process wood using industry relevant machinery

Objective 1 Identify and safely use equipment that is commonly used in the woodworking industry. (See Common Tools List)

1. Identify hand tools commonly used in the woodworking industry.
2. Identify clamps commonly used in the woodworking industry.
3. Identify handheld electric and pneumatic power tools commonly used in the woodworking industry.
4. Identify machinery commonly used in the woodworking industry.

Objective 2 Outline the necessary steps to get a rough board to its final dimensions.

Performance Skills

1. Candidates can safely use hand tools commonly used in the woodworking industry.
2. Candidates can properly use clamps commonly used in the woodworking industry.
3. Candidates can safely use handheld electric and pneumatic power tools commonly used in the woodworking industry.
4. Candidates can safely use machinery commonly used in the woodworking industry.
5. Candidates can mill a piece of lumber to final thickness, width, and length while making every surface 90 degrees to its adjacent surfaces.
6. Candidates can perform the following actions on a CNC:
    a. Position and secure the workpiece to the CNC work surface.
    b. Load a program into the controller.
    c. Confirm settings and proper tooling.
    d. Successfully run a program

Standard 7 - Join Wooden Boards (16%)

Candidates will learn basic ways to join wooden boards together

Objective 1 Identify the following joints:

1. Butt joint (including reinforced)
2. Dado Joint
3. Rebbet Joint

Objective 2 Understand the elements necessary for a strong glue joint.

1. Flat, smooth surfaces

2. Appropriate pressure
3. Appropriate type and amount of glue
4. Proper set and cure time

Objective 3 Understand the difference between working time, setting, and curing.

Objective 4 Identify common adhesives used in woodworking and their applications:

1. PVA Glue (wood glue)
2. Cyanoacrylate (CA glue)
3. Epoxy

Objective 5 Identify common fasteners used to join wood together and their applications.

1. Nails
2. Screws

Performance Skills

1. Candidates can join two or more boards together using each of the joints listed:
    a. Butt (including reinforced)
    b. Dado
2. Rabbet
3. Candidates can join two or more boards together using the correct type of glue for the application. The glue line should be as invisible as possible.
4. Candidates can use fasteners listed:
    a. Nails
    b. Screws

Standard 8 - Apply Wood Finish (8%)

Candidates will learn how to prepare for and apply wood finish.

Objective 1 Understand what sandpaper grit numbering means: higher number = finer finish.

Objective 2 Understand the difference between a film finish and a penetrating finish.

Objective 3 Understand the difference between drying and curing.

Performance Skill

1. Candidates can properly prepare a surface for a finish.
2. Candidates can properly apply a film finish or penetrating finish.

Common Tools List

Measuring & Marking Tools	Clamps	Bits and Drivers	Hand Tools	Power Tools	Machines
Tape Measure Calipers Combination Square Framing Square Tri-Square Scratch Awl Center Punch	Bar Clamp Handscrew Clamp C Clamp Spring Clamp Countersink	Phillips Driver Flathead Driver Square Driver Star Driver (Torx Forstner Bit Twist Bit Mallet Hole Saw	Hand Saw Claw Hammer Dead Blow Rubber Mallet Chisel Glue Scraper Nail Set Screwdriver Spoke Shave Wood File Wood Rasp Hand Plane Cabinet Scraper Pocket Hole Jig	Router Drill Driver Random Orbit Sander Finish Sander Brad Nail Gun Pin Nail Gun Staple Gun Jig Saw Oscillating Tool Belt Sander Biscuit Joiner Finish Sprayer	Upcut Saw Jointer Surface Planer Wide Belt Sander Table Saw Miter Saw Band Saw Panel Saw Horizontal Belt Sander Spindle Sander Drill Press CNC Router Shaper Disc Sander Lathe Mortiser Router Table CNC Laser Edge Bander

Performance Skills Evaluation

Exam name: Woodworking, Beginning

Candidate Name: _____

Performance assessments may be completed and evaluated any time before the certification is issued. The following performance skills can be used in connection with the associated standards and exam. The evaluator will function as the subject matter expert to determine if the candidate meets the skills requirements with a Yes/No for passing.

• Complete a woodworking project that demonstrates the use of woodworking tools, machinery, basic joinery, adhesive, and finishing techniques. • Use a CNC machine to apply a simple design to a wood surface. • Demonstrate practice of the Technology & Engineering Professional Workplace Skills. • Participate in a significant activity that provides each candidate with an opportunity to render service to others, employ leadership skills, or demonstrate skills they have learned through this course, preferably through participation in a Career & Technical Student Organization (CTSO) such as SkillsUSA.	**Pass:**

Evaluator Name: _____

Date: _____