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Red Seal Occupational Standard

Cabinetmaker

INTERPROVINCIAL STANDARD
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RED SEAL OCCUPATIONAL STANDARD

CABINETMAKER

Title: Cabinetmaker

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PDF
Cat. No.: Em15-3/37-2022E-PDF
ISBN/ISSN: 978-0-660-44580-9

FOREWORD

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this Red Seal Occupational Standard (RSOS) as the Red Seal standard for the Cabinetmaker trade.

Background

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. Employment and Social Development Canada (ESDC) sponsors the Red Seal Program, which, under the guidance of the CCDA, develops a national occupational standard for each of the Red Seal trades.

Standards have the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed in every province and territory;
- to develop instruments for use in the preparation of Interprovincial Red Seal Examinations and assessment tools for apprenticeship and certification authorities;
- to develop common tools for apprenticeship on-the-job and technical training in Canada;
- to facilitate the mobility of apprentices and skilled workers in Canada;
- to supply employers, employees, associations, industries, training institutions and governments with occupational standards.

Any questions, comments, or suggestions for changes, corrections, or revisions to this standard or any of its related products may be forwarded to:

Trades and Apprenticeship Division
Apprenticeship and Sectoral Initiatives Directorate
Employment and Social Development Canada
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ACKNOWLEDGEMENTS

The CCDA and ESDC wish to express sincere appreciation for the contribution of the many tradespersons, industrial establishments, professional associations, labour organizations, provincial and territorial government departments and agencies, and all others who contributed to this publication.

Special thanks are offered to the following representatives who contributed greatly to the original draft of the standard and provided expert advice throughout its development:

Steve Bader	Ontario
Justin Bennett	Newfoundland and Labrador
Todd Birtwhistle	Manitoba
Jeremy Burrill	New Brunswick
Roger Cloutier	Alberta
Norm Falk	Manitoba
Kyle Karlstedt	British Columbia
Rob Taylor	Nova Scotia
Kelly Tompkins	Newfoundland and Labrador
Mark Whitman	Architectural Woodwork Manufacturers Association of Canada (AWMAC)

This standard was prepared by the Apprenticeship and Sectoral Initiatives Directorate of ESDC. The coordinating, facilitating and processing of this standard were undertaken by employees of the standards development team of the Trades and Apprenticeship Division and of Alberta, the host jurisdiction for this trade.

STRUCTURE OF THE OCCUPATIONAL STANDARD

This standard contains the following sections:

Methodology: an overview of the process for development, review, validation and weighting of the standard

Description of the Cabinetmaker trade: an overview of the trade's duties, work environment, job requirements, similar occupations and career progression

Trends in the Cabinetmaker trade: some of the trends identified by industry as being the most important for workers in this trade

Essential Skills Summary: an overview of how each of the nine essential skills is applied in this trade

Roles and Opportunities for Skilled Trades in a Sustainable Future: an overarching description of how in the context of climate change, skilled trades play a large role in implementing solutions and adjusting to changes in the world. In addition to highlighting the importance of this awareness, the standard may also contain more details on activities, skills and knowledge elements that are specific to the trade

Industry Expected Performance: description of the expectations regarding the level of performance of the tasks, including information related to specific codes, regulations and standards that must be observed

Language Requirements: description of the language requirements for working and studying in this trade in Canada

Pie Chart of Red Seal Examination Weightings: a graph which depicts the national percentages of exam questions assigned to the major work activities

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard

Harmonization of Apprenticeship Training: the aspects of apprenticeship training that participating provinces and territories have agreed upon to substantively align apprenticeship systems across Canada

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities

Task: distinct actions that describe the activities within a major work activity

Task Descriptor: a general description of the task

Sub-task: distinct actions that describe the activities within a task

Skills:

Performance Criteria: description of the activities that are done as the sub-task is performed

Evidence of Attainment: proof that the activities of the sub-task meet the expected performance of a tradesperson who has reached journeyperson level

Knowledge:

Learning Outcomes: describes what should be learned relating to a sub-task while participating in technical or in-school training

Learning Objectives: topics to be covered during technical or in-school training in order to meet the learning outcomes for the sub-task

Range of Variables: elements that provide a more in-depth description of a term used in the performance criteria, evidence of attainment, learning outcomes, or learning objectives

Appendix A – Acronyms: a list of acronyms used in the standard with their full name

Appendix B – Tools and Equipment / Outils et équipement: a non-exhaustive list of tools and equipment used in this trade

Appendix C – Glossary / Glossaire: definitions or explanations of selected technical terms used in the standard

METHODOLOGY

Development of the Standard

A draft standard is developed by a broad group of trade representatives, including tradespeople, instructors and employers at a National Workshop led by a team of facilitators. This draft standard breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade.

Harmonization of Apprenticeship Training

An analysis of all provinces' and territories' apprenticeship programs is performed and recommendations are made on harmonizing the name of the trade, the hours of training required and the number of levels of training. Provinces and territories consult with their respective industry stakeholders on these elements and revisions are discussed until consensus is reached. Following the development of the workshop draft of the RSOS, participants discuss and come to consensus on the sequence of training topics, as expressed in the new standard. Their sequencing recommendations are reviewed by stakeholders in participating provinces and territories and further discussions are convened to reach consensus and to identify any exceptions.

Online Survey

The draft standard is made available to stakeholders to review and validate the activities described in it. These stakeholders are invited to participate in this consultation through apprenticeship authorities, as well as national stakeholder groups.

Draft Review

The RSOS development team forwards a copy of the standard and its translation to provincial and territorial authorities who consult with industry representatives to review it. Their recommendations are assessed and incorporated into the standard.

Validation and Weighting

Participating provinces and territories also consult with industry to validate and weight the document for the purpose of planning the makeup of the Red Seal Interprovincial Examination for the trade. They validate and weight the major work activities (MWA), tasks and sub-tasks, of the standard as follows:

MWA	Each jurisdiction assigns a percentage of questions to each MWA for an examination that would cover the entire trade.
TASKS	Each jurisdiction assigns a percentage of exam questions to each task within a MWA.
SUB-TASKS	Each jurisdiction indicates, with a YES or NO, whether or not each sub-task is performed by skilled workers within the occupation in its jurisdiction.

The results of this exercise are submitted to the RSOS development team who then analyzes the data and incorporates it into the document. The RSOS provides the individual jurisdictional validation results as well as the national averages of all responses. The national averages for MWA and task weighting guide the Interprovincial Red Seal Examination plan for the trade.

The validation of the RSOS is used to identify common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions' industry performs a sub-task, it shall be considered common core. Interprovincial Red Seal Examination questions are limited to the common core sub-tasks identified through this validation process.

Definitions for Validation and Weighting

YES	sub-task performed by qualified workers in the occupation in that province or territory
NO	sub-task not performed by qualified workers in the occupation in that province or territory
NV	standard Not Validated by that province or territory
ND	trade Not Designated in a province or territory
NOT COMMON CORE (NCC)	sub-task, task or MWA performed less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
NATIONAL AVERAGE %	average percentage of questions assigned to each MWA and task in Interprovincial Red Seal Examination for the trade

Provincial/Territorial Abbreviations

NL	Newfoundland and Labrador
NS	Nova Scotia
PE	Prince Edward Island
NB	New Brunswick
QC	Quebec
ON	Ontario
MB	Manitoba
SK	Saskatchewan
AB	Alberta
BC	British Columbia
NT	Northwest Territories
YT	Yukon Territory
NU	Nunavut

DESCRIPTION OF THE CABINETMAKER TRADE

"**Cabinetmaker**" is this trade's official Red Seal occupational title approved by the CCDA. This standard covers tasks performed by cabinetmakers.

Cabinetmakers build, repair, finish and install residential and commercial cabinets (including hardware), wooden furniture and architectural millwork using a variety of woods, laminates and other products. Cabinetmakers read drawings and specifications, and prepare layouts. They also set up and operate woodworking equipment, both power and computerized, to machine wood products and composite materials. Cabinetmakers use various hand and power tools, and precision woodworking tools to perform their work. In some shops, cabinetmakers sand and finish the surfaces either before or after assembly. They also apply finishing products.

Cabinetmakers are employed by millwork contractors, general contractors, and kitchen, cabinet and furniture manufacturers. They may also be self-employed. The products they produce may be production or custom-made pieces. Production pieces are made in large quantities and according to a standard design. Custom-made pieces are often from one-of-a-kind designs and are not mass-produced. Some cabinetmakers specialize in a specific type of product, such as custom-made furniture, stairs or cabinet doors. In some cabinetmaking shops using high-tech, computer-controlled equipment, cabinetmakers may specialize in one or two functions. A working knowledge of the design principles, functional requirements, and traditions associated with furniture building is also advantageous in many areas of the cabinetmaker trade.

Cabinetmakers primarily work in a shop environment, but they may also work at locations where the products are installed. While the working environment varies according to employers and locations, cabinetmakers are often exposed to workplace health and safety risks such as high noise levels, sawdust and chemicals. There are risks of injury involved in working with woodworking machinery, portable power tools and hand tools.

Key attributes for people in this trade are good eye-hand coordination, manual dexterity, mathematical aptitude and good conceptual skills. Cabinetmakers require a high degree of accuracy, and good eyesight to select woods and look for imperfections. The work may require lifting of heavy materials.

This standard recognizes similarities or overlaps with the work of carpenters, and painters and decorators.

With experience, cabinetmakers may act as mentors and trainers to apprentices in the trade. They may advance to supervisory or design positions or may set up their own shop. Some may choose to specialize in areas such as stairs, veneering or finishing.

TRENDS IN THE CABINETMAKER TRADE

Cabinetmakers must continuously adapt to changing trends, product demands and processes that are introduced by the market-driven industry.

Products and Materials

There are a large and growing variety of specialty materials that are used in the cabinetmaker trade. These include metals, plastics, acrylics, phenolics, vinyls, glass, and poured epoxies. Working with these materials requires specialized skills and knowledge. The great variety of materials used in this trade requires adaptability and continual learning and transferring of cabinetmakers' skillset.

Reclaimed, recycled and sustainable materials are used more and more in the trade, sometimes requiring more specific knowledge.

Tools, Equipment and Technology

New technology is being utilized in spraying methods, such as robotic and automated spraying systems. As such, some cabinetmakers are learning these automated tool skills, though in many cases, spraying work may be contracted to specialized finishing shops or departments.

3D room scanning technologies are being used to install products in a more efficient manner.

Cabinetmakers need to have an increasing knowledge of programing skills to run automated equipment and software.

Safety and Environmental

Water-borne finishing materials have been developed which are less hazardous to human health and the environment than in the past. They have fewer VOCs and require less hazardous materials for cleaning. They tend to be manufactured in "green" facilities.

LEED specifications are becoming more common in large projects.

Safety certification requirements including documentation are being stringently required to ensure employee safety.

ESSENTIAL SKILLS SUMMARY

Essential skills are needed for work, learning and life. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change.

Through extensive research, the Government of Canada and other national and international agencies have identified and validated nine essential skills. These skills are used in nearly every occupation and throughout daily life in different ways.

READING

Cabinetmakers use reading skills to read manuals, instructions and details of job specifications such as material lists. They read health and safety materials and WHMIS documents, in order to maintain a safe work environment.

DOCUMENT USE

Documents that cabinetmakers work with include material lists, instructions and work orders. They may also consult and interpret drawings and sketches. They complete checklists relating to safety precautions.

WRITING

Cabinetmakers write lists of materials and instructions. They may write notes to keep records of job specifications for themselves, others and clients. They prepare layouts and shop sketches to guide assembly and installation.

ORAL COMMUNICATION

Cabinetmakers use oral communication skills to discuss job details with colleagues, apprentices and clients. They also coordinate work with other trades.

NUMERACY

Cabinetmakers use numeracy skills to accurately measure and calculate required building material. They may also estimate time, labour and skill set for a project. The ability to perform unit conversions and to convert between imperial and metric measurements is important. The knowledge of basic geometry is essential.

THINKING

Problem solving skills are used by cabinetmakers to anticipate and deal with situations such as materials arriving damaged or unplanned machinery breakdowns. They also problem solve when they need to create a custom piece. Cabinetmakers use their decision-making skills when dealing with various issues such as work priorities and procedures. Cabinetmakers plan and organize jobs. They must recall standard measurements, stock numbers of commonly used materials and standard allowances for openings.

WORKING WITH OTHERS

Cabinetmakers may work independently or with others. They coordinate their work with other workers on-site including apprentices, journeypersons, supervisors and workers from other trades depending on the size of the work site and the type of work.

DIGITAL TECHNOLOGY

Computer-aided design (CAD) software is often used by cabinetmakers for specifications and drawings. Computer-aided manufacturing (CAM) software may be used for controlling machinery and machine tools to produce work pieces. Cabinetmakers may also work with computer numerical control (CNC) machines. They may use computers or digital devices to conduct research on a product or to communicate in a production environment. They may use word processing and spreadsheet software to assist with regular work activities.

CONTINUOUS LEARNING

There is an ongoing requirement to learn and gain experience while working as a cabinetmaker. Applications, materials and processes are continually changing and skills need to be kept up-to-date. Certification courses are also available to authorize cabinetmakers to use and install certain types of products.

Roles and Opportunities for Skilled Trades in a Sustainable Future

Climate change affects all of us. Trades play a large role in implementing solutions and adjusting to changes in the world.

Throughout this standard, there may be specific references to tasks, skills and knowledge that clearly show this trade's role in a more sustainable future. Each trade has different roles to play and contributions to make in their own way.

For example:

- Construction tradespeople need to consider the materials they are using, building methods, and improvements to mechanical and electrical installations. There are important changes to codes and standards to help meet the climate change goals and commitments set for 2030 and 2050. Retrofits and new construction of low-energy buildings provide enormous opportunities for workers in this sector. Concepts, such as energy efficiency and regarding buildings as systems are foundational.

- Automotive and mechanical trades are seeing a shift towards the electrification of vehicles and equipment. As a result, new skills and knowledge will be required for tradespeople working in this sector. There are mandates for sales of new light-duty zero-emission vehicles (ZEV) in Canada, with the goal of achieving 100% ZEV sales by 2035. Due to this mandate, the demand for these vehicles is growing quickly among consumers and fleets. With this escalating demand, the need for skilled workers to maintain and repair these vehicles is also increasing.

- In industrial and resource sectors, there is pressure to move towards increased electrification of industrial processes. Many industrial and commercial facilities are also being upgraded to improve energy efficiency in areas such as lighting systems, and new production processes and technologies. There are also opportunities in carbon capture, utilization and storage (CCUS), as well as the production and export of low-carbon hydrogen.

- Trades in the service sector may also need to be aware of responsible sourcing, as well as efficient use of products and materials. New ways of working better are always a part of the job.

There are fast-moving changes in guidelines, codes, regulations and specifications. Many are being implemented for the purpose of energy efficiency and climate change. Those that affect specific trades may be mentioned within the standard. Examples of these guidelines and legislation include:

- The National Energy Code of Canada for Buildings (NECB).

- The Canadian Net-Zero Emissions Accountability Act (CNZEAA).

- programs that encourage sustainable building design and construction such as Leadership in Energy and Environmental Design (LEED) and the Zero Carbon Building (ZCB) standards.

- the Montreal Protocol for phasing out R22 refrigerants.

- energy efficiency programs such as ENERGY STAR.

- principles of the United Nations Declaration for the Rights of Indigenous Peoples pertaining to energy sector development.

Apprentices and tradespeople need to increase their climate literacy and reinforce their own understanding of energy issues and environmental practices. It is important for them to understand why these changes are happening and their effect on trades' work. While individual tradespeople and apprentices may not be able to choose certain elements like; the architectural design of buildings, building material selection, regulatory requirements, use of electric vehicles and technologies, they must understand the impact of using these elements in their work. Impacts include using environmentally friendly products and following requirements related to the disposal and recycling of materials.

In apprenticeship, as well as in ongoing professional development, employers and instructors should encourage learning about these concepts, why they are important, how they are implemented, and the overarching targets they are aiming to achieve.

All in all, it's about doing the work better and building a better world.

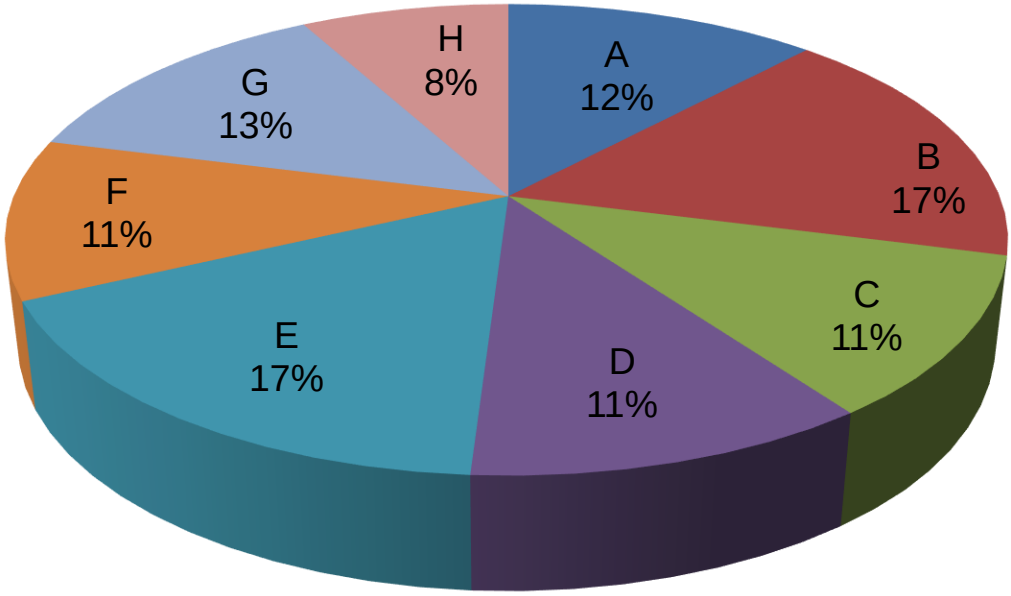
INDUSTRY EXPECTED PERFORMANCE

All tasks must be performed according to the applicable jurisdictional codes and industry standards. All health and safety standards must be respected and observed. Work should be done efficiently and to a high quality without material waste or environmental damage. All requirements of employers, designers, manufacturers, clients and quality control policies must be met. At a journeyperson level of performance, all tasks must be done with minimal direction and supervision. As a journeyperson progresses in their career there is an expectation they continue to upgrade their skills and knowledge to maintain pace with industry and promote continuous learning in their trade through mentoring of apprentices.

LANGUAGE REQUIREMENTS

It is expected that journeypersons are able to understand and communicate in either English or French, which are Canada's official languages. English or French are the common languages of business as well as languages of instruction in apprenticeship programs.

PIE CHART
OF RED SEAL EXAMINATION WEIGHTINGS



MWA A	Performs common occupational skills	12%
MWA B	Performs machining	17%
MWA C	Performs forming and laminating	11%
MWA D	Installs veneers and laminates	11%
MWA E	Performs shop assembly	17%
MWA F	Performs finishing	11%
MWA G	Performs on-site assembly and installation	13%
MWA H	Performs specialized operations	8%

This pie chart represents a breakdown of the interprovincial Red Seal examination. Percentages are based on the collective input from workers from the trade from across Canada. The Task Matrix on the next pages indicates the breakdown of tasks and sub-tasks within each Major Work Activity and the breakdown of questions assigned to the Tasks. The Interprovincial examination for this trade has 120 questions.

Cabinetmaker

TASK MATRIX

A – Performs common occupational skills — 12%

Task A-1 Performs safety-related functions 15%	A-1.01 Maintains safe work environment	A-1.02 Uses personal protective equipment (PPE) and safety equipment	
Task A-2 Maintains tools and equipment 19%	A-2.01 Maintains hand, portable power and pneumatic tools and equipment	A-2.02 Maintains stationary power tools	A-2.03 Maintains automated and computer numerical control (CNC) equipment
	A-2.04 Maintains finishing equipment		
Task A-3 Organizes work 26%	A-3.01 Interprets prints and drawings	A-3.02 Plans project	A-3.03 Creates design
	A-3.04 Performs layout of cabinets, furniture and architectural millwork		
Task A-4 Performs routine work practices 26%	A-4.01 Handles materials, supplies and products	A-4.02 Fabricates jigs and templates	A-4.03 Builds prototypes
	A-4.04 Dry-fits components	A-4.05 Selects hardware	A-4.06 Selects adhesives and fasteners
Task A-5 Uses communication and mentoring techniques 14%	A-5.01 Uses communication techniques	A-5.02 Uses mentoring techniques	

B – Performs machining 17%

Task B-6 **Machines components using stationary and portable power tools** **72%**	**B-6.01 Breaks out solid wood**	**B-6.02 Dresses solid wood**	**B-6.03 Shapes solid wood**
	B-6.04 Breaks out sheet materials	**B-6.05 Machines sheet materials**	**B-6.06 Machines joints**
	B-6.07 Performs preliminary sanding		
Task B-7 **Machines components using automated and CNC equipment** **28%**	**B-7.01 Sets up automated and CNC equipment**	**B-7.02 Operates automated and CNC equipment**	

C – Performs forming and laminating 11%

Task C-8 **Creates curved components using wood and composite materials** **44%**	**C-8.01 Builds forms**	**C-8.02 Performs curved laminating**	**C-8.03 Steam-forms wood**
Task C-9 **Laminates wood and composite materials** **56%**	**C-9.01 Arranges materials for laminating**	**C-9.02 Applies adhesive for laminating**	**C-9.03 Clamps pieces together**

D – Installs veneers and laminates — 11%

Task D-10 **Applies veneers** **50%**	**D-10.01 Selects veneers**	**D-10.02 Prepares veneer and substrate**	**D-10.03 Adheres veneers to substrates**
	D-10.04 Performs final clean-up of veneered panels		
Task D-11 **Applies laminate sheets** **50%**	**D-11.01 Selects laminate sheets**	**D-11.02 Prepares laminate sheets and substrate**	**D-11.03 Adheres laminate sheets to substrate**
	D-11.04 Performs final clean-up of laminated sheets		

E – Performs shop assembly — 17%

Task E-12 **Assembles cabinets and furniture** **54%**	**E-12.01 Assembles cabinet components**	**E-12.02 Assembles furniture components**	**E-12.03 Combines cabinet and furniture components into final assemblies**
Task E-13 **Assembles architectural millwork products** **46%**	**E-13.01 Assembles architectural millwork components in shop**	**E-13.02 Assembles architectural fixtures in shop**	

F – Performs finishing 11%

Task F-14 **Prepares surface for finishing** **51%**	**F-14.01 Repairs imperfections**	**F-14.02 Prepares parts for finishing**	**F-14.03 Performs final sanding of surfaces**
Task F-15 **Finishes wood products** **49%**	**F-15.01 Prepares finishing materials**	**F-15.02 Applies finishing material manually**	**F-15.03 Sprays on finishing material**

G – Performs on-site assembly and installation 13%

Task G-16 **Modifies products to site conditions** **30%**	**G-16.01 Cuts access holes on site**	**G-16.02 Scribes product to fit on site**	
Task G-17 **Installs cabinets and countertops** **38%**	**G-17.01 Performs final on-site assembly and fastening of cabinets and countertops**	**G-17.02 Finalizes installation of cabinets and countertops**	
Task G-18 **Installs architectural millwork products and mouldings** **32%**	**G-18.01 Performs final on-site assembly and fastening of architectural millwork products**	**G-18.02 Installs mouldings**	**G-18.03 Finalizes installation of architectural millwork products and mouldings**

H – Performs specialized operations

8%

Task H-19 **Builds stairs and balustrades** **32%**	**H-19.01 Lays out stair and balustrade components**	**H-19.02 Machines stair and balustrade components**	**H-19.03 Assembles stairs and balustrades**
	H-19.04 Installs stairs and balustrades		
Task H-20 **Works with solid surface material and custom countertops** **36%**	**H-20.01 Breaks out materials**	**H-20.02 Fabricates solid surface material**	**H-20.03 Installs solid surface material**
Task H-21 **Creates decorative woodwork** **20%**	**H-21.01 Performs marquetry (NOT COMMON CORE)**	**H-21.02 Performs carving (NOT COMMON CORE)**	**H-21.03 Performs woodturning**
Task H-22 **Restores woodwork** **12%**	**H-22.01 Repairs woodwork for restoration purposes**	**H-22.02 Refinishes woodwork**	

HARMONIZATION OF APPRENTICESHIP TRAINING

Provincial and territorial apprenticeship authorities are each responsible for their respective apprenticeship programs. In the spirit of continual improvement, and to facilitate mobility among apprentices in Canada, participating authorities have agreed to work towards harmonizing certain aspects of their programs where possible. After consulting with their stakeholders in the trade, they have reached consensus on the following elements. Note that implementation of these elements may vary from jurisdiction to jurisdiction, depending on their own circumstances. For more information on the implementation in any province and territory, please contact that jurisdiction's apprenticeship authority.

1. Trade name

The official Red Seal name for this trade is Cabinetmaker.

2. Number of Levels of Apprenticeship

The number of levels of technical training recommended for this trade is 4.

3. Total Training Hours During Apprenticeship Training

The total hours of training, including both on-the-job and in-school training for this trade is 7200.

4.Sequencing Topics and Related Subtasks

These topic titles in the table below are placed in a column for each apprenticeship level for technical training. Each topic is accompanied by the subtasks and their reference number. The topics in the grey shaded cells represent those that are covered "in context" with other training in these subsequent years.

Level 1	Level 2	Level 3	Level 4
	Context	Context	Context
	Safety-Related Functions	Safety-Related Functions	Safety-Related Functions
	Tools and Equipment		
	Organizes Work	Organizes Work	Organizes Work
			Routine Work Practices
	Surface Preparation	Surface Preparation	Surface Preparation
	Stationary and Portable Power Tools (Machines Components)	Stationary and Portable Power Tools (Machines Components)	Stationary and Portable Power Tools (Machines Components)

Level 1	Level 2	Level 3	Level 4
Safety-Related Functions 1.01 Maintains safe work environment 1.02 Uses personal protective equipment (PPE) and safety equipment			
Tools and Equipment 2.01 Maintains hand, portable power and pneumatic tools and equipment 2.02 Maintains stationary power tools		**Tools and Equipment** 2.03 Maintains automated and CNC equipment 2.04 Maintains finishing equipment	**Tools and Equipment** 2.03 Maintains automated and CNC equipment 2.04 Maintains finishing equipment
Organizes Work 3.01 Interprets prints and drawings 3.02 Plans project 3.03 Creates design 3.04 Performs layout of cabinets, furniture and architectural millwork			
Routine Work Practices 4.01 Handles materials, supplies and products 4.04 Dry-fits components 4.05 Selects hardware 4.06 Selects adhesives and fasteners	**Routine Work Practices** 4.02 Fabricates jigs and templates 4.04 Dry-fits components 4.05 Selects hardware	**Routine Work Practices** 4.02 Fabricates jigs and templates 4.03 Builds prototypes	
Communication Techniques 5.01 Uses communication techniques			**Mentoring Techniques** 5.02 Uses mentoring techniques

Level 1	Level 2	Level 3	Level 4
Stationary and Portable Power Tools (Machine Components) 6.01 Breaks out solid wood 6.02 Dresses solid wood 6.03 Shapes solid wood 6.04 Breaks out sheet materials 6.05 Machines sheet materials 6.06 Machines joints 6.07 Performs preliminary sanding			
		Automated and CNC Equipment (Machine Components) 7.01 Sets up automated and CNC equipment 7.02 Operates automated and CNC equipment	**Automated and CNC Equipment (Machine Components)** 7.01 Sets up automated and CNC equipment 7.02 Operates automated and CNC equipment
		Curved Components 8.01 Builds forms 8.02 Performs curved laminating 8.03 Steam-forms wood	**Curved Components** 8.01 Builds forms 8.02 Performs curved laminating 8.03 Steam-forms wood
Wood and Composite Materials (Laminating) 9.01 Arranges materials for laminating 9.02 Applies adhesive for laminating 9.03 Clamps pieces together	**Wood and Composite Materials (Laminating)** 9.01 Arranges materials for laminating 9.02 Applies adhesive for laminating 9.03 Clamps pieces together		
		Veneer (Application) 10.01 Selects veneers 10.02 Prepares veneer and substrate 10.03 Adheres veneers to substrates 10.04 Performs final clean-up of laminated sheets	**Veneer (Application)** 10.03 Adheres veneers to substrates 10.04 Performs final clean-up of laminated sheets

Level 1	Level 2	Level 3	Level 4
Laminate Sheets (Application) 11.01 Selects laminate sheets 11.02 Prepares laminate sheets and substrate	**Laminate Sheets (Application)** 11.01 Selects laminate sheets 11.02 Prepares laminate sheets and substrate 11.03 Adheres laminate sheets to substrate 11.04 Performs final clean-up of laminated sheets		
Cabinets and Furniture (Assembly) 12.01 Assembles cabinet components 12.02 Assembles furniture components 12.03 Combines cabinet and furniture components into final assemblies	**Cabinets and Furniture (Assembly)** 12.01 Assembles cabinet components 12.02 Assembles furniture components 12.03 Combines cabinet and furniture components into final assemblies	**Cabinets and Furniture (Assembly)** 12.01 Assembles cabinet components 12.02 Assembles furniture components 12.03 Combines cabinet and furniture components into final assemblies	
			Architectural Millwork Products 13.01 Assembles architectural millwork components in shop 13.02 Assembles architectural fixtures in shop
Surface Preparation 14.01 Repairs imperfections 14.02 Prepares parts for finishing 14.03 Performs final sanding of surfaces			
	Wood Products (Finishing) 15.01 Prepares finishing materials 15.02 Applies finishing material manually 15.03 Sprays on finishing material	**Wood Products (Finishing)** 15.01 Prepares finishing materials 15.02 Applies finishing material manually 15.03 Sprays on finishing material	

Level 1	Level 2	Level 3	Level 4
	Product Modification 16.01 Cuts access holes on site 16.02 Scribes product to fit on site		
	Cabinets and Countertops 17.01 Performs final on-site assembly and fastening of cabinets and countertops 17.02 Finalizes installation of cabinets and countertops		
			Architectural Millwork Products and Mouldings (Installation) 18.01 Performs final on-site assembly and fastening of architectural millwork products 18.02 Installs mouldings 18.03 Finalizes installation of architectural millwork products and mouldings
		Stairs and Balustrades 19.01 Lays out stair and balustrade components 19.02 Machines stair and balustrade components 19.03 Assembles stairs and balustrades 19.04 Installs stairs and balustrades	
		Solid Surface Material and Custom Countertops 20.01 Breaks out materials 20.02 Fabricates solid surface material 20.03 Installs solid surface material	

Level 1	Level 2	Level 3	Level 4
			Decorative Woodwork 21.01 Performs marquetry (NCC) 21.02 Performs carving (NCC) 21.03 Performs woodturning
			Restores Woodwork 22.01 Repairs woodwork for restoration purposes 22.02 Refinishes woodwork

MAJOR WORK ACTIVITY A

Performs common occupational skills

TASK A-1 Performs safety-related functions

TASK DESCRIPTOR

Cabinetmakers continually practice safe work methods to prevent injury and ensure a healthy work environment. This also prevents damage to tools, equipment and materials.

A-1.01 Maintains safe work environment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-1.01.01P	ensure work area is clean and organized	work area is clean and organized to minimize risk to workers and others
A-1.01.02P	perform continuous hazard assessment of work area	continuous hazard assessment of work area is performed to identify ***hazards*** and prevent accidents
A-1.01.03P	prevent injury from ***environmental hazards***	safety measures are used to prevent injury from ***environmental hazards*** according to environmental regulations
A-1.01.04P	prevent injury from ***hazards***	safety measures are used to prevent injury from ***hazards*** according to jurisdictional safety regulations
A-1.01.05P	identify and report ***hazards***, incidents and accidents	***hazards***, incidents and accidents are identified and reported according to jurisdictional safety regulations to ensure resolution of safety concerns
A-1.01.06P	comply with ***safety policies***	***safety policies*** are complied with according to jurisdictional safety regulations
A-1.01.07P	handle, store and dispose of ***hazardous materials***	***hazardous materials*** are handled, stored and disposed of according to environmental regulations

A-1.01.08P	ventilate for finishing	ventilation for finishing is ensured according to jurisdictional safety regulations and environment regulations
A-1.01.09P	use compressed air	compressed air is used according to jurisdictional safety regulations

RANGE OF VARIABLES

hazards include: slippery surfaces, uneven loads, flying debris, tripping hazards, heavy lifting, sharp cutting tools

environmental hazards include: excessive dust, fumes, spills

safety policies include: Occupational Health and Safety (OH&S) regulations, employer and installation site policies

hazardous materials include: finishing materials, used rags, chemicals, adhesives

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-1.01.01L	demonstrate knowledge of safe work practices	describe housekeeping practices
		identify potential ***hazards***, and describe associated safety measures
		identify ***environmental hazards***, and describe associated safety measures
		describe company safety policies and procedures
		identify location of ***documents***, and describe their characteristics and applications
		identify ***emergency procedures*** and location of ***safety equipment***
		describe disposal and recycling procedures for ***hazardous materials***
A-1.01.02L	demonstrate knowledge of regulatory requirements pertaining to safety	describe Workplace Hazardous Materials Information System (WHMIS) requirements
		identify workers' rights and responsibilities associated with maintaining a safe work environment
		identify training requirements to maintain a safe work environment
		identify electrical, fire and safety regulations
		describe Occupational Health and Safety (OH&S) requirements for work area
A-1.01.03L	demonstrate knowledge of procedures to maintain safe work environment	describe procedures to maintain safe work environment

	describe procedures to ventilate for finishing
	describe procedures to use compressed air

RANGE OF VARIABLES

hazards include: slippery surfaces, uneven loads, flying debris, tripping hazards, heavy lifting, sharp cutting tools

environmental hazards include: excessive dust, fumes, spills

documents include: safety data sheets (SDS), OH&S regulations, manufacturers' specifications of tools and supplies, safety meeting documents

emergency procedures include: evacuation, fire drills, first aid procedures, lock-down drills

safety equipment includes: eye wash stations, fire extinguishers, first aid kits, WHMIS binder, personal protective equipment (PPE)

hazardous materials include: finishing materials, used rags, chemicals, adhesives

A-1.02 Uses personal protective equipment (PPE) and safety equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
A-1.02.01P	select ***PPE***	***PPE*** is selected according to task
A-1.02.02P	recognize and replace worn and damaged ***PPE***	worn and damaged ***PPE*** is recognized and replaced
A-1.02.03P	comply with ***PPE regulations***	***PPE regulations*** are complied with according to jurisdictional safety regulations
A-1.02.04P	store and maintain ***PPE***	***PPE*** is stored and maintained according to jurisdictional safety regulations
A-1.02.05P	adjust ***PPE*** to ensure proper fit	***PPE*** is adjusted to ensure proper fit
A-1.02.06P	locate ***safety equipment***	***safety equipment*** is located according to jurisdictional safety regulations

RANGE OF VARIABLES

PPE includes: respiratory equipment, ear protection, hand protection, eye protection, safety footwear, hard hats, fall protection, vest, coveralls/aprons

PPE regulations include: OH&S, employer and installation site policies

safety equipment includes: first aid stations, fire extinguishers, eyewash stations, evacuation kits, defibrillator kits, blow horns

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-1.02.01L	demonstrate knowledge of ***PPE*** and ***safety equipment***, their characteristics and applications	identify ***PPE*** and ***safety equipment***, and describe their characteristics and applications
		describe company safety policies and procedures
		identify location of ***documents***, and describe ***document*** characteristics and applications
		identify ***emergency procedures*** and location of ***safety equipment***
		describe health hazards associated with handling materials and supplies
A-1.02.02L	demonstrate knowledge of regulatory requirements pertaining to safety	describe WHMIS requirements
		identify workers' rights and responsibilities associated with maintaining safe work environment
		identify training requirements for using ***PPE*** and ***safety equipment***
		describe OH&S requirements
A-1.02.03L	demonstrate knowledge of procedures to use and maintain ***PPE*** and ***safety equipment***	describe procedures to use and maintain ***PPE*** and ***safety equipment***
		identify maintenance schedules and certification requirements for ***PPE*** and ***safety equipment***

RANGE OF VARIABLES

PPE includes: respiratory equipment, ear protection, hand protection, eye protection, safety footwear, hard hats, fall protection, vest, coveralls/aprons

safety equipment includes: first aid stations, fire extinguishers, eyewash stations, evacuation kits, defibrillator kits, blow horns

documents include: safety data sheets (SDS), OH&S regulations, manufacturers' specifications of tools and supplies

emergency procedures include: evacuation, fire drills

TASK A-2 Maintains tools and equipment

TASK DESCRIPTOR

The proper maintenance of tools and equipment is very important to ensure consistent performance and safety of the user.

A-2.01 Maintains hand, portable power and pneumatic tools and equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-2.01.01P	apply lockout and tagout procedure	lockout and tagout procedures are applied according to jurisdictional safety regulations and site policies
A-2.01.02P	sharpen ***hand tools***	***hand tools*** are sharpened according to ***industry standards***
A-2.01.03P	clean and lubricate ***hand***, ***portable power*** and ***pneumatic tools and equipment***	***hand***, ***portable power*** and ***pneumatic tools and equipment*** are cleaned and lubricated according to manufacturers' specifications to ensure safe operation and longevity of tool
A-2.01.04P	recognize, replace or repair damaged ***hand***, ***portable power*** and ***pneumatic tools and equipment***	***hand***, ***portable power*** and ***pneumatic tools and equipment*** that are damaged due to ***conditions***, are replaced or repaired according to manufacturers' specifications
A-2.01.05P	recognize and replace worn or damaged ***power tool accessories***	worn or damaged ***power tool accessories*** are recognized and replaced according to manufacturers' specifications
A-2.01.06P	organize and store ***hand***, ***portable power*** and ***pneumatic tools and equipment***	***hand***, ***portable power*** and ***pneumatic tools and equipment*** are organized and stored to maintain accuracy and ensure longevity
A-2.01.07P	drain compressors and air dryers	compressors and air dryers are drained according to manufacturers' specifications to prevent moisture in air supply system
A-2.01.08P	change ***components***	***components*** are changed when ***conditions*** are identified

A-2.01.09P	use dust collector	dust collector is used while operating ***portable power*** and ***pneumatic tools and equipment***
A-2.01.10P	maintain dust collection system	dust collection system for use with ***portable power*** and ***pneumatic tools and equipment*** is maintained according to manufacturers' specifications

RANGE OF VARIABLES

hand tools include: chisels, planes, cabinet scrapers

industry standards include: Architectural Woodwork Manufacturers Association of Canada (AWMAC), Architectural Woodworking Institute (AWI), Woodwork Institute (WI), Canadian Kitchen Cabinet Association (CKCA), shop-specific standard

portable power tools (cordless and corded) include: drills, hand planes, jigsaws, routers, biscuit joiners, mitre saws, domino cutters

pneumatic tools and equipment include: nailers, compressors, regulator, filters, staplers, drills, sanders, fuel cell powered

conditions include: cracked and loose handles, damaged power cords, leaking air fittings, dull blades

power tool accessories include: blades, router bits, drill bits, sanding belts

components include: air hoses and fittings, blades

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-2.01.01L	demonstrate knowledge of ***hand, portable power*** and ***pneumatic tools and equipment*** and their characteristics and applications	identify types of ***hand tools***, and describe their characteristics and applications
		identify types of ***portable power tools***, and describe their characteristics and applications
		identify types of ***pneumatic tools and equipment***, and describe their characteristics and applications
A-2.01.02L	demonstrate knowledge of procedures to maintain ***hand, portable power*** and ***pneumatic tools and equipment***	describe procedures to maintain ***hand tools***
		describe procedures to maintain ***portable power tools***
		describe procedures to maintain ***pneumatic tools and equipment***
		describe lockout and tagout procedures
		describe safety procedures for maintaining ***portable power tools***
		describe procedures to use and maintain dust collection system

RANGE OF VARIABLES

hand tools include: chisels, planes, cabinet scrapers

portable power tools (cordless and corded) include: drills, hand plane, jigsaw, router, biscuit joiner, mitre saw, domino cutter

pneumatic tools and equipment include: nailers, compressors, regulator, filters, staplers, drills, sanders, fuel cell powered

A-2.02 Maintains stationary power tools

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
A-2.02.01P	apply lockout and tagout procedures	lockout and tagout procedures are applied according to jurisdictional regulations and site policies
A-2.02.02P	calibrate ***stationary power tools and equipment***	***stationary power tools and equipment*** are calibrated to ensure accuracy
A-2.02.03P	recognize tools that are malfunctioning	tools that are malfunctioning are recognized through ***sensory inspections***
A-2.02.04P	clean and lubricate ***stationary power tools and equipment***	***stationary power tools and equipment*** are cleaned and lubricated according to manufacturers' specifications
A-2.02.05P	use dust collector	dust collector is used during o of ***stationary power tools and equipment*** according to manufacturers' specifications
A-2.02.06P	maintain dust collection system	dust collection system is maintained for use with ***stationary power tools and equipment***
A-2.02.07P	recognize and replace worn or damaged ***stationary power tool accessories***	worn or damaged ***stationary power tool accessories*** are recognized and replaced according to manufacturers' specifications
A-2.02.08P	set up and maintain ***guards***	***guards*** are set up and maintain according to manufacturers' specifications to prevent injury
A-2.02.09P	replace and adjust drive belts	drive belts are replaced and adjusted according to manufacturers' specifications to prevent premature wear of belt, ensure proper revolutions per minute (RPM) and increase longevity

RANGE OF VARIABLES

stationary power tools and equipment include: table saws, planers, panel saws, shapers, jointers, molders

sensory inspections include: hearing, feeling, seeing

stationary power tool accessories include: saw blades, planer knives, shaper knives

guards include: anti-kickback devices, riving knives, belt covers

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-2.02.01L	demonstrate knowledge of ***stationary power tools and equipment***, and their characteristics and applications	identify ***stationary power tools and equipment***, and describe their characteristics and applications
		identify ***guards*****,** and describe their characteristics and applications
A-2.02.02L	demonstrate knowledge of procedures to maintain ***stationary power tools and equipment***	describe procedures to maintain ***stationary power tools and equipment***
		describe safety procedures for maintaining ***stationary power tools and equipment***
		describe procedures to use and maintain dust collection system
		describe lockout and tagout procedures

RANGE OF VARIABLES

stationary power tools and equipment include: table saws, planers, panel saws, shapers, jointers, molders

guards include: anti-kickback devices, riving knives, belt covers

stationary power tool accessories include: saw blades, planer knives, shaper knives

A-2.03 Maintains automated and computer numerical control (CNC) equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-2.03.01P	apply lockout and tagout procedures	lockout and tagout procedures are applied according to jurisdictional safety regulations and site policies
A-2.03.02P	calibrate ***automated equipment***	***automated equipment*** is calibrated to ensure accuracy

A-2.03.03P	calibrate computer numerical control (***CNC) equipment***	***CNC equipment*** is calibrated to ensure accuracy
A-2.03.04P	recognize tools that are malfunctioning	tools that are malfunctioning are recognized through ***sensory inspections***
A-2.03.05P	clean and lubricate ***automated equipment***	***automated equipment*** is cleaned and lubricated according to manufacturers' specifications
A-2.03.06P	clean and lubricate ***CNC equipment***	***CNC equipment*** is cleaned and lubricated according to manufacturers' specifications
A-2.03.07P	use dust collector	dust collector is used during operation of ***CNC equipment*** according to manufacturers' specifications
A-2.03.08P	maintain dust collection system	dust collection system is maintained for use with ***CNC equipment***
A-2.03.09P	recognize and replace worn or damaged ***automated equipment***	worn or damaged ***automated equipment*** are recognized and replaced according to manufacturers' specifications
A-2.03.10P	recognize and replace worn or damaged ***CNC equipment***	worn or damaged ***CNC equipment*** are recognized and replaced according to manufacturers' specifications
A-2.03.11P	use and maintain ***guards***	***guards*** are used and maintained according to manufacturers' specifications to prevent injury
A-2.03.12P	replace and adjust drive system	drive system is replaced and adjusted according to manufacturers' specifications to prevent premature wear of belt, ensure proper revolutions per minute (RPM) and increase longevity

RANGE OF VARIABLES

automated equipment includes: spray lines, conveyor systems, material handling equipment, veneer presses, dovetailer

CNC equipment includes: CNC machining centres, edge banders, CNC beam saws, wide belt sanders, routers, veneer presses

sensory inspections include: hearing, feeling, seeing

guards include: anti-kickback devices, belt covers, barrier guards, limit switches

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-2.03.01L	demonstrate knowledge of ***automated equipment***, and their characteristics and applications	identify ***automated equipment***, and describe their characteristics and applications
		identify ***CNC equipment***, and describe their characteristics and applications
A-2.03.02L	demonstrate knowledge of procedures to maintain ***automated equipment***	describe procedures to maintain ***automated equipment***

		describe safety procedures for maintaining ***automated equipment***
A-2.03.03L	demonstrate knowledge of procedures to maintain ***CNC equipment***	describe procedures to maintain ***CNC equipment***
		describe safety procedures for maintaining ***CNC equipment***

RANGE OF VARIABLES

automated equipment includes: spray lines, conveyor systems, material handling equipment, veneer presses, dovetailer

CNC equipment includes: CNC machining centres, edge banders, CNC beam saws, wide belt sanders, routers, veneer presses

A-2.04 Maintains finishing equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
A-2.04.01P	apply lockout and tagout procedures	lockout and tagout procedures are applied according to jurisdictional safety regulations and site policies
A-2.04.02P	clean finishing equipment	finishing equipment is cleaned according to manufacturers' specifications to avoid damage to equipment and contamination of finish
A-2.04.03P	lubricate finishing equipment	finishing equipment is lubricated according to manufacturers' specifications to maximize performance
A-2.04.04P	store finishing equipment	finishing equipment is stored according to manufacturers' specifications for short or long term
A-2.04.05P	recognize and replace worn or damaged ***finishing equipment components***	worn or damaged ***finishing equipment components*** are recognized and replaced according to manufacturers' specifications
A-2.04.06P	change filters in air and fluid lines	filters in air and fluid lines are changed according to manufacturers' specifications to ensure a contamination-free finish
A-2.04.07P	change filters in ventilation and air makeup system	filters in ventilation and air makeup system are changed according to manufacturers' specifications ensure balanced and efficient ventilation

RANGE OF VARIABLES

finishing equipment components include: tips, needles, pressure pot, air cap, agitators, hoses

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-2.04.01L	demonstrate knowledge of finishing equipment, and their characteristics and applications	identify types of manual finishing equipment, and describe their characteristics and applications
		identify types of ***spray systems***, and describe their characteristics and applications
		identify types of ***finishing equipment components***, and describe their characteristics and applications
		describe lighting and ventilation requirements for finishing equipment
		describe disposal requirements for ***cleaning supplies***
		identify health hazards associated with handling solvents, adhesives and lacquer thinners
A-2.04.02L	demonstrate knowledge of procedures to maintain and store ***finishing equipment components***	describe procedures to maintain and store ***finishing equipment components***
		describe lockout and tagout procedures

RANGE OF VARIABLES

spray systems include: high volume low pressure (HVLP), airless, low volume low pressure (LVLP), air assist airless, conventional

finishing equipment components include: tips, needles, pressure pot, air cap, agitators, hoses

cleaning supplies include: solvents, lacquer thinners, rags

TASK A-3 Organizes work

TASK DESCRIPTOR

The ability to communicate with customers and other trades persons, as well as interpret documentation and prints, allows cabinetmakers to organize their work efficiently. Cabinetmakers perform basic design and layout in cooperation with other professionals to ensure a quality final product.

A-3.01 Interprets prints and drawings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-3.01.01P	determine project requirements	project requirements are determined by locating and cross-referencing ***information in drawings and specifications***
A-3.01.02P	verify job site measurements	job site measurements are verified
A-3.01.03P	create shop drawings and notes	shop drawings and notes are created to communicate project tasks based on drawings and specifications
A-3.01.04P	produce material take offs from shop drawings	material take offs are produced from shop drawings to facilitate ordering and estimating of material
A-3.01.05P	determine required millwork	required millwork is determined according to ***symbols*** and specifications on architectural drawings
A-3.01.06P	interpret ***industry standards*** and building codes	***industry standards*** and building codes are interpreted and applied

RANGE OF VARIABLES

information in drawings and specifications includes: dimensions, materials, finishes, specification books

symbols include: mechanical, electrical, finishing

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-3.01.01L	demonstrate knowledge of prints and drawings, and their characteristics and applications	identify ***types of drawings*** and prints, and describe their characteristics and applications
		identify ***information in drawings and specifications***
		identify ***symbols*** on architectural drawings
A-3.01.02L	demonstrate knowledge of regulatory requirements	identify Canadian Standards Association (CSA) documentation
		identify ***industry standards*** and building codes, and describe their characteristics and applications
A-3.01.03L	demonstrate knowledge of procedures to create shop drawings	describe procedures to create shop drawings and notes to communicate project tasks
		describe procedures to produce material take offs

RANGE OF VARIABLES

types of drawings include: rough sketches, shop, plans

information in drawings and specifications include: dimensions, materials, finishes, specification books

symbols include: mechanical, electrical, finishing

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

A-3.02 Plans project

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-3.02.01P	assist in determining daily, weekly and project objectives	daily, weekly and project objectives are determined according to project specifications
A-3.02.02P	determine material and hardware requirements	material and hardware requirements are determined according to project specifications

A-3.02.03P	determine tool, equipment and shop space requirements	tool, equipment and shop space requirements are determined according to project requirements
A-3.02.04P	assist in determining time and labour requirements	time and labour requirements are determined according to project requirements

KNOWLEDGE		
	Learning Outcomes	**Learning Objectives**
A-3.02.01L	demonstrate knowledge of project planning	describe drawing specifications
		identify ***types of views***, and describe their characteristics and applications
		describe sequence of work
		determine schedules
		identify materials and hardware, and describe their characteristics and applications
		identify tool, equipment and shop space requirements
		identify time and labour requirements
A-3.02.02L	demonstrate knowledge of regulatory requirements	identify CSA documentation, and describe their applications
		identify regulatory requirements, and describe their characteristics and applications

RANGE OF VARIABLES

types of views include: plan, elevation, section, detail

A-3.03 Creates design

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS		
	Performance Criteria	**Evidence of Attainment**
A-3.03.01P	interpret client needs and preferences	client needs and preferences are interpreted to ensure client expectations are met in construction of final product
A-3.03.02P	recognize ***potential construction challenges***	***potential construction challenges*** are recognized reviewing project specifications and job site conditions

A-3.03.03P	resolve ***potential construction challenges***	***potential construction challenges*** are resolved according to change orders, project specifications and communication with general contractor
A-3.03.04P	draw ***rough sketches***	***rough sketches*** are drawn to facilitate communication with client
A-3.03.05P	maximize yield from materials and labour	yield from materials and labour is maximized through efficient design
A-3.03.06P	create basic dimension drawings	basic dimension drawings are produced using computer-aided design (CAD) software and/or manual method
A-3.03.07P	verify for ***design requirements***	***design requirements*** are verified according to project specifications

RANGE OF VARIABLES

potential construction challenges include: inability to access, obstacles, services, obstruction of utilities, conflict between function and appearance, conflict within specifications

rough sketches include: isometric, orthographic, floor plans

design requirements include: accessibility, site measurements

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-3.03.01L	demonstrate knowledge of basic design, and its associated characteristics and applications	identify basic design concepts, and describe their characteristics and applications
		identify basic design terminology
		identify ***standard dimensions***
		describe CAD software and manual method of producing basic dimension drawings
		describe AWMAC manuals
A-3.03.02L	demonstrate knowledge of procedures to create basic design	describe procedures to recognize and resolve ***potential construction challenges***
		describe procedures to create basic dimension drawings
		describe procedures to verify ***design requirements***
		describe procedures to maximize yield from materials and labour

RANGE OF VARIABLES

standard dimensions include: table, chair and counter heights, mattress dimensions

potential construction challenges include: inability to access, obstacles, services, obstruction of utilities, conflict between function and appearance, conflict within specifications

design requirements include: accessibility, site measurements

A-3.04 Performs layout of cabinets, furniture and architectural millwork

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
A-3.04.01P	select and use ***layout tools***	***layout tools*** are selected and used to ensure accuracy
A-3.04.02P	transfer drawing information and specifications to full scale layout	drawing information and specifications are transferred to full scale layout to ensure functionality
A-3.04.03P	identify potential problems on site	potential problems on site are identified and communicated to other trades
A-3.04.04P	take site measurements	site measurements are taken to ensure accuracy and to avoid obstruction of utilities
A-3.04.05P	template ***site conditions***	***site conditions*** are templated to ensure accuracy
A-3.04.06P	perform basic ***geometric calculations***	basic ***geometric calculations*** are performed
A-3.04.07P	observe ***site accessibility***	***site accessibility*** is observed to ensure product pieces can be delivered to final location
A-3.04.08P	verify ***design requirements***	***design requirements*** are verified according to project specifications

RANGE OF VARIABLES

layout tools include: trammel points, straight edges and tape measures, levels, electronic measuring devices, CAD measuring devices

site conditions include: curved and angled walls, walls out of plumb, floors out of level

geometric calculations include: radius, slope, circumference, angles

site accessibility include: passage doors, elevators, parking, stairways, loading docks

design requirements include: accessibility, site measurements

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-3.04.01L	demonstrate knowledge of laying out cabinets, furniture and architectural millwork, and layout characteristics and applications	describe characteristics and applications of laying out cabinets, furniture and architectural millwork
		identify ***layout materials***, and describe their characteristics and applications
		identify ***cabinet, furniture and architectural hardware***, and describe their characteristics and applications
		identify location of installed cabinets, stairs and architectural millwork
		identify basic ***geometric calculations***
		identify ***design requirements***
A-3.04.02L	demonstrate knowledge of procedures to lay out cabinets, furniture and architectural millwork	identify ***layout tools***, and describe their procedures for use
		describe procedures to lay out cabinets, furniture and architectural millwork
		describe procedures to transfer drawing information and specifications to full scale layout
		describe procedures to take site measurements
		describe procedures to template ***site conditions***

RANGE OF VARIABLES

layout materials include: hardboard and medium density fibreboard (MDF), paper, plastic

cabinet, furniture and architectural hardware includes: hinges, slides, locks, pulls

geometric calculations include: radius, slope, circumference, angles

design requirements include: accessibility, site measurements

layout tools include: trammel points, straight edges and tape measures, levels, electronic measuring devices, CAD measuring devices

site conditions include: curved and angled walls, walls out of plumb, floors out of level

TASK A-4 Performs routine work practices

TASK DESCRIPTOR

The foundation skills that make this task are used throughout the trade and must be maintained and may be performed prior to other trade tasks. Jigs, templates and prototypes allow cabinetmakers to work more efficiently and accurately. Making prototypes and dry-fitting components help cabinetmakers visualize and refine the final product.

A-4.01 Handles materials, supplies and products

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-4.01.01P	verify products received	products received are verified to avoid delays in project according to purchase order
A-4.01.02P	check products for damage and ***quality***	products are checked for damage and ***quality*** to ensure adequate supply for projects
A-4.01.03P	disassemble and label required sections of final product	required sections of final product are disassembled and labelled for ease of site assembly and installation
A-4.01.04P	pack and wrap products	products are packed and wrapped using ***materials*** to prevent damage during transport and to secure in vehicle
A-4.01.05P	load and secure products in transport vehicle	products are loaded and secured in transport vehicle using ***restraints***
A-4.01.06P	assess size and weight of products	size and weight of products are assessed to accommodate handling limitations and to prevent injury and product damage
A-4.01.07P	temporarily protect products after installation	products are temporarily protected after installation to avoid damage
A-4.01.08P	store ***supplies***	***supplies*** are stored to prevent injury and damage to product
A-4.01.09P	transport ***supplies*** in shop	***supplies*** in shop are transported to avoid injury and damage to materials

RANGE OF VARIABLES

quality includes: moisture content, type of cut, species of wood, board dimensions, wood defects
materials include: plastic wrap, blankets, cardboard, skids, corner protectors
restraints include: cargo jacks, straps
supplies include: sheet goods, solid lumber, veneer, laminate, adhesives, finishing supplies, chemicals

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-4.01.01L	demonstrate knowledge of materials, supplies and products, and their characteristics and applications	describe materials, supplies and products, and their characteristics and applications
		describe storage requirements of ***materials***, ***supplies*** and products
		identify company policies for material handling and shipping
		describe handling procedures for ***supplies*** during fabrication
		describe acclimatization requirements of ***supplies***
		describe importance of temporarily protecting products after installation
A-4.01.02L	demonstrate knowledge of procedures to handle ***materials***, ***supplies*** and products	describe procedures to verify products received
		describe procedures to disassemble and label required sections of final product
		describe procedures to temporarily protect products after installation
		describe procedures to store ***supplies***
		describe procedures to transport ***materials*** and ***supplies*** in shop

RANGE OF VARIABLES

materials include: plastic wrap, blankets, cardboard, skids, corner protectors
supplies include: sheet goods, solid lumber, veneer, laminate, adhesives, finishing supplies, chemicals

A-4.02 Fabricates jigs and templates

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
A-4.02.01P	select ***jig and template material***	***jig and template material*** is selected according to project requirements
A-4.02.02P	select and use layout and machining tools	layout and machining tools are selected and used according to ***industry standards***
A-4.02.03P	produce jigs and templates	jigs and templates are produced to ensure accuracy, repeatability and safety
A-4.02.04P	test jig and templates	jig and templates are tested to determine accuracy and durability according to ***industry standards***
A-4.02.05P	label and store jigs and templates for future use	jigs and templates are labelled and stored for future use
A-4.02.06P	make template on site	template is made on-site to transfer site dimensions to final product in shop

RANGE OF VARIABLES

jig and template material includes: MDF, acrylic, plywood, plastic
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.02.01L	demonstrate knowledge of jigs and templates, and their characteristics and applications	describe jigs and templates, and their characteristics and applications
		describe safety considerations, accuracy and limitations of jigs and templates
		identify ***jig and template materials*** and hardware, and describe their characteristics and applications
A-4.02.02L	demonstrate knowledge of procedures to fabricate jigs and templates	identify layout and machining tools and equipment used to fabricate jigs and templates, and describe their procedures for use
		describe procedures to fabricate jigs and templates

RANGE OF VARIABLES

jig and template material includes: MDF, acrylic, plywood, plastic

A-4.03 Builds prototypes

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
A-4.03.01P	select ***prototype materials***	***prototype materials*** are selected according to visual and functional needs
A-4.03.02P	recognize and resolve ***potential construction challenges***	***potential construction challenges*** are recognized and resolved in order to meet client requirements
A-4.03.03P	test and modify prototypes and hardware	prototypes and hardware are tested and modified according to manufacturing and client requirements
A-4.03.04P	determine appropriateness of building a prototype	appropriateness of building a prototype is determined according to time, labour and material considerations

RANGE OF VARIABLES

prototype materials include: actual, simulated or equivalent material

potential construction challenges include: inability to access, obstacles, services, obstruction of utilities, conflict between function and appearance, conflict within specifications

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.03.01L	demonstrate knowledge of prototypes, and their characteristics and applications	identify prototypes, and describe their characteristics and applications
		identify ***prototype materials***, and describe their characteristics and applications
A-4.03.02L	demonstrate knowledge of procedures to build prototypes	identify tools and equipment used to build prototypes, and describe their procedures for use
		describe procedures to build and test prototypes

RANGE OF VARIABLES

prototype materials include: actual, simulated or equivalent material

A-4.04 Dry-fits components

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
A-4.04.01P	ensure tight joints, squareness and correct fit	tight joints, squareness and correct fit is ensured using ***devices***
A-4.04.02P	identify and correct construction ***defects/faults***	construction ***defects/faults*** are identified and corrected according to ***industry standards***
A-4.04.03P	measure and verify tolerances	tolerances of dry-fitted components are measured and verified to avoid inaccuracies and compounded errors according to ***industry standards***

RANGE OF VARIABLES

devices include: clamps and case clamps, squares, tape measures, mallet
defects/faults include: incorrect size, missing parts, out-of-square
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.04.01L	demonstrate knowledge of dry-fitting components, and their characteristics and applications	describe importance of dry-fitting components
		identify clearances and tolerances, and describe their characteristics and applications
		describe characteristics and applications of metric and imperial measurement systems
		identify assembly systems, and describe their characteristics and applications
		identify finished product dimensions and requirements
A-4.04.02L	demonstrate knowledge of procedures to dry-fit components	identify ***devices*** used to dry-fit components, and describe their procedures for use
		describe procedures to dry-fit components

RANGE OF VARIABLES

devices include: clamps and case clamps, squares, tape measures, mallets

A-4.05 Selects hardware

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
A-4.05.01P	ensure hardware meets project specifications	hardware meets project specifications
A-4.05.02P	ensure hardware meets ***safety considerations***	hardware ***safety considerations*** are ensured according to jurisdictional regulations
A-4.05.03P	ensure hardware meets ***durability considerations***	hardware ***durability considerations*** are ensured according to ***industry standards***
A-4.05.04P	perform hardware take off	hardware take off is performed from drawings and design to ensure adequate numbers are in stock and ordered
A-4.05.05P	evaluate ***specialty hardware***	***specialty hardware*** is evaluated according to project specifications

RANGE OF VARIABLES

safety considerations include: weight restrictions, tipping hazard, fall hazards
durability considerations include: repetitive use, finish, hardware quality
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
specialty hardware includes: electronic hardware

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.05.01L	demonstrate knowledge of hardware, and their characteristics and applications	identify types of hardware, and describe their characteristics and applications
		describe ***safety considerations*** and ***durability considerations***
		identify ***specialty hardware***
A-4.05.02L	demonstrate knowledge of procedures to perform hardware take off	describe procedures to perform hardware take off
		identify tools and equipment used to perform hardware take off, and describe their procedures for use

RANGE OF VARIABLES

safety considerations include: weight restrictions, tipping hazard, fall hazards
durability considerations include: repetitive use, finish, hardware quality
specialty hardware includes: electronic hardware

A-4.06 Selects adhesives and fasteners

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
A-4.06.01P	determine project materials required	project materials required in project construction are determined according to project specifications
A-4.06.02P	determine ***adhesives*** that are compatible with project materials	***adhesives*** that are compatible with project materials are determined
A-4.06.03P	select ***adhesive***	***adhesive*** is selected according to ***considerations*** and ***industry standards***
A-4.06.04P	determine ***fasteners*** that are compatible with application	***fasteners*** that are compatible with applications are determined according to ***industry standards***
A-4.06.05P	select ***fasteners***	***fasteners*** are selected according to ***industry standards***

RANGE OF VARIABLES

adhesives include: contact cement, wood glues, resin, hot-melt-glue
considerations include: customer specifications, strength, project considerations, availability, price
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
fasteners include: biscuits, staples, screws, nails, anchors

KNOWLEDGE

	Learning Outcomes	Learning Objectives
A-4.06.01L	demonstrate knowledge of ***adhesives*** and ***fasteners***, and their characteristics and applications	identify ***adhesive***, and describe their characteristics and applications
		identify ***adhesives*** used for substrates and edge treatment, and describe their characteristics and applications
		identify ***fasteners***, and describe their characteristics and applications

RANGE OF VARIABLES

adhesives include: contact cement, wood glues, resin, hot-melt-glue
fasteners include: biscuits, staples, screws, nails, anchors

TASK A-5 Uses communication and mentoring techniques

TASK DESCRIPTOR

Learning in the trades is done primarily in the workplace with tradespeople passing on their skills and knowledge to apprentices, as well as sharing knowledge among themselves. Apprenticeship is, and always has been about mentoring – learning workplace skills and passing them on. Because of the importance of this to the trade, this task covers the activities related to communication in the workplace and mentoring skills.

A-5.01 Uses communication techniques

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-5.01.01P	demonstrate communication practices with individuals or in a group	instructions and messages are interpreted by all parties involved in communication
A-5.01.02P	listen using ***active listening*** practices	***active listening*** practices are utilized
A-5.01.03P	receive and respond to feedback on work	response to feedback indicates understanding and corrective measures are taken
A-5.01.04P	explain and provide feedback	explanation and feedback is provided and task is carried out as directed
A-5.01.05P	use questioning to improve communication	questions enhance understanding, on-the-job training and goal setting
A-5.01.06P	participate in safety and information meetings	meetings are attended, information is relayed to workforce, and is applied

RANGE OF VARIABLES

active listening includes: hearing, interpreting, reflecting, responding, paraphrasing

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-5.01.01L	demonstrate knowledge of trade terminology	define terminology used in trade
A-5.01.02L	demonstrate knowledge of effective communication practices	describe importance of using effective verbal and non-verbal communication with ***people in the workplace***
		identify ***sources of information*** to effectively communicate
		identify communication and ***learning styles***
		describe effective listening and speaking skills
		identify ***personal responsibilities and attitudes*** that contribute to on-the-job success
		identify value of diversity in workplace
		identify communication that constitutes ***harassment*** and ***discrimination***

RANGE OF VARIABLES

people in the workplace include: other tradespeople, colleagues, apprentices, supervisors, clients, authorities having jurisdiction (AHJ), manufacturers'

sources of information include: regulations, codes, occupational health and safety requirements, AHJ requirements, prints, drawings, specifications, company and client documentation

learning styles include: seeing it, hearing it, trying it

personal responsibilities and attitudes include: asking questions, working safely, accepting constructive feedback, time management and punctuality, respect for authority, good stewardship of materials, tools and property, efficient work practice

harassment: as defined by the Canadian and jurisdictional Human Rights Commissions

discrimination: as defined by the Canadian Human Rights Act and jurisdictional human rights laws

A-5.02 Uses mentoring techniques

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
A-5.02.01P	identify and communicate learning objectives and point of lesson	apprentice or learner can explain objectives and point of lesson
A-5.02.02P	link lesson to other lessons and the job	lesson order and unplanned learning opportunities are defined

A-5.02.03P	demonstrates performance of a skill to an apprentice or learner	***steps required to demonstrate a skill*** are performed
A-5.02.04P	set up conditions required for an apprentice or learner to practice a skill	***practice conditions*** are set up so that skill can be practiced safely by apprentice or learner
A-5.02.05P	assess apprentice or learner's ability to perform tasks with increasing independence	performance of apprentice or learner improves with practice to a point where skill can be done with little supervision
A-5.02.06P	give supportive and corrective feedback	apprentice or learner adopts best practice after having been given supportive or corrective feedback
A-5.02.07P	support apprentices or learners in pursuing technical training opportunities	technical training is completed within timeframe prescribed by apprenticeship authority
A-5.02.08P	support anti-***harassment*** in workplace	workplace is ***harassment*** and ***discrimination***-free
A-5.02.09P	assess apprentice or learner suitability to trade during probationary period	apprentice or learner is given feedback that helps them identify their own strengths and weaknesses and suitability for trade

RANGE OF VARIABLES

steps required to demonstrate a skill include: understanding who, what, where, when, why, and how, explaining, showing, giving encouragement, following up to ensure skill is performed correctly

practice conditions means: guided, limited independence, full independence

harassment: as defined by the Canadian and jurisdictional Human Rights Commissions

discrimination: as defined by the Canadian Human Rights Act and jurisdictional human rights laws

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
A-5.02.01L	demonstrate knowledge of strategies for learning skills in workplace	describe importance of individual experience
		describe shared responsibilities for workplace learning
		determine one's own learning preferences and explain how these relate to learning new skills
		describe importance of different types of skills in workplace
		describe importance of ***essential skills*** in workplace
		identify different ***learning styles***
		identify different ***learning needs*** and strategies to meet them
		identify ***strategies to assist in learning a skill***

A-5.02.02L	demonstrate knowledge of strategies for ***teaching*** workplace ***skills***	identify different roles played by a workplace mentor
		describe ***teaching skills***
		explain importance of identifying point of a lesson
		identify how to choose a good time to present a lesson
		explain importance of linking lessons
		identify components of skill (context)
		describe considerations in setting up opportunities for skill practice
		explain importance of providing feedback
		identify techniques for giving effective feedback
		describe a skills assessment
		identify methods of assessing progress
		explain how to adjust a lesson to different situations

RANGE OF VARIABLES

essential skills are: reading, document use, writing, oral communication, numeracy, thinking, working with others, digital technology, continuous learning

learning styles include: seeing it, hearing it, trying it

learning needs include: learning disabilities, learning preferences, language proficiency

strategies to assist in learning a skill include: understanding basic principles of instruction, developing coaching skills, being mature and patient, providing feedback

teaching skills include: identifying point of lesson, linking lesson, demonstrating skill, providing practice, giving feedback, assessing skills and progress

MAJOR WORK ACTIVITY B

Performs machining

TASK B-6 Machines components using stationary and portable power tools

TASK DESCRIPTOR

Cabinetmakers prepare wood and sheet goods in a variety of shapes and sizes according to drawings and specifications. This process modifies materials, changing them from a rough product to a processed state after which they are ready to be assembled.

B-6.01 Breaks out solid wood

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
B-6.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
B-6.01.02P	check moisture content	moisture content is checked according to ***industry standards***
B-6.01.03P	develop and review cut list	cut list is developed and reviewed to optimize material according to project specifications
B-6.01.04P	ensure inventory is available	inventory is available according to project specifications considering waste factors
B-6.01.05P	select required lumber thickness and width	required lumber thickness and width is selected according to project specifications (cut list)
B-6.01.06P	recognize material ***defects***	material ***defects*** are recognized and assessed according to ***industry standards***

B-6.01.07P	select wood	wood is selected according to desired visual aesthetic and project specifications
B-6.01.08P	cut wood to rough length and width	wood is cut to rough length and width according to project specifications

RANGE OF VARIABLES

tools and equipment include: radial arm saws, chop saws, table saws, pop-up saws
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
defects include: mineral stains, knots, insect damage, heartwood/sapwood, checks

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-6.01.01L	demonstrate knowledge of breaking out solid wood, and its characteristics and applications	describe ***properties and characteristics of wood***
		describe how to determine required dimensions and quantities of solid wood
		identify ***species*** of solid wood
B-6.01.02L	demonstrate knowledge of procedures to break out solid wood	identify ***tools and equipment*** used for breaking out solid wood, and describe their procedures for use
		describe procedures to break out solid wood

RANGE OF VARIABLES

properties and characteristics of wood include: cut, grain direction, density, colours
species include: birch, maple, walnut, fir, oak, pine
tools and equipment include: radial arm saws, chop saws, table saws, pop-up saws

B-6.02 Dresses solid wood

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
B-6.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
B-6.02.02P	joint, plane and rip solid wood to desired width and thickness	solid wood is jointed, planed and ripped to desired width and thickness according to project specifications

B-6.02.03P	determine suitability of board	suitability of board is determined by interpreting ***board characteristics*** according to project specifications
B-6.02.04P	determine lengths	lengths are determined according to project specifications
B-6.02.05P	cut board to length	board is cut to length according to project specifications
B-6.02.06P	correct ***performance problems***	***performance problems*** are corrected according to ***industry standards***

RANGE OF VARIABLES

tools and equipment include: jointers, planers, saws
board characteristics include: crooks, grain direction, checks
performance problems include: tear-out, burning
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-6.02.01L	demonstrate knowledge of dressing solid wood, and its characteristics and applications	describe ***properties and characteristics of wood***
		describe how to determine required dimensions and quantities of solid wood
		describe sequence of dressing operations
		describe causes of ***performance problems***
B-6.02.02L	demonstrate knowledge of procedures to dress solid wood	identify ***tools and equipment*** used to dress solid wood, and describe their procedures for use
		describe procedures to dress solid wood

RANGE OF VARIABLES

properties and characteristics of wood include: cut, grain direction, density, colours
performance problems include: tear-out, burning
tools and equipment include: jointers, planers, saws

B-6.03 Shapes solid wood

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
B-6.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
B-6.03.02P	verify shape and dimensions	shape and dimensions are verified according to drawings and project specifications
B-6.03.03P	select and change ***cutting tool components***	***cutting tool components*** are selected and changed according to application requirements
B-6.03.04P	avoid tear outs	tear outs are avoided by reading grain direction
B-6.03.05P	shape solid wood	solid wood is shaped according to project specifications
B-6.03.06P	profile solid wood	solid wood is profiled according to project specifications
B-6.03.07P	secure project to jig	project is secured to jig using ***holding devices***
B-6.03.08P	set up stock feeders	stock feeders are set up to accommodate width and thicknesses of solid wood

RANGE OF VARIABLES

tools and equipment include: jigs, templates, band saws, lathes, shapers, routers
cutting tool components include: blades, knives, router bits
holding devices include: clamps, stops, pneumatic devices

KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-6.03.01L	demonstrate knowledge of shaping solid wood, and associated characteristics and applications	describe ***properties and characteristics of wood***
		identify types of ***edge treatments***, and describe their characteristics and applications
		identify adhesives for edging and automated applications, and describe their characteristics and applications

		identify types of ***joints***, and describe their characteristics and applications
		describe causes of ***performance problems***
B-6.03.02L	demonstrate knowledge of procedures to shape solid wood	identify ***tools and equipment*** used to shape solid wood, and describe their procedures for use
		describe procedures to determine dimensions and shape required of finished product
		describe procedures to shape solid wood

RANGE OF VARIABLES

properties and characteristics of wood include: cut, grain direction, density, colours
edge treatments include: polyvinyl chloride (PVC), solid wood, high pressure decorative laminate (HPDL)
joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon
performance problems include: tear-out, burning
tools and equipment include: jigs, templates, band saws, lathes, shapers, routers

B-6.04 Breaks out sheet materials

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
B-6.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
B-6.04.02P	develop and review cut list	cut list is developed and reviewed to optimize material according to project specifications
B-6.04.03P	determine edge treatment	edge treatment is determined according to project specifications and adjustments made to cut list
B-6.04.04P	determine type of ***sheet material***	type of ***sheet material*** is determined according to availability of stock and project specifications
B-6.04.05P	ensure panel saw blades are sharp and scoring blades are aligned	panel saw blades are sharp and scoring blades are aligned
B-6.04.06P	cut ***sheet material*** to size	***sheet material*** is cut to size according to project specifications

RANGE OF VARIABLES

tools and equipment include: panel saws, automated equipment, table saws, routers
sheet materials include: melamine, particle board, MDF, hardboard, plywood

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-6.04.01L	demonstrate knowledge of ***sheet material***, and its characteristics and applications	identify types of ***sheet material***, and describe their properties and characteristics
		describe how to determine dimensions and quantities of ***sheet material***
		identify and describe ***characteristics of cut list***
		identify types of ***joints***, and describe their characteristics and applications
		describe causes of ***performance problems***
		identify types of ***edge treatments***, and describe their characteristics and applications
		identify adhesives for edging and automated applications, and describe their characteristics and applications
B-6.04.02L	demonstrate knowledge of procedures to break out sheet material	identify ***tools and equipment*** used for breaking out sheet material, and describe their procedures for use
		describe procedures to determine dimensions and shape required of finished product
		describe procedures to break out sheet material

RANGE OF VARIABLES

sheet materials include: melamine, particle board, MDF, hardboard, plywood
characteristics of cut list include: edge treatments, material thickness, joints, grain direction
joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon
performance problems include: chipping, burning, uneven edge
edge treatments include: PVC, solid wood, HPDL
tools and equipment include: panel saws, automated equipment, table saws, router

B-6.05 Machines sheet materials

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
B-6.05.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
B-6.05.02P	select ***tools and equipment accessories***	***tools and equipment accessories*** are selected according to application requirements
B-6.05.03P	verify cut list and edge treatments	cut list and edge treatments are verified according to project specifications
B-6.05.04P	ensure panels are square, cut to size and chip free	panels are square, cut to size and chip free according to ***industry standards***
B-6.05.05P	select, apply and trim edge treatment	edge treatment is selected according to project specifications, and applied and trimmed according to application requirements
B-6.05.06P	shape ***sheet materials***	***sheet materials*** are shaped using ***tools and equipment***
B-6.05.07P	drill and route panel	panel is drilled and routed according to project specifications

RANGE OF VARIABLES

tools and equipment include: edge bander, routers, shapers, line drills, edge sanders, jigs, templates
tools and equipment accessories include: router bits, blades, drill bits
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
sheet materials include: melamine, particle board, MDF, hardboard, plywood

KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-6.05.01L	demonstrate knowledge of ***sheet materials***, and their properties, characteristics and applications	identify ***sheet materials***, and describe their properties, characteristics and applications
		describe how to determine required dimensions and quantities ***sheet materials***
		describe sequence of machining operations
		identify types of ***edge treatments***, and describe their characteristics and applications

		identify adhesives for edging and automated applications, and describe their characteristics and applications
		identify sheet thicknesses and sizes, and describe their characteristics and applications
		identify types of ***joints***, and describe their characteristics and applications
		describe causes of ***performance problems***
B-6.05.02L	demonstrate knowledge of procedures to machine ***sheet material***	identify ***tools and equipment*** used for machining ***sheet material***, and describe their procedures for use
		describe procedures to determine dimensions and shape required of finished product
		describe procedures to machine ***sheet material***

RANGE OF VARIABLES

sheet materials include: melamine, particle board, MDF, hardboard, plywood
edge treatments include: PVC, solid wood, HPDL
joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon
performance problems include: chipping, burning, uneven edge
tools and equipment include: edge bander, routers, shapers, line drills, edge sanders, jigs, templates

B-6.06 Machines joints

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
B-6.06.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
B-6.06.02P	verify cut list and machining details	cut list and machining details are verified to ensure they meet project specifications
B-6.06.03P	select ***joints***	***joints*** are selected according to drawings and project specifications

B-6.06.04P	use templates for placement and accuracy of repetitive ***joints***	templates are used for placement and accuracy of repetitive ***joints*** according to application requirements
B-6.06.05P	fabricate ***joints***	***joints*** are fabricated and tested for accuracy according to ***industry standards***

RANGE OF VARIABLES

tools and equipment includes: biscuit joiners, drills, routers, dovetail machine, saws
joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-6.06.01L	demonstrate knowledge of ***joints***, and their characteristics and applications	identify types of ***joints***, and describe their characteristics and applications
		describe how to determine required dimensions and quantities of ***joints***
		describe ***properties and characteristics of wood***
		identify ***sheet materials***, and describe their properties and characteristics
		identify sheet thicknesses and sizes, and describe their characteristics and applications
		describe causes of ***performance problems***
B-6.06.02L	demonstrate knowledge of procedures to machine joints	identify ***tools and equipment*** used to machine joints, and describe their procedures for use
		describe procedures to determine dimensions and shape required of finished product
		describe procedures to machine joints

RANGE OF VARIABLES

joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon
properties and characteristics of wood include: cut, grain direction, density, colours
sheet materials include: melamine, particle board, MDF, hardboard, plywood
performance problems include: chipping, burning, fit, flushness
tools and equipment includes: biscuit joiners, drills, routers, dovetail machine, saws

B-6.07 Performs preliminary sanding

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
B-6.07.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
B-6.07.02P	select abrasive grit	abrasive grit is selected according to project requirements and to minimize future sanding
B-6.07.03P	sand component surfaces	component surfaces are sanded according to ***industry standards***
B-6.07.04P	verify thickness	thickness is verified according to project specifications

RANGE OF VARIABLES

tools and equipment include: scrapers, hand sanders, pneumatic sanders, wide-belt sanders, calipers, machinist rule

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-6.07.01L	demonstrate knowledge of sanding, and its characteristics and applications	describe ***properties and characteristics of wood***
		identify ***sheet materials***, and describe their properties and characteristics
		describe causes of ***performance problems*** of sanding
		identify abrasive grits, and describe their characteristics and applications
B-6.07.02L	demonstrate knowledge of procedures to sand	identify ***tools and equipment*** used to sand, and describe their procedures for use
		describe procedures to determine dimensions and shape required of finished product
		describe scraping and preliminary sanding techniques

RANGE OF VARIABLES

properties and characteristics of wood include: cut, grain direction, density, colours
sheet materials include: melamine, particle board, MDF, hardboard, plywood
performance problems include: burning, scratches, flushness
tools and equipment include: scrapers, hand sanders, pneumatic sanders, wide-belt sanders, calipers, machinist rule

TASK B-7 Machines components using automated and CNC equipment

TASK DESCRIPTOR

Automated equipment includes CNC machines, edge banders, spray lines, conveyor systems and material handling. It can be set up, programmed and operated by cabinetmakers to produce pieces accurately and efficiently. Cabinetmakers are expected to have a working knowledge of this equipment, but would require training specific to each machine's manufacturer.

B-7.01 Sets up automated and CNC equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
B-7.01.01P	determine machining requirements	machining requirements are determined according to drawings and project specifications
B-7.01.02P	calibrate ***automated equipment***	***automated equipment*** is calibrated according to manufacturers' specifications
B-7.01.03P	calibrate ***CNC equipment***	***CNC equipment*** is calibrated according to manufacturers' specifications
B-7.01.04P	select, load and run program	program is selected, loaded and run according to application requirements
B-7.01.05P	program or modify parameters	parameters are programmed or modified according to application requirements
B-7.01.06P	select tooling	tooling is selected according to application requirements
B-7.01.07P	install tool	tool is installed according to manufacturer's specifications

B-7.01.08P	adjust settings or programming of ***automated equipment***	settings or programming of ***automated equipment*** is adjusted after test piece is run according to ***industry standards***
B-7.01.09P	adjust settings or programming of ***CNC equipment***	settings or programming of ***CNC equipment*** is adjusted after test piece is run according to ***industry standards***

RANGE OF VARIABLES

automated equipment includes: spray lines, conveyor systems, material handling, veneer presses, dovetailer

CNC equipment includes: CNC machining centres, edge banders, CNC beam saws, wide belt sanders, routers

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
B-7.01.01L	demonstrate knowledge of ***automated equipment***, and their characteristics and applications	identify types of ***automated equipment***, and describe their characteristics and applications
		identify tooling used to operate ***automated equipment***, and describe their characteristics and applications
B-7.01.02L	demonstrate knowledge of ***CNC equipment***, and their characteristics and applications	identify types of ***CNC equipment***, and describe their characteristics and applications
		describe computer applications and basic CNC programming
		identify CAD and computer aided manufacturing (CAM) software and drawings, and describe their characteristics and applications
		identify tooling used to operate ***CNC equipment***, and describe their characteristics and applications
B-7.01.03L	demonstrate knowledge of procedures to set up ***automated equipment***	describe procedures to set up ***automated equipment***
		describe procedures to adjust and calibrate ***automated equipment***
B-7.01.04L	demonstrate knowledge of procedures to set up ***CNC equipment***	describe procedures to set up ***CNC equipment***
		describe procedures to adjust and calibrate ***CNC equipment***

RANGE OF VARIABLES

automated equipment includes: spray lines, conveyor systems, material handling, veneer presses, dovetailer

CNC equipment includes: CNC machining centres, edge banders, CNC beam saws, wide belt sanders, routers

B-7.02 Operates automated and CNC equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
B-7.02.01P	identify flaws and defects	flaws and defects are identified by inspecting material according to ***industry standards***
B-7.02.02P	load and unload material	material is loaded and unloaded according to automated equipment capacity
B-7.02.03P	check ***automated equipment***	***automated equipment*** is checked periodically during use to ensure quality
B-7.02.04P	check ***CNC equipment***	***CNC equipment*** is checked periodically during use to ensure quality
B-7.02.05P	correct ***performance problems***	***performance problems*** are corrected according to manufacturers' specifications and ***industry standards***

RANGE OF VARIABLES

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

automated equipment includes: spray lines, conveyor systems, material handling, veneer presses, dovetailer

CNC equipment includes: CNC machining centres, edge banders, CNC beam saws, wide belt sanders, routers

performance problems include: adhesion, burning, broken cutter, dull tools, clogged spray gun, timing of robotics, programming issues

KNOWLEDGE

	Learning Outcomes	Learning Objectives
B-7.02.01L	demonstrate knowledge of ***automated equipment***, and their characteristics and applications	identify types of ***automated equipment***, and describe their characteristics and applications
		identify tooling used to operate ***automated equipment***, and describe their characteristics and applications

		identify ***products*** applied with ***automated equipment***
B-7.02.02L	demonstrate knowledge of ***CNC equipment***, and their characteristics and applications	identify types of ***CNC equipment***, and describe their characteristics and applications
		describe computer applications and basic CNC programming
		identify CAD and CAM software and drawings, and describe their characteristics and applications
		identify tooling used to operate ***CNC equipment***, and describe their characteristics and applications
		identify ***products*** applied with ***CNC equipment***
B-7.02.03L	demonstrate knowledge of procedures to operate ***automated equipment***	describe procedures to operate ***automated equipment***
		describe procedures to adjust and calibrate ***automated equipment***
B-7.02.04L	demonstrate knowledge of procedures to operate ***CNC equipment***	describe procedures to operate ***CNC equipment***
		describe procedures to adjust and calibrate ***CNC equipment***

RANGE OF VARIABLES

automated equipment includes: spray lines, conveyor systems, material handling, veneer presses, dovetailer

CNC equipment includes: CNC machining centres, edge banders, CNC beam saws, wide belt sanders, routers

products include: adhesives, finishing materials, packaging materials

MAJOR WORK ACTIVITY C
Performs forming and laminating

TASK C-8 Creates curved components using wood and composite materials

TASK DESCRIPTOR

Cabinetmakers produce curves and irregular shapes from wood and composite materials for use in products such as railings, crown mouldings, store and office fixtures, and window treatments. This process includes creating layouts for curved components, building forms, as well as bending and laminating solid and composite material.

C-8.01 Builds forms

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-8.01.01P	select ***materials*** to build form	***materials*** to build form are selected
C-8.01.02P	determine shape to create form	shape to create form is determined using applied geometry according to project specifications
C-8.01.03P	select and use ***layout tools***	***layout tools*** are selected and used according to ***industry standards***
C-8.01.04P	use templates and layouts	templates and layouts are used according to drawings
C-8.01.05P	apply ***adhesives*** and ***fasteners***	***adhesives*** and ***fasteners*** are applied according to application
C-8.01.06P	apply release agents	release agents are applied to facilitate adhesive removal
C-8.01.07P	match type of form to application	type of form is matched to application
C-8.01.08P	select and use ***tools and equipment*** to create form components	***tools and equipment*** are selected and used to create form components according to ***industry standards***

RANGE OF VARIABLES

materials include: plywood, particle board, MDF, plastic, bendable plywood, steel, solid wood
layout tools include: compasses, trammel points, protractors, straight edge
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
adhesives include: wood glues, contact cement, epoxies
fasteners include: screws, nails, staples, anchors
tools and equipment include: band saws, jigsaws, table saws, routers

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-8.01.01L	demonstrate knowledge of forms, and their characteristics and applications	identify types of forms, and describe their characteristics and applications
		identify form ***materials***, and describe their characteristics and applications
		identify ***types of form construction***, and describe their characteristics and applications
		identify types of ***adhesives***, and describe their characteristics and applications
		identify types of ***fasteners***, and describe their characteristics and applications
		identify release agents, and describe their characteristics and applications
		identify wood and composite materials, and describe their ***properties,*** characteristics and applications
C-8.01.02L	demonstrate knowledge of procedures to build forms	identify ***tools and equipment*** used to create form components, and describe their procedures for use
		describe procedures to build forms

RANGE OF VARIABLES

materials include: plywood, particle board, MDF, plastic, bendable plywood, steel, solid wood
types of form construction includes: shaped walls, two-part moulds, vacuum mould
adhesives include: wood glues, contact cement, epoxies
fasteners include: screws, nails, staples, anchors
properties include: density, bendability, flexibility
tools and equipment include: band saws, jigsaws, table saws, routers

C-8.02 Performs curved laminating

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
C-8.02.01P	select and use clamping method	clamping method is selected and used according to ***industry standards*** and project specifications
C-8.02.02P	determine laminating requirements	laminating requirements are determined according to drawings and project specifications
C-8.02.03P	select and sort ***materials***	***materials*** are selected and sorted according to project requirements
C-8.02.04P	apply ***adhesives***, ***fasteners*** and ***clamps***	***adhesives***, ***fasteners*** and ***clamps*** are applied according to application
C-8.02.05P	laminate in sequence	***materials*** are laminated in sequence

RANGE OF VARIABLES

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
materials include: bendable plywood, MDF, veneers, hardwood, solid wood
adhesives include: wood glues, contact cement, epoxies
fasteners include: screws, nails, staples, anchors
clamps include: band, C, edge, bar, vacuum bag

KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-8.02.01L	demonstrate knowledge of curved laminating, and associated characteristics and applications	describe curved laminating characteristics and applications
		identify wood and composite material, and describe their ***properties,*** characteristics and applications
		list sequence of lamination
		describe range of percentage of springback of curved laminating ***materials***
		identify ***types of joints*** used in laminating, and describe their characteristics and applications
		describe final sizing techniques
		identify length of curing time required for various ***materials*** and ***adhesives***

		identify types of ***adhesives***, and describe their characteristics and applications
C-8.02.02L	demonstrate knowledge of procedures to perform curved laminating	identify ***clamps*** used to curve laminating, and describe their characteristics, applications and procedures for use
		describe procedures to form curved components with vacuum bag
		describe procedures to kerf and/or bend material to accommodate appropriate radius

RANGE OF VARIABLES

properties include: density, bendability, flexibility, moisture
materials include: bendable plywood, MDF, veneers, hardwood, solid wood
types of joints include: scarf, butt
adhesives include: wood glues, contact cement, epoxies
clamps include: band, C, edge, bar, vacuum bag

C-8.03 Steam-forms wood

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	no	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
C-8.03.01P	select and use tools and equipment	tools and equipment are selected and used according to application requirements
C-8.03.02P	determine steam-form wood requirements	steam-form wood requirements are determined according to drawings, project specifications and wood properties
C-8.03.03P	build steam box	steam box is built to accommodate material according to size requirements
C-8.03.04P	calculate length of time required for steaming	length of time required for steaming is calculated according to material thickness and species
C-8.03.05P	clamp wood to form	wood is clamped to form after steaming and until cured

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-8.03.01L	demonstrate knowledge of steam forming wood, and associated characteristics and applications	describe characteristics and applications of steam forming wood
		describe moisture content of woods
		identify ***methods of bending wood***, and describe their characteristics and applications
		determine length of steaming time required for different thicknesses and species of wood
C-8.03.02L	demonstrate knowledge of procedures to steam form wood	identify tools and equipment used to steam form wood, and describe their procedures for use
		describe procedures to steam form wood

RANGE OF VARIABLES

methods of bending wood include: steam, heat

TASK C-9 Laminates wood and composite materials

TASK DESCRIPTOR

The proper sequence and arrangement of pieces is critical when laminating wood and composite materials. Proper selection and use of adhesives and clamping devices will ensure quality lamination.

C-9.01 Arranges materials for laminating

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-9.01.01P	determine finished component size	finished component size is determined according to drawings and project specifications
C-9.01.02P	inspect for ***defects***	materials are inspected for ***defects*** according to ***industry standards***

C-9.01.03P	match colour and grain of materials	colour and grain of materials are matched according to project specifications
C-9.01.04P	prevent warping and cupping	warping and cupping is prevented by alternating growth ring orientation

RANGE OF VARIABLES

defects include: knots, checks, out-of-square, cracks, honeycomb, wane, contaminants
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-9.01.01L	demonstrate knowledge of materials for laminating, and their characteristics and applications	identify materials for laminating, and describe their characteristics and applications
		identify ***types of laminated products***, and describe their characteristics and applications
		describe common ***laminating problems***
		identify dimensions of materials to be laminated
		identify grain direction of materials to be laminated
		identify ***types of adhesives***, and describe their ***properties***, characteristics and applications
		identify ***wood properties***, and describe their characteristics and applications
C-9.01.02L	demonstrate knowledge of procedures to laminate products	identify tools and equipment used to laminate products, and describe their procedures for use
		describe common laminating procedures and sequence of lamination

RANGE OF VARIABLES

types of laminated products include: butcher block tops, tables, panels, segmented layers
laminating problems include: splits, sunken joints, delamination, starved joints
types of adhesives include: wood glues, contact cement, epoxies
properties (adhesives) include: open time, setup time, curing time, clean-up
wood properties include: absorption rate, presence of oils, moisture content

C-9.02 Applies adhesive for laminating

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
C-9.02.01P	select and use tools and equipment	tools and equipment are selected and used according to application requirements
C-9.02.02P	select ***adhesive***	***adhesive*** is selected according to end use and process
C-9.02.03P	determine ***application method***	***application method*** is determined according to manufacturers' specifications
C-9.02.04P	determine amount of ***adhesive***	amount of ***adhesive*** is determined according to type and quantity of wood
C-9.02.05P	spread ***adhesive***	***adhesive*** is spread evenly over joint surface according to manufacturers' specifications

RANGE OF VARIABLES

adhesive include: wood glue, contact cement, epoxies, casein glue, polyurethanes
application method include: rolling, brushing, spraying

KNOWLEDGE

	Learning Outcomes	Learning Objectives
C-9.02.01L	demonstrate knowledge of ***adhesives*** for laminating, and their characteristics and applications	identify ***adhesives*** for laminating, and describe their characteristics and applications
		identify ***types of laminated products***, and describe their characteristics and applications
		describe common ***laminating problems***
		identify types of ***adhesives***, and describe their ***properties***, characteristics and applications
		identify ***wood properties***, and describe their characteristics and applications
C-9.02.02L	demonstrate knowledge of procedures to laminate products	identify tools and equipment used to laminate products, and describe their procedures for use
		describe common laminating procedures and sequence of lamination

RANGE OF VARIABLES

adhesive include: wood glue, contact cement, epoxies, casein glue, polyurethanes
types of laminated products include: butcher block tops, tables, panels, segmented layers
laminating problems include: splits, sunken joints, delamination, starved joints
properties (adhesives) include: open time, setup time, curing time, clean-up
wood properties include: absorption rate, presence of oils, moisture content

C-9.03 Clamps pieces together

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
C-9.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
C-9.03.02P	select and use ***clamps***	***clamps*** are selected and used according to industry standards
C-9.03.03P	determine clamping pressure	clamping pressure is determined according to material thickness and density
C-9.03.04P	ensure alignment prior to final clamping pressure	alignment prior to final clamping pressure is ensured by adjusting pieces using ***tools and equipment***
C-9.03.05P	remove excess glue and squeeze-out	excess glue and squeeze-out is removed using glue scrapers
C-9.03.06P	remove ***clamps***	***clamps*** are removed after adhesives have set

RANGE OF VARIABLES

tools and equipment include: dead blow hammer, pneumatic pressure bar
clamps include: hand, pneumatic, vacuum

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
C-9.03.01L	demonstrate knowledge of ***clamps***, and their characteristics and applications	identify ***clamps***, and describe their characteristics, applications and procedures for use
		identify density of woods and composite materials, and describe their characteristics and applications
C-9.03.02L	demonstrate knowledge of procedures to clamp pieces together	identify procedures to clamp pieces together, and describe their characteristics and applications

RANGE OF VARIABLES

clamps include: hand, pneumatic, vacuum

MAJOR WORK ACTIVITY D

Installs veneers and laminates

TASK D-10 Applies veneers

TASK DESCRIPTOR

Cabinetmakers must understand the methods and techniques used for bonding veneer to a variety of substrates according to the design requirements and specifications. For the purpose of this standard, veneers are made of wood and do not have any backing.

D-10.01 Selects veneers

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
D-10.01.01P	identify ***species of veneers***	***species of veneers*** are identified according to individual characteristics
D-10.01.02P	identify ***cuts of veneers***	***cuts of veneers*** are identified according to matching requirements
D-10.01.03P	balance sheet	sheet is balanced according to ***industry standards***
D-10.01.04P	identify acceptable or unacceptable ***defects*** and aesthetic appearances	acceptable or unacceptable ***defects*** and aesthetic appearances are identified according to ***industry standards***
D-10.01.05P	ensure quantity of product required for project is available	quantity of product required for project is available according to flitch size

RANGE OF VARIABLES

species of veneers include: oak, cherry, maple
cuts of veneers include: rotary, flat, quarter, rift
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
defects include: mineral stains, knots, insect damage, heartwood/sapwood

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-10.01.01L	demonstrate knowledge of veneers, and their characteristics and applications	identify ***species of veneers***, and describe their characteristics and applications
		identify ***cuts of veneers***, and describe their characteristics and applications
		identify ***grades of veneers***, and describe their characteristics and applications
		identify reconstituted veneers, and describe their characteristics and applications
		describe ***matching veneer*** requirements
		describe veneer storage techniques and characteristics
D-10.01.02L	demonstrate knowledge of procedures to select veneers	describe procedures to select veneers
		describe procedure to balance sheet

RANGE OF VARIABLES

species of veneers include: oak, cherry, maple
cuts of veneers include: rotary, flat, quarter, rift
grades of veneers include: AA, A, B, C, D, E, 1, 2, 3, 4
matching veneer includes: book, slip, diamond, swing, random, reverse diamond

D-10.02 Prepares veneer and substrate

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
D-10.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
D-10.02.02P	calculate optimum size of veneer leaves	optimum size of veneer leaves is calculated for application and appearance according to ***industry standards***
D-10.02.03P	cut veneer	veneer is cut to size according to project specifications using ***tools and equipment***
D-10.02.04P	join veneer pieces	veneer pieces are joined by taping or by using ***tools and equipment***
D-10.02.05P	repair checks and splits in veneer	checks and splits in veneer are repaired by taping or by using hand stitchers

D-10.02.06P	cut substrate	substrate is cut to size according to project specifications and considering edge treatment
D-10.02.07P	sand substrate	substrate is sanded using ***sanders***
D-10.02.08P	relax veneer	veneer is relaxed either chemically, according to manufacturers' specifications, or by adding moisture to ensure suitability for laminating

RANGE OF VARIABLES

tools and equipment include: mitre saws, shears, guillotine, veneer saw, edge gluers, stitchers
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
sanders include: thickness, drum, belt

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-10.02.01L	demonstrate knowledge of veneers and substrates, and their characteristics and applications	identify ***species of veneers***, and describe their characteristics and applications
		identify ***cuts of veneers***, and describe their characteristics and applications
		identify ***grades of veneers***, and describe their characteristics and applications
		identify reconstituted veneers, and describe their characteristics and applications
		describe ***matching veneers*** requirements
		describe veneer storage techniques, and describe their characteristics
		identify substrates, and describe their characteristics and applications
		describe methods to calculate quantity of material required
D-10.02.02L	demonstrate knowledge of procedures to prepare veneers and substrates	identify ***tools and equipment*** used to prepare veneers and substrates, and describe their procedures for use
		describe methods to cut veneers and substrates
		describe procedures for edge treatment of substrate
		describe methods to repair veneers and substrates
		describe methods of sanding substrates
		describe methods of relaxing veneers

RANGE OF VARIABLES

species of veneers include: oak, cherry, maple
cuts of veneers include: rotary, flat, quarter, rift
grades of veneers include: AA, A, B, C, D, E, 1, 2, 3, 4
matching veneers include: book, slip, diamond, swing, random, reverse diamond
tools and equipment include: mitre saws, shears, guillotine, veneer saw, edge gluers, stitchers

D-10.03 Adheres veneers to substrates

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
D-10.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
D-10.03.02P	select adhesives	adhesives are selected according to project specifications
D-10.03.03P	apply adhesives	adhesives are applied according to manufacturers' specifications and taking into consideration bleed-through
D-10.03.04P	press veneer to substrate	veneer is pressed to substrate using ***methods*** to apply pressure required
D-10.03.05P	perform visual inspection of veneer	visual inspection of veneer is performed after it is applied to detect delamination and other defects, and repair if possible

RANGE OF VARIABLES

tools and equipment include: glue rollers, glue spreaders, veneer presses
methods include: vacuum press, hot press, cold press

KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-10.03.01L	demonstrate knowledge of veneers and substrates, and their characteristics and applications	identify ***species of veneers***, and describe their characteristics and applications
		identify ***cuts of veneers***, and describe their characteristics and applications
		identify ***grades of veneers***, and describe their characteristics and applications

		identify reconstituted veneers, and describe their characteristics and applications
		identify ***matching veneers***, and describe their characteristics and applications
		identify types of adhesives, and describe their characteristics and applications
		identify types of substrates, and describe their characteristics and applications
		describe procedures for edge treatment of substrate
		describe hazards associated with adhesives
D-10.03.02L	demonstrate knowledge of procedures to adhere veneers to substrates	identify ***tools and equipment*** used to apply adhesives and adhere veneers to substrates, and describe their procedures for use
		describe procedures to adhere veneers to substrates

RANGE OF VARIABLES

species of veneers include: oak, cherry, maple
cuts of veneers include: rotary, flat, quarter, rift
grades of veneers include: AA, A, B, C, D, E, 1, 2, 3, 4
matching veneers include: book, slip, diamond, swing, random, reverse diamond
tools and equipment include: glue rollers, glue spreaders, veneer presses

D-10.04 Performs final clean-up of veneered panels

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
D-10.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
D-10.04.02P	scrape veneer seams	veneer seams are scraped to remove tape, stitch residue and excess glue using ***tools and equipment***
D-10.04.03P	trim overhanging edges	overhanging edges are trimmed using ***tools and equipment***

RANGE OF VARIABLES

tools and equipment include: glue scrapers, sanders, rasps, sanding blocks, files, routers, planes, trimmers

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-10.04.01L	demonstrate knowledge of final veneered panels, and their characteristics and applications	describe wood grain characteristics related to trimming
		describe acceptable defects depending on species and grade
D-10.04.02L	demonstrate knowledge of procedures to perform final clean up of veneered panels	identify ***tools and equipment*** used to perform final clean up of veneered panels, and describe their procedures for use
		describe procedures to perform final clean up of veneered panels
		describe veneer trimming techniques and procedures

RANGE OF VARIABLES

tools and equipment include: glue scrapers, sanders, rasps, sanding blocks, files, routers, planes, trimmers

TASK D-11 Applies laminate sheets

TASK DESCRIPTOR

Cabinetmakers apply laminate sheets to a variety of substrates to provide a durable, sanitary and decorative finish. For the purpose of this standard, veneers with backing are considered laminate sheets as the handling techniques are the same. Many countertops are now supplied by companies that specialize in post-formed countertop manufacturing.

D-11.01 Selects laminate sheets

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
D-11.01.01P	choose size, ***grade and thickness*** of laminate sheets	size, ***grade and thickness*** of laminate sheets is chosen according to project specifications
D-11.01.02P	inspect laminate sheets for ***flaws and damage***	laminate sheets are inspected for ***flaws and damage*** according to ***industry standards***
D-11.01.03P	balance sheet	sheet is balanced according to ***industry standards***

RANGE OF VARIABLES

grades and thickness include: general purpose (GP), vertical grade (V32), acid resistant, fire rated
flaws and damage include: scratches, colour variation
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-11.01.01L	demonstrate knowledge of laminate sheets, and their characteristics and applications	identify types of laminate sheets, and describe their ***properties,*** characteristics and applications
		describe grain direction
		describe sheet balancing
D-11.01.02L	demonstrate knowledge of procedures to select laminate sheets	describe procedures to select laminate sheets

RANGE OF VARIABLES

properties include: flexibility, grade, finish

D-11.02 Prepares laminate sheets and substrate

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
D-11.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
D-11.02.02P	cut laminate sheets	laminate sheets are cut according to project specifications
D-11.02.03P	handle laminate sheets with care	laminate sheets are handled with care to prevent damage according to ***industry standards***
D-11.02.04P	join laminate edges	laminate edges are seamed according to ***industry standards***
D-11.02.05P	cut substrate	substrate is cut to size according to project specifications and considering edge treatment

RANGE OF VARIABLES

tools and equipment include: laminate knives, routers, saws, hand planes
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-11.02.01L	demonstrate knowledge of laminate sheets and substrates, and their characteristics and applications	identify types of laminate sheets, and describe their ***properties,*** characteristics and applications
		identify types of substrates, and describe their characteristics and applications
D-11.02.02L	demonstrate knowledge of procedures to prepare laminate sheets and substrate	identify ***tools and equipment*** used to prepare laminate sheets and substrate, and describe their procedures for use
		describe procedures for edge treatment of substrate
		describe procedures to prepare laminate sheets and substrate

RANGE OF VARIABLES

properties include: flexibility, grade, finish
tools and equipment include: laminate knives, routers, saws, hand planes

D-11.03 Adheres laminate sheets to substrate

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
D-11.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
D-11.03.02P	select ***adhesives***	***adhesives*** are selected according to project specifications
D-11.03.03P	apply ***adhesives***	***adhesives*** are applied according to manufacturers' specifications
D-11.03.04P	press laminate to substrate	laminate is pressed to substrate using ***methods***
D-11.03.05P	apply pressure to laminate when using contact cement	pressure is applied to laminate when using contact cement
D-11.03.06P	achieve tight and flush seam	tight and flush seam is achieved using methods according to ***industry standards***

RANGE OF VARIABLES

tools and equipment include: rollers, glue spreaders, glue sprayers, brushes, rubber mallets
adhesives include: polyvinyl acetate (PVA), contact cement
methods include: vacuum press, hot press, cold press
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

KNOWLEDGE

	Learning Outcomes	Learning Objectives
D-11.03.01L	demonstrate knowledge of laminate sheets and substrates, and their characteristics and applications	identify types of laminate sheets, and describe their ***properties,*** characteristics and applications
		identify types of substrates, and describe their characteristics and applications
		identify types of ***adhesives***, and describe their characteristics and applications
		describe hazards associated with adhesives

		identify solvents and cleaners, and describe their characteristics and applications
		describe ***environmental conditions*** affecting laminate
D-11.03.02L	demonstrate knowledge of ***methods*** to adhere laminate sheets to substrates	identify ***tools and equipment*** used to adhere laminate sheets to substrates, and describe their procedures for use
		describe ***methods*** to adhere laminate sheets to substrates

RANGE OF VARIABLES

properties include: flexibility, grade, finish
adhesives include: PVA, contact cement
environmental conditions include: temperature, humidity
methods include: vacuum press, hot press, cold press
tools and equipment include: rollers, glue spreaders, glue sprayers, brushes, rubber mallet

D-11.04 Performs final clean-up of laminated sheets

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
D-11.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
D-11.04.02P	trim excess laminate	excess laminate is trimmed
D-11.04.03P	file and sand laminate edges	laminate edges are filed and sanded to make flush with substrate
D-11.04.04P	bevel finished laminate edge	finished laminate edge is bevelled
D-11.04.05P	remove excess adhesives	excess adhesives are removed using solvents and specialized cleaners

RANGE OF VARIABLES

tools and equipment include: laminate trimmers, hand planes, files bevel trimmers, sanding blocks

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
D-11.04.01L	demonstrate knowledge of final laminated sheets, and their characteristics and applications	identify solvents and cleaners, and describe their characteristics and applications
		describe manufacturers' guidelines concerning inside radius and cut-outs
D-11.04.02L	demonstrate knowledge of procedures to perform final clean up of laminated sheets	identify ***tools and equipment*** used to perform final clean up of laminated sheets, and describe their procedures for use
		describe procedures to perform final clean up of laminated sheets
		describe laminated sheet trimming techniques and procedures

RANGE OF VARIABLES

tools and equipment include: laminate trimmers, hand planes, files, bevel trimmers, sanding blocks

MAJOR WORK ACTIVITY E

Performs shop assembly

TASK E-12 Assembles cabinets and furniture

TASK DESCRIPTOR

Cabinets are wood or composite products that are permanently fastened in place while furniture is generally freestanding. Cabinetmakers perform assembly of cabinets and furniture in the shop prior to shipping them to the site. They must always be aware of the conditions and accessibility of the installation site.

E-12.01 Assembles cabinet components

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-12.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
E-12.01.02P	select and sort ***cabinet components***	***cabinet components*** are selected and sorted according to cabinet construction, and grain and colour considerations
E-12.01.03P	verify ***cabinet components*** are true, square and cut to size	***cabinet components*** are true, square and cut to size according to drawings and project specifications
E-12.01.04P	apply adhesive to joints	adhesive is applied to joints to provide strength and minimize clean-up
E-12.01.05P	select ***fasteners*** and ***containment methods***	***fasteners*** and ***containment methods*** that allow for wood movement are selected according to drawings and project specifications and ***industry standards***
E-12.01.06P	join ***sub-assembly components***	***sub-assembly components*** are joined using ***tools and equipment***, joints and ***fasteners***
E-12.01.07P	join ***cabinet components***	***cabinet components*** are joined using ***tools and equipment***, joints and ***fasteners***

E-12.01.08P	verify and adjust final assembly for square and accuracy	final assembly is squared and accurate according to drawings, project specifications and ***industry standards***
E-12.01.09P	remove excess adhesive	excess adhesive is removed according to ***industry standards***
E-12.01.10P	trim joints flush and to desired size	joints are trimmed flush and to desired size according to drawings and project specifications and ***industry standards***

RANGE OF VARIABLES

tools and equipment include: measuring tapes, squares, pneumatic nailers and staplers, clamps, biscuit joiners, drills

cabinet components include: gables, tops, bottoms, doors, drawers, backs

fasteners include: biscuits, dowels, screws, assembly fittings, pins, glue blocks, splines

containment methods include: using slotted hardware, foam panel spacers

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

subassembly components include: toe kick boxes, drawer boxes

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-12.01.01L	demonstrate knowledge of ***cabinet components***, and their characteristics and applications	identify ***cabinet components***, and describe their characteristics and applications
		identify ***subassembly components***, and describe their characteristics and applications
		identify types of adhesives, and describe their characteristics and applications
		identify ***standard measurements*** of cabinets, and describe their applications
		describe ***properties*** and applications of solid wood and sheet goods
		identify types of ***joints***, and describe their characteristics and applications
		identify types of ***fasteners***, and describe their characteristics and applications
		identify ***containment methods***, and describe their characteristics and applications
		identify ***types of doors***, and describe their characteristics and applications
		identify ***types of door and drawer front applications***, and describe their characteristics
		identify types of ***door hardware***, and describe their characteristics and applications

		identify types of ***drawer hardware***, and describe their characteristics and applications
		describe face frame and frameless construction
		describe door and drawer front clearances
		identify ***cabinet components***, and describe their characteristics and applications
		identify ***drawer components***, and describe their characteristics and applications
		identify ***cabinet door components***, and describe their characteristics and applications
		describe 32 mm drilling system of cabinetmaking
E-12.01.02L	demonstrate knowledge of procedures to assemble ***cabinet components***	identify ***tools and equipment*** used to assemble ***cabinet components***, and describe their procedures for use
		describe procedures to assemble ***cabinet components***

RANGE OF VARIABLES

cabinet components include: gables, tops, bottoms, doors, drawers, backs
subassembly components include: toe kick boxes, drawer boxes
standard measurements include: height, width, depth
properties include: expansion, contraction, photosensitivity
joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon
fasteners include: biscuits, dowels, screws, assembly fittings, pins, glue blocks, splines
containment methods include: using slotted hardware, foam panel spacers
types of doors include: raised panel, flat panel, tambour, slab
types of door and drawer front applications include: full-overlay, half-overlay, inset, retractable
door hardware includes: hinges (concealed, butt, piano, pivot), soft-closing, locks, pulls
drawer hardware includes: integrated slides, full-extension slides, soft-closing, locks, pulls
drawer components include: sides, bottoms, backs
cabinet door components include: stiles, rails, panels, slab door
tools and equipment include: measuring tapes, squares, pneumatic nailers and staplers, clamps, biscuit joiners, drills

E-12.02 Assembles furniture components

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
E-12.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
E-12.02.02P	select and sort ***furniture components***	***furniture components*** are selected and sorted according to furniture assembly requirements, and grain and colour considerations
E-12.02.03P	verify ***furniture components*** are true, square and cut to size	***furniture components*** are true, square and cut to size according to drawings and project specifications
E-12.02.04P	confirm ***furniture components*** for fit	***furniture components*** and ***joints*** are confirmed for fit
E-12.02.05P	select ***fasteners*** and ***containment methods***	***fasteners*** and ***containment methods*** that allow for wood movement are selected according to drawings and project specifications and ***industry standards***
E-12.02.06P	apply adhesive to ***joints***	adhesive is applied to ***joints*** to provide strength and minimize clean-up
E-12.02.07P	join ***subassembly components***	***subassembly components*** are joined using ***tools and equipment, joints*** and ***fasteners***
E-12.02.08P	join ***furniture components***	***furniture components*** are joined using ***tools and equipment, joints*** and ***fasteners***
E-12.02.09P	verify and adjust final assembly for square and accuracy	final assembly is verified and adjusted for square and accuracy according to drawings, project specifications and ***industry standards***
E-12.02.10P	remove excess adhesive	excess adhesive is removed according to ***industry standards***
E-12.02.11P	trim joints flush and to desired size	joints are trimmed flush and to desired size according to drawings and project specifications and ***industry standards***

RANGE OF VARIABLES

tools and equipment include: measuring tapes, squares, pneumatic nailers and staplers, clamps, biscuit joiners, drills

furniture components include: legs, aprons, rails, arms, backs

joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon

fasteners include: biscuits, dowels, screws, assembly fittings, pins, glue blocks, splines

containment methods include: using slotted hardware, foam panel spacers

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

subassembly components include: web frames, table pedestals

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-12.02.01L	demonstrate knowledge of ***furniture components***, and their characteristics and applications	identify ***furniture components***, and describe their characteristics and applications
		identify ***subassembly components***, and describe their characteristics and applications
		identify types of adhesives, and describe their characteristics and applications
		identify ***standard measurements*** of furniture, and describe their applications
		describe ***properties*** and applications of solid wood and sheet goods
		identify types of ***joints***, and describe their characteristics and applications
		identify types of ***fasteners***, and describe their characteristics and applications
		identify ***containment methods***, and describe their characteristics and applications
		identify ***types of furniture***, and describe their characteristics and applications
		identify ***furniture hardware***, and describe their characteristics and applications
		identify ***types of doors***, and describe their characteristics and applications
		identify ***types of door and drawer front applications***, and describe their characteristics and applications
		identify types of ***door hardware***, and describe their characteristics and applications
		identify types of ***drawer hardware***, and describe their characteristics and applications

		identify ***drawer components***, and describe their characteristics and applications
		describe 32 mm drilling system of cabinetmaking
		identify on-site installation considerations
		describe shipping and handling requirements
E-12.02.02L	demonstrate knowledge of procedures to assemble ***furniture components***	identify ***tools and equipment*** used to assemble ***furniture components***, and describe their procedures for use
		describe procedures to assemble ***furniture components***

RANGE OF VARIABLES

furniture components include: legs, aprons, rails, arms, backs
subassembly components include: web frames, table pedestals
standard measurements include: height, width, depth
properties include: expansion, contraction, photosensitivity
joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon
fasteners include: biscuits, dowels, screws, assembly fittings, pins, glue blocks, splines
containment methods include: using slotted hardware, foam panel spacers
types of furniture includes: tables, chairs, beds, desks
furniture hardware includes: hinges, table slides, swivels
types of doors include: raised panel, flat panel, tambour, slab
types of door and drawer front applications include: full-overlay, half-overlay, inset, retractable
door hardware includes: hinges (concealed, butt, piano, pivot), soft-closing, locks, pulls
drawer hardware includes: integrated slides, full-extension slides, soft-closing, locks, pulls
drawer components include: sides, bottoms, backs
tools and equipment include: measuring tapes, squares, pneumatic nailers and staplers, clamps, biscuit joiners, drills

E-12.03 Combines cabinet and furniture components into final assemblies

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
E-12.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
E-12.03.02P	use ***fasteners***	***fasteners*** are used according to drawings, project specifications and application requirements

E-12.03.03P	install face frame onto case work	face frame is installed onto case work according to drawings and project specifications
E-12.03.04P	apply decorative moulding and edging	decorative moulding and edging are applied considering alignment and placement according to drawings, project specifications and ***industry standards***
E-12.03.05P	install ***hardware***	***hardware*** is installed according to manufacturers' specifications and to achieve desired function
E-12.03.06P	install ***specialty hardware***	***specialty hardware*** is installed according to manufacturers' specifications and to achieve desired function
E-12.03.07P	install ***decorative hardware***	***decorative hardware*** is installed according to drawings, project specifications and client requirements
E-12.03.08P	ensure hardware placement does not impede operation	potential challenges of hardware placement that could impede operation are recognized and adjustments made according to application requirements
E-12.03.09P	install drawer boxes	drawer boxes are installed according to drawings, project specifications and ***industry standards*** using ***hardware*** for smooth operation
E-12.03.10P	install and adjust doors and drawer fronts	doors and drawer fronts are installed and adjusted for alignment and clearances
E-12.03.11P	install glass and decorative panels into framework	glass and decorative panels are installed into framework using ***fastening methods***
E-12.03.12P	test and evaluate all components	all components are tested and evaluated for operation, aesthetic appeal and installation considerations

RANGE OF VARIABLES

tools and equipment includes: tape measures, clamps, pneumatic nailers, screwdrivers, drills, routers, mortising jigs, door handle jigs

fasteners include: biscuits, dowels, screws, assembly fittings, pins, glue blocks, splines

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

hardware includes: hinges, locks, slides, guides

specialty hardware includes: drop leaf hinges, table slides, swivels, retractable door hardware

decorative hardware includes: handles, knobs, pulls

fastening methods include: retaining strips, silicone, wood stops

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-12.03.01L	demonstrate knowledge of final assemblies, and their characteristics and applications	identify ***cabinet components***, and describe their characteristics and applications
		identify ***subassembly components***, and describe their characteristics and applications
		identify ***fastening methods*** for glass and decorative panels, and describe their characteristics and applications
		identify types of adhesives, and describe their characteristics and applications
		identify types of ***joints***, and describe their characteristics and applications
		identify types of ***fasteners***, and describe their characteristics and applications
		identify ***types of doors***, and describe their characteristics and applications
		identify ***types of door and drawer front applications***, and describe their characteristics
		identify types of ***door hardware***, and describe their characteristics and applications
		identify types of ***drawer hardware***, and describe their characteristics and applications
		describe door and drawer front clearances
		describe face frame and frameless construction
		identify ***cabinet components***, and describe their characteristics and applications
		identify ***drawer components***, and describe their characteristics and applications
		identify ***cabinet door components***, and describe their characteristics and applications
		identify ***types of furniture***, and describe their characteristics and applications
		identify ***furniture hardware***, and describe their characteristics and applications
		identify ***furniture components***, and describe their characteristics and applications

		describe 32 mm drilling system of cabinetmaking
		identify on-site installation considerations
		describe shipping and handling requirements
		identify ***hardware***, and describe their characteristics and applications
		identify ***specialty hardware***, and describe their characteristics and applications
		identify ***decorative hardware***, and describe their characteristics and applications
		describe sequence of assembly and consideration ***factors***
E-12.03.02L	demonstrate knowledge of procedures to combine cabinet and furniture components into final assemblies	identify ***tools and equipment*** used to combine cabinet and furniture components into final assemblies, and describe their procedures for use
		describe procedures to combine cabinet and furniture components into final assemblies

RANGE OF VARIABLES

cabinet components include: gables, tops, bottoms, doors, drawers, backs
subassembly components include: toe kick boxes, drawer boxes
fastening methods include: retaining strips, silicone, wood stops
joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon
fasteners include: biscuits, dowels, screws, assembly fittings, pins, glue blocks, splines
types of doors include: raised panel, flat panel, tambour, slab
types of door and drawer front applications include: full-overlay, half-overlay, inset, retractable
door hardware includes: hinges (concealed, butt, piano, pivot), soft-closing, locks, pulls
drawer hardware includes: integrated slides, full-extension slides, soft-closing, locks, pulls
drawer components include: sides, bottoms, backs
cabinet door components include: stiles, rails, panels, slab door
hardware includes: hinges, locks, slides, guides
specialty hardware includes: drop leaf hinges, table slides, swivels, retractable door hardware
decorative hardware includes: handles, knobs, pulls
factors include: finishing requirements, laminating, site assembly, sanding requirements
tools and equipment includes: tape measures, clamps, pneumatic nailers, screwdrivers, drills, routers, mortising jigs, door handle jigs

TASK E-13 Assembles architectural millwork products

TASK DESCRIPTOR

Cabinetmakers assemble architectural millwork products in the shop because it is practical, efficient, cost effective, and reduces installation time. They must always be aware of the conditions and accessibility of the installation site.

E-13.01 Assembles architectural millwork components in shop

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
E-13.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
E-13.01.02P	fabricate ***architectural millwork components***	***architectural millwork components*** are fabricated according to drawings, project specifications and ***industry standards***
E-13.01.03P	combine ***architectural millwork components*** into larger sections	***architectural millwork components*** are combined into larger sections using fasteners and clamps according to ***accessibility and on-site considerations*** and application requirements
E-13.01.04P	confirm ***architectural millwork components*** accuracy and fit	***architectural millwork components*** accuracy and fit is confirmed using ***tools and equipment***

RANGE OF VARIABLES

tools and equipment include: tape measures, squares, levels, clamps, drills

architectural millwork components include: doors, door frames, sidelights, wainscoting, crown and base mouldings, columns, wall cladding, window frames, transoms, wall panels

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

accessibility and on-site considerations includes: elevators, door openings

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-13.01.01L	demonstrate knowledge of ***architectural millwork components***, and their characteristics and applications	identify types of ***architectural millwork components***, and describe their characteristics and applications
		identify ***joints***, and describe their characteristics and applications
		identify types of ***fasteners***, and describe their characteristics and applications
		identify ***architectural specifications***, and describe their characteristics and applications
		describe sequence of assembly in shop and on-site
		identify architectural quality assurance guidelines
		identify ***properties*** of solid wood and sheet goods, and describe their characteristics and applications
		describe shipping and handling requirements
E-13.01.02L	demonstrate knowledge of procedures to assemble ***architectural fixtures***	identify ***tools and equipment*** used to assemble ***architectural fixtures***, and describe their procedures for use
		describe procedures of glass installation for ***products***
		describe procedures to assemble ***architectural fixtures***

RANGE OF VARIABLES

architectural millwork components include: doors, door frames, sidelights, wainscoting, crown and base mouldings, columns, wall cladding, window frames, transoms, wall panels

joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon

fasteners include: concealed fasteners, screws, toggle fasteners, lockable biscuits, flat metal brackets

architectural specifications include: fire-rated products, accessibility requirements

properties include: expansion, contraction, photosensitivity

architectural fixtures include: store and office fixtures, benches, custom display cases

tools and equipment include: tape measures, squares, levels, clamps, drills

products include: display cases, sidelights, doors

E-13.02 Assembles architectural fixtures in shop

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
E-13.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
E-13.02.02P	construct ***architectural fixtures***	***architectural fixtures*** are constructed according to according to architectural drawings, project specifications and ***industry standards***
E-13.02.03P	factor in unique ***challenges of custom applications***	unique ***challenges of custom applications*** are factored in
E-13.02.04P	join components	components are joined using ***fasteners***
E-13.02.05P	verify final dimensions of assembled product	final dimensions of assembled product are verified according to site conditions, architectural drawings, project specifications and ***industry standards***
E-13.02.06P	combine ***architectural fixtures*** into sections	***architectural fixtures*** are combined into sections according to ***accessibility and on-site considerations*** and application requirements
E-13.02.07P	incorporate ***decorative elements*** into fixture	***decorative elements*** are incorporated into fixture according to architectural drawings, project specifications and ***industry standards***

RANGE OF VARIABLES

tools and equipment include: tape measures, squares, levels, clamps, drills

architectural fixtures include: store and office fixtures, benches, custom display cases

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

challenges of custom applications include: electrical and mechanical components, special site conditions

fasteners include: concealed fasteners, screws, toggle fasteners, lockable biscuits, flat metal brackets

accessibility and on-site considerations includes: elevators, door openings

decorative elements include: glass, steel, acrylics, leather

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
E-13.02.01L	demonstrate knowledge of ***architectural fixtures***, and their characteristics and applications	identify types of ***architectural fixtures***, and describe their characteristics and applications
		identify ***joints***, and describe their characteristics and applications
		identify types of ***fasteners***, and describe their characteristics and applications
		identify ***architectural specifications***, and describe their characteristics and applications
		describe sequence of assembly in shop and on-site
		identify architectural quality assurance guidelines
		identify ***properties*** of solid wood and sheet goods, and describe their characteristics and applications
		describe shipping and handling requirements
		identify ***decorative elements***, and describe their characteristics and applications
E-13.02.02L	demonstrate knowledge of procedures to assemble ***architectural fixtures***	identify ***tools and equipment*** used to assemble ***architectural fixtures***, and describe their procedures for use
		describe procedures to assemble ***architectural fixtures***
		describe procedures of glass installation for ***products***

RANGE OF VARIABLES

architectural fixtures include: store and office fixtures, benches, custom display cases
joints include: dowel, biscuit, dovetail, finger, hardware, rabbets, dados, mitres, mortise and tenon
fasteners include: concealed fasteners, screws, toggle fasteners, lockable biscuits, flat metal brackets
architectural specifications include: fire-rated products, accessibility requirements
properties include: expansion, contraction, photosensitivity
decorative elements include: glass, steel, acrylics, leather
tools and equipment include: tape measures, squares, levels, clamps, drills
products include: display cases, doors

MAJOR WORK ACTIVITY F
Performs finishing

TASK F-14 Prepares surface for finishing

TASK DESCRIPTOR

Preparing the surface is important to ensure products are ready to accept the final finish.

F-14.01 Repairs imperfections

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
F-14.01.01P	check material for ***imperfections***	material is checked for ***imperfections*** according to ***industry standards***
F-14.01.02P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
F-14.01.03P	sand and scrape excess glue and blemishes	excess glue and blemishes are sanded and scraped according to ***industry standards*** to ensure defect is no longer visible
F-14.01.04P	fill nail holes, tear-outs and depressions	nail holes and tear-outs and depressions are filled with auto body filler, wood filler and wax (lacquer) sticks according to ***industry standards***
F-14.01.05P	steam wood to remove depressions	wood is steamed to remove depressions and defect is no longer visible according to industry and shop-specific practices

RANGE OF VARIABLES

imperfections include: excess adhesive, contaminants, blemishes, water spots, scratches, dents, machine marks

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
F-14.01.01L	demonstrate knowledge of materials	identify material to be finished
		identify ***material properties***, and describe their characteristics and applications
F-14.01.02L	demonstrate knowledge of procedures to repair ***imperfections***	identify ***tools and equipment*** used to repair ***imperfections***, and describe their procedures for use
		describe procedures to repair ***imperfections***
		describe prevention and removal procedures of ***contaminants***
		describe scraping and sanding procedures to remove glue or machine marks

RANGE OF VARIABLES

material properties include: species of wood, cuts of wood, grade of wood, grain, moisture content, veneer thickness

imperfections include: excess adhesive, contaminants, blemishes, water spots, scratches, dents, machine marks

tools and equipment include: scrapers, pneumatic sanders, putty knives, irons, sandpaper, rags

contaminants include: silicone, solvents, excess glue, water, stains, pitch pockets, resin

F-14.02 Prepares parts for finishing

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
F-14.02.01P	remove hardware	hardware is removed to prevent contamination of hardware from finishing product
F-14.02.02P	mask surfaces	surfaces are masked to protect adjacent areas and hardware from finishing products
F-14.02.03P	places eye hooks and hanging bars/brackets	eye hooks and hanging bars are installed in non-visible locations to hang parts for spraying according to shop-specific standards

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
F-14.02.01L	demonstrate knowledge of activities for preparing parts for finishing	identify ***masking requirements***
		identify ***masking materials***, their characteristics and applications
		describe order of operations for finishing materials
		identify least visible locations for eye hooks and hanging bars

RANGE OF VARIABLES

masking requirements include: protection of hardware and other products, protection of adjacent colours or finishes

masking materials include: masking tape, paper, painter's tape, peel coat

F-14.03 Performs final sanding of surfaces

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
F-14.03.01P	remove cross grain marks	cross grain marks are removed by sanding with grain
F-14.03.02P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
F-14.03.03P	remove sharp edges	sharp edges are removed by sanding material according to ***industry standards***
F-14.03.04P	select grit of sandpaper to finish	grit of sandpaper is selected according to finish and ***industry standards***
F-14.03.05P	remove excess dust	excess dust is removed using vacuums and compressed air according to ***jurisdictional safety regulations***

RANGE OF VARIABLES

tools and equipment includes: scrapers, sanding blocks, orbital sanders, belt sanders, palm sanders, wide-belt sanders

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

jurisdictional safety regulations include: OH&S, WHMIS, workers' compensation boards, manufacturers' health and safety

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
F-14.03.01L	demonstrate knowledge of sanding, and its characteristics and applications	identify material to be finished
		identify ***material properties***, and describe their characteristics and applications
		identify ***abrasive supplies*** and describe their characteristics and applications
		describe sanding procedures
		identify ***types of sandpaper***, and describe their characteristics and applications
		identify ***abrasive grits used for final sanding***, and describe their characteristics and applications
		describe sequence for sanding parts
		describe prevention and removal procedures of ***contaminants***
F-14.03.02L	demonstrate knowledge of procedures for final sanding of surfaces	identify ***tools and equipment*** used for final sanding of surfaces, and describe their procedures for use
		describe procedures for final sanding of surfaces
		describe scraping procedures to remove glue or machine marks
		describe ***procedures for final inspection*** of surface after final sanding and before finishing

RANGE OF VARIABLES

material properties include: species of wood, cuts of wood, grade of wood, grain, moisture content, veneer thickness

abrasive supplies include: sandpaper, scrapers, steel wool, sanding sponges

types of sandpaper includes: aluminium oxide, garnet, silicone carbide, ceramic

abrasive grits used for final sanding include: 100, 120, 150, 180, 220

contaminants include: silicone, solvents, excess glue, oil, water, excess filler

tools and equipment includes: scrapers, sanding blocks, orbital sanders, belt sanders, palm sanders, wide-belt sanders

procedures for final inspection include: performing visual inspections, shining various light sources, applying specialty solvents, performing inspection by touch

TASK F-15 Finishes wood products

TASK DESCRIPTOR

Cabinetmakers should know the basics of finishing. It is important to understand how finishing materials are applied and how they affect the final product.

F-15.01 Prepares finishing materials

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
F-15.01.01P	select ***finishing materials***	***finishing materials*** are selected according to project specifications and applications
F-15.01.02P	measure, mix and filter ***finishing materials***	***finishing materials*** are measured, mixed and filtered according to manufacturers' and project specifications
F-15.01.03P	test and adjust ***finishing materials***	***finishing materials*** are tested and adjusted for ***qualities*** according to ***industry standards*** and client requirements

RANGE OF VARIABLES

finishing materials (interior and exterior) include: lacquers, resins, varnishes, paints, stains, water-based, solvent-based, oils

qualities include: colour, sheen, viscosity, performance

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
F-15.01.01L	demonstrate knowledge of ***finishing materials***, and their characteristics and applications	identify ***finishing materials***, and describe their characteristics and applications
		describe ***application methods*** for finishing materials
		identify ***additives***, and describe their characteristics and applications
		describe ***safety requirements*** involved in preparing finishes

		identify ***finishing material properties***, and describe their characteristics and applications
		describe ***end user hazards*** associated with finishing products
F-15.01.02L	demonstrate knowledge of procedures to prepare ***finishing materials***	identify tools and equipment used to prepare ***finishing materials***, and describe their procedures for use
		describe procedures to prepare ***finishing materials***

RANGE OF VARIABLES

finishing materials (interior and exterior) include: lacquers, resins, varnishes, paints, stains, water-based, solvent-based, oils

application methods include: spraying, brushing, wiping, dipping, distressing

additives include: solvents, dryers, slow-reducers, catalysts

safety requirements include: WHMIS materials (labels, SDS), hazards, PPE, OH&S, jurisdictional standards

finishing material properties include: drying time, appearance, durability

end user hazards include: flammability, off gassing, toxicity

F-15.02 Applies finishing material manually

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
F-15.02.01P	select and use ***tools and equipment*** for applying finishing material manually	***tools and equipment*** for applying finishing material manually are selected and used according to desired finish
F-15.02.02P	test application tools with finishing material	application tools are tested with finishing material to ensure compatibility of tool, technique and material
F-15.02.03P	confirm product is cleaned, sanded and ready to be finished	product is cleaned, sanded and ready to be finished
F-15.02.04P	select ***PPE*** used for manually finishing materials	***PPE*** used for finishing materials is selected according to SDS and safety procedures
F-15.02.05P	select application technique	application technique is selected according to manufacturers' specifications
F-15.02.06P	set up clean and safe area for applying and drying	clean and safe area for applying and drying is set up considering location and environment

RANGE OF VARIABLES

tools and equipment includes: brushes, sponges, rags
PPE includes: masks, filters, gloves, respirators, goggles, aprons, protective coveralls

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
F-15.02.01L	demonstrate knowledge of ***finishing materials***, and their characteristics and applications	identify ***finishing materials***, and describe their characteristics and applications
		identify ***additives***, and describe their characteristics and applications
		describe ***safety requirements*** involved in applying finishing materials
		identify ***manual finishing techniques***, and describe their characteristics and applications
		identify ***finishing material properties***, and describe their characteristics and applications
		identify ***wood properties***, and describe their applications
		describe ***end user hazards*** associated with finishing products
		describe ***finishing problems*** and possible solutions
		describe ***procedures to prepare surface*** between coats
F-15.02.02L	demonstrate knowledge of procedures to apply ***finishing material*** manually	identify ***tools and equipment*** used to apply ***finishing material*** manually, and describe their procedures for use
		describe procedures to apply finishing material manually
		describe methods of repairing finish imperfections or damage
		describe methods of ***conditioning***

RANGE OF VARIABLES

finishing materials (interior and exterior) include: lacquers, resins, varnishes, paints, stains, water-based, solvent-based, oils

additives include: solvents, dryers, slow-reducers, catalysts

safety requirements include: WHMIS materials (labels, SDS), hazards, PPE, OH&S, jurisdictional standards

manual finishing techniques include: brushing, wiping, rolling, dipping, pouring

finishing material properties include: drying time, appearance, durability

wood properties include: stability, absorption, moisture content

end user hazards include: flammability, off gassing, toxicity

finishing problems include: blush, pin-holes, fish eye, orange peel, bleeding, colour variance, drips and runs

procedures to prepare surface include: scuff sanding (manual and machine), removing contaminants (blowing off dust, tacking surface, vacuuming), filling imperfections, shading/toning

tools and equipment includes: brushes, sponges, rags

conditioning includes: wash coat, pre-stain sealant, stain controller

F-15.03 Sprays on finishing material

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
F-15.03.01P	select and use spray equipment for applying finishing material	spray equipment for applying finishing material is selected and used according to desired ***finished properties***
F-15.03.02P	identify, test and adjust spray equipment	spray equipment is identified, tested and adjusted with finishing material to ensure compatibility, set-up and technique
F-15.03.03P	confirm product is cleaned, sanded and ready to be finished	product is cleaned, sanded and ready to be finished
F-15.03.04P	select application technique	application technique is selected according to manufacturers' specifications and desired finish
F-15.03.05P	select ***PPE*** used for spraying finishing materials	***PPE*** used for finishing materials is selected according to SDS and safety procedures
F-15.03.06P	arrange clean and safe area for applying and drying	clean and safe area for applying and drying is arranged considering location and environment
F-15.03.07P	check product for ***finishing problems***	product is checked for ***finishing problems***

RANGE OF VARIABLES

finished properties include: colour, sheen, build

PPE includes: masks, filters, gloves, respirators, goggles, aprons, protective coveralls

finishing problems include: pin-holes, fish eyes, orange peel, overspray, drips and runs, shading/toning, colour variation, poor surface quality

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
F-15.03.01L	demonstrate knowledge of finishing materials, and their characteristics and applications	identify ***finishing materials***, and describe their characteristics and applications
		identify ***additives***, and describe their characteristics and applications
		describe ***safety requirements*** involved in applying finishing materials
		identify ***finishing material properties***
		identify ***wood properties*** and describe their effects on spraying
		describe ***end user hazards*** associated with finishing products
		describe ***finishing problems*** and possible solutions
		identify ***spraying systems***, and describe their characteristics and applications
		describe ***procedures to prepare surface*** between coats
F-15.03.02L	demonstrate knowledge of procedures to spray on ***finishing materials***	identify tools and equipment used to spray on ***finishing materials***, and describe their procedures for use
		describe procedures to spray on finishing materials
		describe methods of repairing finish imperfections or damage
		describe methods of ***conditioning***

RANGE OF VARIABLES

finishing materials (interior and exterior) include: lacquers, resins, varnishes, paints, stains, water-based, solvent-based, oils

additives include: solvents, dryers, slow-reducers, catalysts

safety requirements include: WHMIS materials (labels, SDS), hazards, PPE, OH&S, jurisdictional standards

finishing material properties include: drying time, appearance, durability

wood properties include: stability, absorption, moisture

end user hazards include: flammability, off gassing, toxicity

spraying systems include: HVLP, air assist airless, automated spray systems, automated drying systems

procedures to prepare surface include: scuff sanding (manual and machine), removing contaminants (blowing off dust, tacking surface, vacuuming), filling imperfections, shading/toning

conditioning includes: wash coat, pre-stain sealant, stain controller

MAJOR WORK ACTIVITY G

Performs on-site assembly and installation

TASK G-16 Modifies products to site conditions

TASK DESCRIPTOR

Products often require modifications on-site prior to final installation. Plumbing, electrical and heating access holes may need to be cut and scribing is often done to ensure the product is tight fitting to uneven surfaces. Final adjustments are also done by the cabinetmaker to ensure that the product is functional and aesthetically pleasing.

G-16.01 Cuts access holes on site

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
G-16.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
G-16.01.02P	determine reference point for locating ***access holes***	reference point for locating ***access holes*** is determined according to drawings and site conditions
G-16.01.03P	create holes	holes are created according to project requirements
G-16.01.04P	paint and seal access points	access points are painted and sealed with paint or edging according to ***industry standards***

RANGE OF VARIABLES

tools and equipment includes: jigsaws, circular (track) saw, measuring tapes, levels, drills (hole saws), routers, oscillating multi-tool, paint brushes, rollers

access holes include: electrical, heating, plumbing, mechanical

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
G-16.01.01L	demonstrate knowledge of ***access holes***, and their characteristics and applications	identify functions of ***access holes***
		describe concerns related to working with ***utilities***
G-16.01.02L	demonstrate knowledge of procedures for creating ***access holes***	explain procedures for cutting ***access holes***
		explain why access points are sealed or edged

RANGE OF VARIABLES

access holes include: electrical, heating, plumbing, mechanical
utilities include: electrical, heating, plumbing, mechanical

G-16.02 Scribes product to fit on site

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
G-16.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
G-16.02.02P	recognize untrue wall, ceiling and floor surfaces	untrue wall, ceiling and floor surfaces are recognized according to ***testing tools***
G-16.02.03P	set products in place	products are set in place against untrue walls or surfaces ensuring products are plumb and level
G-16.02.04P	mark profile of surface	profile of surface is marked according to site conditions using ***scribing tools and equipment***
G-16.02.05P	protect surface of product	surface of product is protected where possible using ***protective materials and procedures***
G-16.02.06P	modify profile	profile is modified according to project requirements using ***tools and equipment***

RANGE OF VARIABLES

tools and equipment include: power planes, jigsaws, belt sanders, knives, circular (track) saws

testing tools include: laser level, plumb line, bubble level, water level

scribing tools and equipment include: compasses, pencils and spacers, contour gauges, scribing wheels

protective materials and procedures include: tape, cardboard, polywrap, carpet, limiting personnel access

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
G-16.02.01L	demonstrate knowledge of procedures to scribe product to fit on site	identify ***tools and equipment*** used to scribe product to fit on site, and describe their procedures for use
		describe ***sequence of scribing operations***
		describe procedures to scribe product to fit on site

RANGE OF VARIABLES

tools and equipment include: power planes, jigsaws, belt sanders, knives, circular (track) saws

sequence of scribing operations include: setting products in place, marking profile, protecting surfaces, cutting profile

TASK G-17 Installs cabinets and countertops

TASK DESCRIPTOR

Cabinets and countertops often arrive at the installation site in sections and have to be assembled and fastened in the proper sequence. Cabinetmakers have to securely install cabinets and countertops plumb and level to ensure proper operation of hardware and cabinet components.

G-17.01 Performs final on-site assembly and fastening of cabinets and countertops

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
G-17.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
G-17.01.02P	check site for ***conditions***	site is checked for ***conditions*** to ensure readiness for cabinet installation
G-17.01.03P	protect floors and surrounding areas	floors and surrounding areas are protected to prevent damage from delivery and installation of product
G-17.01.04P	locate and verify ***structural components*** and utilities	***structural components*** and utilities are located and verified to ensure they are appropriate for installation
G-17.01.05P	pre-assemble some cabinet components prior to installation where necessary	some cabinet components are pre-assembled prior to installation according to shop drawings and site conditions
G-17.01.06P	lay out cabinets	cabinets are laid out according to shop drawings and site conditions
G-17.01.07P	modify cabinets	cabinets are modified on site when necessary to meet design requirements using appropriate ***tools and equipment***
G-17.01.08P	position, level and fasten cabinets on walls and floor	cabinets are positioned, leveled and fastened on walls and floor to ensure cabinets are flush and aligned and installed according to ***industry standards***

G-17.01.09P	fit, assemble and fasten countertop components to cabinets	countertop components are fit, assembled and fastened to cabinets according to project requirements using ***tools and equipment*** and ***scribing tools and equipment***
G-17.01.10P	install ***trim components***	***trim components*** are installed according to design drawings

RANGE OF VARIABLES

tools and equipment include: power planes, jigsaws, belt sanders, knives, circular (track) saws, levels
conditions include: level floor, plumb walls, square corners, humidity and temperature
structural components include: blocking, studs, joists, trusses
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
scribing tools and equipment include: compasses, pencils and spacers, contour gauges, scribing wheel
trim components include: crown moulding, baseboard, spindles, decorative trims and profiles, light valences, fascia

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
G-17.01.01L	demonstrate knowledge of cabinets and countertops, and their characteristics and applications	describe process of cabinet construction
		identify ***conditions*** affecting final installation
		describe sequence of on-site assembly as indicated on shop drawings
		identify sequence of work done by other trades
		identify ***mechanical fasteners***, and describe their specifications, characteristics and applications
		identify ***types of countertops***, and describe their characteristics and applications
		identify adhesives, and describe their characteristics and applications
		identify code requirements pertaining to cabinet and countertop installation
G-17.01.02L	demonstrate knowledge of procedures to assemble and fasten cabinets and countertops	identify ***tools and equipment*** used to assemble and fasten cabinets and countertops, and describe their procedures for use
		identify ***scribing tools and equipment*** and describe their procedures for use
		describe procedures to assemble and fasten cabinets and countertops

	describe wall, ceiling and floor construction
	describe procedures to locate utilities in wall, ceiling and floor
	describe installation techniques for fastening solid wood countertops

RANGE OF VARIABLES

conditions include: level floor, plumb walls, square corners, humidity and temperature

mechanical fasteners include: screws, nails, wall anchors, concrete anchors, ready to assemble (RTA) fasteners, draw bolts

types of countertops include: post form, self edge

tools and equipment include: power planes, jigsaws, belt sanders, knives, circular (track) saws, levels

scribing tools and equipment include: compasses, pencils and spacers, contour gauges, scribing wheel

G-17.02 Finalizes installation of cabinets and countertops

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
G-17.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
G-17.02.02P	install handles and accessory hardware	handles and accessory hardware are installed according to drawings and specifications
G-17.02.03P	check and adjust all doors, drawer fronts and hardware	all doors, drawer fronts and hardware are checked adjusted according to ***industry standards*** to enhance visual appearance and ensure smooth operation
G-17.02.04P	identify and repair ***imperfections***	***imperfections*** are identified and repaired according to ***industry standards***
G-17.02.05P	seal ***cut-outs***	***cut-outs*** are sealed according to ***industry standards***
G-17.02.06P	clean cabinets, countertop and worksite	cabinets, countertop and worksite are cleaned using ***cleaners***
G-17.02.07P	select and apply caulking and silicone	caulking and silicone are selected and applied to prevent water damage to cabinets according to compatibility with wall finish

RANGE OF VARIABLES

tools and equipment include: drills, levels, screwdrivers, caulking guns, paint brushes, rollers
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard
imperfections include: scratches, dents, chips, misaligned joints, damaged components
cut-outs include: sinks, plumbing, removable panels, wire chases
cleaners include: methyl hydrate, thinners, solvents, green cleaners, soap and water

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
G-17.02.01L	demonstrate knowledge of cabinets and countertops, and their characteristics and applications	identify cabinets, and describe their characteristics and applications
		identify ***types of countertops***, and describe their characteristics and applications
G-17.02.02L	demonstrate knowledge of procedures to finalize installation of cabinets and countertops	identify ***tools and equipment*** used to finalize installation of cabinets and countertops, and describe their procedures for use
		describe procedures to finalize installation of cabinets and countertops
		identify ***cleaners*** and cleaning procedures used to finalize installation of cabinets and countertops

RANGE OF VARIABLES

types of countertops include: post form, self edge, solid wood
tools and equipment include: drills, levels, screwdrivers, caulking guns, paint brushes, rollers
cleaners include: methyl hydrate, thinners, solvents, green cleaners, soap and water

TASK G-18 Installs architectural millwork products and mouldings

TASK DESCRIPTOR

Cabinetmakers use various techniques, fasteners and adhesives to assemble and install architectural millwork products that arrive on the installation site in sections. Often, mouldings are installed to enhance the overall appearance of the end product.

G-18.01 Performs final on-site assembly and fastening of architectural millwork products

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
G-18.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
G-18.01.02P	assess site conditions	temperature and humidity are recorded, and mechanical, electrical and building conditions are assessed
G-18.01.03P	protect floors and surrounding areas	floors and surrounding areas are protected to prevent damage from delivery and installation of product
G-18.01.04P	check site for ***installation conditions***	site is checked for ***installation conditions***
G-18.01.05P	locate ***structural components*** and ***utilities***	***structural components*** and ***utilities*** are located
G-18.01.06P	assemble architectural components	architectural components are assembled prior to installation according to shop drawings
G-18.01.07P	fit, level and fasten ***architectural millwork products*** on walls, ceiling and floor	***architectural millwork products*** are fit, leveled and fastened on walls, ceiling and floor to ensure products are flush, square and aligned
G-18.01.08P	install passage doors and hardware	passage doors and hardware are installed according to door and hardware schedule, and shop drawings
G-18.01.09P	apply panel adhesives, sealants, glues and caulking	panel adhesives, sealants, glues and caulking are applied according to ***industry standards***

RANGE OF VARIABLES

tools and equipment include: drills, air nailers, levels, saws, ladders, staging
installation conditions include: level floor, plumb walls, square corners
structural components include: studs, joists, trusses, blocking
utilities include: in-floor heating, electrical wiring, data cables, plumbing components
architectural millwork products include: wainscoting, panelling, doors, frames, store fixtures, wood-framed windows
industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
G-18.01.01L	demonstrate knowledge of ***architectural millwork products***, and their characteristics and applications	identify ***architectural millwork products***, and describe their characteristics and applications
		identify hardware, and describe their characteristics and applications
		describe procedures for wall and ceiling construction and finish
		identify ***fasteners***, and describe their characteristics and applications
		identify ***blind fasteners***, and describe their characteristics and applications
		identify ***types of joints***, and describe their characteristics and applications
		identify adhesives, sealants, glues and caulking, and describe their characteristics and applications
G-18.01.02L	demonstrate knowledge of procedures to perform final on-site assembly and fastening of ***architectural millwork products***	identify ***tools and equipment*** used to perform final on-site assembly and fastening of ***architectural millwork products***, and describe their procedures for use
		describe procedures to perform final on-site assembly and fastening of ***architectural millwork products***
		describe procedures to locate ***utilities*** inside walls, ceilings and floors
		describe procedures to locate ***structural components***

RANGE OF VARIABLES

architectural millwork products include: wainscoting, panelling, doors, frames, store fixtures, wood-framed windows

fasteners include: screws, toggles, wall anchors, nails

blind fasteners include: ledger strips, French cleats, keyhole slots

types of joints include: mitre, cope, butt, scarf

tools and equipment include: drills, air nailers, levels, saws, ladders, staging

utilities include: in-floor heating, electrical wiring, data cables, plumbing components

structural components include: studs, joists, trusses, blocking

G-18.02 Installs mouldings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
G-18.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
G-18.02.02P	locate ***structural components***	***structural components*** are located
G-18.02.03P	lay out ***mouldings*** and wainscoting	***mouldings*** and wainscoting are laid out according to drawings and to provide balanced appearance
G-18.02.04P	cut and cope ***mouldings***	***mouldings*** are cut and coped to ensure tight joints
G-18.02.05P	position and secure ***mouldings***	***mouldings*** are positioned and secured using adhesives and fasteners according to ***industry standards***
G-18.02.06P	conceal nail and screw holes	nail and screw holes are concealed using colour match putty, caulking and wax (lacquer) sticks according to ***industry standards***

RANGE OF VARIABLES

tools and equipment include: mitre saws, coping saws, table saws, pneumatic tools, levels, caulking guns

structural components include: studs, joists, trusses

mouldings include: baseboard, casing, crown, chair rail, decorative trims

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
G-18.02.01L	demonstrate knowledge of ***mouldings***, and their characteristics and applications	identify types of ***mouldings***, and describe their characteristics and applications
		identify adhesives, sealants, glues and caulking, and describe their characteristics and applications
		identify wainscoting and design styles
G-18.02.02L	demonstrate knowledge of procedures to install ***mouldings***	identify ***tools and equipment*** used to install ***mouldings***, and describe their procedures for use
		describe procedures to install ***mouldings***
		identify ***types of joints*** and their applications

RANGE OF VARIABLES

mouldings include: baseboard, casing, crown, chair rail, decorative trims

tools and equipment include: mitre saws, coping saws, table saws, pneumatic tools, levels, caulking guns

types of joints include: mitre, cope, butt, scarf

G-18.03 Finalizes installation of architectural millwork products and mouldings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
G-18.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
G-18.03.02P	check and adjust doors, drawer fronts and hardware	doors, drawer fronts and hardware are checked and adjusted according to ***industry standards*** to enhance visual appearance and ensure smooth operation
G-18.03.03P	reinstall removable panels and install grommets	removable panels are reinstalled and grommets installed following installation of ***utilities***
G-18.03.04P	identify and repair ***imperfections***	***imperfections*** are identified and repaired according to ***industry standards***
G-18.03.05P	finalize installation of passage doors	installation of passage doors are finalized by installing ***passage door components***

G-18.03.06P	clean architectural millwork products, passage doors and worksite	architectural millwork products, passage doors and worksite are cleaned using ***cleaners***
G-18.03.07P	apply caulking and silicone	caulking and silicone are applied to prevent water damage to architectural millwork products according to compatibility with wall finish

RANGE OF VARIABLES

tools and equipment include: drills, levels, screwdrivers, caulking guns, paint brushes, rollers, ladders, staging

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

utilities include: data cables, electrical, telephone

imperfections include: scratches, dents, chips, damaged components

passage door components include: door stops, handles, glass, kick plates, locksets, passage sets, hinges, panic bars, overhead closers

cleaners include: methyl hydrate, thinners, solvents, green cleaners, soap and water,

KNOWLEDGE

	Learning Outcomes	Learning Objectives
G-18.03.01L	demonstrate knowledge of ***architectural millwork products*** and ***mouldings*** and their characteristics and applications	identify ***architectural millwork products*** and ***mouldings*** and describe their characteristics and applications
		describe importance of documenting humidity, temperature, and condition of work site, architectural millwork products and moulding
		identify adhesives, sealants, glues and caulking, and describe their characteristics and applications
		identify ***cleaners***, and describe their characteristics and applications
G-18.03.02L	demonstrate knowledge of procedures to finalize installation of ***architectural millwork products*** and ***mouldings***	identify ***tools and equipment*** used to finalize installation of ***architectural millwork products*** and ***mouldings***, and describe their procedures for use
		describe procedures to finalize installation of ***architectural millwork products*** and ***mouldings***

RANGE OF VARIABLES

architectural millwork products include: wainscoting, panelling, doors, frames, store fixtures, wood-framed windows

mouldings include: baseboard, casing, crown, chair rail, decorative trims

cleaners include: methyl hydrate, thinners, solvents, green cleaners, soap and water

tools and equipment include: drills, levels, screwdrivers, caulking guns, paint brushes, rollers, ladders, staging

MAJOR WORK ACTIVITY H

Performs specialized operations

TASK H-19 Builds stairs and balustrades

TASK DESCRIPTOR

This task focuses on the activities that are specific to building stairs and balustrades. Cabinetmakers should be able to use their acquired skills to lay out, build and install stairs and balustrades; however, this is considered a specialized skill.

H-19.01 Lays out stair and balustrade components

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
H-19.01.01P	select and use ***layout tools***	***layout tools*** are selected and used according to application requirements
H-19.01.02P	verify ***stairwell dimensions***	***stairwell dimensions*** are verified according to ***jurisdictional standards and codes***
H-19.01.03P	determine rise/run ratio, radius and spacing of balustrades	rise/run ratio, radius and spacing of balustrades is determined by performing mathematical calculations according to ***industry standards*** and ***jurisdictional standards and codes***
H-19.01.04P	prepare full scale stair layouts	full scale stair layouts are prepared according to calculations and site measurements
H-19.01.05P	verify location of ***stair components***	location of ***stair components*** is verified

RANGE OF VARIABLES

layout tools include: framing squares, angle finders, wing divider, trammel points, lasers, laser levels, plumb bobs

stairwell dimensions include: opening, total rise, allowable headroom, total run

jurisdictional standards and codes include: National Building Code (NBC), jurisdictional building codes

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

stair components include: treads, risers, hand rails, posts, stringers, volutes, landings, newel posts, balustrades

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
H-19.01.01L	demonstrate knowledge of stairs and balustrades, and their characteristics and applications	identify ***stair styles***, and describe their characteristics and applications
		identify ***stair components***, and describe their characteristics and applications
		identify ***considerations*** involved in building stairs
		identify stair terminology
		identify balustrades, and describe their ***components***, characteristics and applications
		describe ***wood properties***
		describe site accessibility and condition considerations
		describe sequence of assembly in shop and on-site
		describe sequence of work done by other trades
		describe mathematical calculations to determine rise/run ratio, radius and spacing of balustrades
H-19.01.02L	demonstrate knowledge of procedures to lay out ***stair*** and ***balustrade components***	identify ***layout tools*** used to lay out ***stair*** and ***balustrade components***, and describe their procedures for use
		describe procedures to lay out ***stair*** and ***balustrade components***
		describe procedures for wall, floor and ceiling construction and finish
		identify clamping techniques, and describe their characteristics and applications

RANGE OF VARIABLES

stair styles include: straight, winders, spiral, curved

stair components include: treads, risers, posts, stringers, volutes, landings, newel posts, hand rails, balustrades

considerations include: required headroom, rise and run ratios, spacing of balustrades, building code requirements

balustrade components include: hand rails, balusters, newel posts, buttress caps, fillets

wood properties include: strength, shrinkage, warping, species, grain, cut

layout tools include: framing squares, angle finders, wing divider, trammel points, lasers, laser levels, plumb bobs

H-19.02 Machines stair and balustrade components

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
H-19.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
H-19.02.02P	select stock	stock is selected to ensure quality and uniformity
H-19.02.03P	machine stringers to accept treads and risers	stringers are machined to accept treads and risers using jigs and templates
H-19.02.04P	shape balusters, hand rails and newel posts	balusters, hand rails and newel posts are shaped according to approved drawings
H-19.02.05P	machine balusters	balusters are machined according to stair design to ensure proper alignment and adequate strength at installation
H-19.02.06P	machine treads	treads are machined according to stair design

RANGE OF VARIABLES

tools and equipment includes: lathes, shapers, moulders, routers, saws, jointers, planers, CNC machines

KNOWLEDGE

	Learning Outcomes	Learning Objectives
H-19.02.01L	demonstrate knowledge of stairs and balustrades, and their characteristics and applications	identify ***stair styles***, and describe their characteristics and applications
		identify ***stair components***, and describe their characteristics and applications

		identify ***considerations*** involved in building stairs
		identify stair terminology
		identify balustrades, and describe their ***components***, characteristics and applications
		describe ***wood properties***
		identify building codes, and describe their applications
		describe site accessibility and condition considerations
		describe sequence of assembly in shop and on-site
H-19.02.02L	demonstrate knowledge of procedures to machine stair and balustrade components	identify ***tools and equipment*** used to machine stair and balustrade components, and describe their procedures for use
		identify machining techniques, and describe their characteristics and applications
		describe procedures to machine stair and balustrade components
		identify clamping techniques, and describe their characteristics and applications
		identify ***stair joinery techniques***, and describe their characteristics and applications

RANGE OF VARIABLES

stair styles include: straight, winders, spiral, curved

stair components include: treads, risers, posts, stringers, volutes, landings, newel posts, hand rails, balustrades

considerations include: required headroom, rise and run ratios, spacing of balustrades, building code requirements

balustrade components include: hand rails, balusters, newel posts, buttress caps, fillets

wood properties include: strength, shrinkage, warping, species, grain, cut

tools and equipment includes: lathes, shapers, moulders, routers, saws, jointers, planers, CNC machines

stair joinery techniques include: dowels, mortise and tenon, rabbets and dados, screws, construction adhesives

H-19.03 Assembles stairs and balustrades

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
H-19.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
H-19.03.02P	form and bend components for curved stringers and hand rails	components for curved stringers and hand rails are formed and bent according to drawings and site conditions
H-19.03.03P	use adhesives, fasteners and wedges	adhesives, fasteners and wedges are used to ensure strong and silent stair construction
H-19.03.04P	construct stairs in sections in shop	stairs are constructed in sections in shop to save time on installation site and according to site accessibility considerations

RANGE OF VARIABLES

tools and equipment include: clamps, pneumatic tools, drills, vacuum bags, power planes

KNOWLEDGE

	Learning Outcomes	Learning Objectives
H-19.03.01L	demonstrate knowledge of stairs and balustrades, and their characteristics and applications	identify ***stair styles***, and describe their characteristics and applications
		identify ***stair components***, and describe their characteristics and applications
		identify ***considerations*** involved in building stairs
		identify stair terminology
		identify balustrades, and describe their ***components***, characteristics and applications
		describe ***wood properties***
		describe site accessibility and condition considerations
		describe sequence of assembly in shop and on-site
		describe sequence of work done by other trades

		identify adhesives, fasteners and wedges, and describe their characteristics and applications
H-19.03.02L	demonstrate knowledge of procedures to assemble stairs and balustrades	identify ***tools and equipment*** used to assemble stairs and balustrades, and describe their procedures for use
		describe procedures to assemble stairs and balustrades
		identify stair assembly techniques, and describe their characteristics and applications
		identify clamping techniques, and describe their characteristics and applications
		describe laminating wood techniques
		identify ***stair joinery techniques***, and describe their characteristics and applications

RANGE OF VARIABLES

stair styles include: straight, winders, spiral, curved

stair components include: treads, risers, posts, stringers, volutes, landings, newel posts, hand rails, balustrades

considerations include: required headroom, rise and run ratios, spacing of balustrades, building code requirements

balustrade components include: hand rails, balusters, newel posts, buttress caps, fillets

wood properties include: strength, shrinkage, warping, species, grain, cut

tools and equipment include: clamps, pneumatic tools, drills, vacuum bags, power planes

stair joinery techniques include: dowels, mortise and tenon, rabbets, dados, screws, construction adhesives

H-19.04 Installs stairs and balustrades

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
H-19.04.01P	select and use ***tools and equipment***	***tools and equipment*** for assembly and installation are selected and used according to application requirements
H-19.04.02P	reassemble ***stair components*** on-site	***stair components*** are reassembled on-site using adhesives, shims and ***fasteners***

H-19.04.03P	locate studs and floor joists	studs and floor joists are located to secure stairs and components in place
H-19.04.04P	position assembled stairs in place	assembled stairs are positioned in place according to drawings and site conditions
H-19.04.05P	level and plumb stairs and balustrades	stairs and balustrades are leveled and plumbed
H-19.04.06P	adjust stairs	stairs are adjusted according to ***site conditions***
H-19.04.07P	secure stairs, balustrades and newel posts in place	stairs, balustrades and newel posts are secured in place to studs, joists or stairs

RANGE OF VARIABLES

tools and equipment include: hand tools, portable power tools, pneumatic tools, clamps, levels, laser levels

stair components include: treads, risers, posts, stringers, volutes, landings, newel posts, hand rails, balustrades

fasteners include: screws, nails, bolts, glue blocks

site conditions include: thickness of finished floors, square of opening

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
H-19.04.01L	demonstrate knowledge of stairs and balustrades, and their characteristics and applications	identify ***stair styles***, and describe their characteristics and applications
		identify ***stair components***, and describe their characteristics and applications
		identify ***considerations*** involved in building stairs
		identify stair terminology
		identify balustrades, and describe their ***components***, characteristics and applications
		describe ***wood properties***
		describe site accessibility and condition considerations
		describe sequence of assembly on-site
		describe sequence of work done by other trades
		identify adhesives, ***fasteners*** and shims, and describe their characteristics and applications
H-19.04.02L	demonstrate knowledge of procedures to install stairs and balustrades	identify ***tools and equipment*** used to assemble and install stairs and balustrades, and describe their procedures for use

	describe procedures to install stairs and balustrades
	identify clamping techniques, and describe their characteristics and applications
	identify ***stair joinery techniques***, and describe their characteristics and applications

RANGE OF VARIABLES

stair styles include: straight, winders, spiral, curved

stair components include: treads, risers, posts, stringers, volutes, landings, newel posts, hand rails, balustrades

considerations include: required headroom, rise and run ratios, spacing of balustrades, building code requirements

balustrade components include: hand rails, balusters, newel posts, buttress caps, fillets

wood properties include: strength, shrinkage, warping, species, grain, cut

tools and equipment include: hand tools, portable power tools, pneumatic tools, clamps, levels, laser levels

stair joinery techniques include: dowels, mortise and tenon, rabbets, dados, screws, construction adhesives

TASK H-20 Works with solid surface material and custom countertops

TASK DESCRIPTOR

Solid surface is a composite material used mainly for countertops, windowsills and backsplashes. Cabinetmakers should be able to use their acquired skills to apply and repair solid surface material; however, it is considered to be a specialized skill and requires certification in order to validate warranties.

H-20.01 Breaks out materials

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
H-20.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
H-20.01.02P	identify damage, defects and colour variation	damage, defects and colour variation are identified by inspecting sheets
H-20.01.03P	optimize material	material is optimized according to shop drawings, cut list and optimizing software data
H-20.01.04P	machine and cut edging, substrates and solid surface material	edging, substrates and solid surface material are machined and cut according to shop drawings, cut list and optimizing software data
H-20.01.05P	machine components for ***hardware and accessories***	components are machined for ***hardware and accessories*** according to shop drawings and site requirements

RANGE OF VARIABLES

tools and equipment include: saws, routers, CNC machines, measuring tools, optimizing software

hardware and accessories include: counter bolts, biscuits, sinks, plumbing points, electrical points, hinges

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
H-20.01.01L	demonstrate knowledge of solid surface material, and their characteristics and applications	identify solid surface material, and describe their characteristics and applications
		describe solid surface ***material properties*** that vary by manufacturer, and describe their characteristics and applications
		identify solid surface ***material dimensions***, and describe their characteristics and applications
		describe manufacturers' specifications and certification program requirements to work with and warranty solid surface material
		identify types of sinks, and describe their characteristics and applications
		describe use of solid surface material in custom applications
H-20.01.02L	demonstrate knowledge of procedures to break out materials	identify ***tools and equipment*** used to break out materials, and describe their procedures for use
		describe procedures to break out materials

RANGE OF VARIABLES

material properties include: polishing and seaming ability, brittleness, colour, photo and chemical sensitivity, pliability, profile and edge treatment, stability

material dimensions include: sheet sizes, thicknesses

tools and equipment include: saws, routers, CNC machines, measuring tools, optimizing software

H-20.02 Fabricates solid surface material

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
H-20.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
H-20.02.02P	prepare components	components are prepared for seaming by cleaning with methyl hydrate to ensure adequate adhesion
H-20.02.03P	apply glue blocks and seaming tools	glue blocks and seaming tools are applied according to industry practices in preparation for seaming
H-20.02.04P	assemble solid surface substrates	solid surface substrates are assembled using glues, clamps and seaming tools
H-20.02.05P	apply edging	edging is applied using adhesives and fasteners, and glue blocks if necessary
H-20.02.06P	apply adhesive and hold components in place	adhesive are applied and components held in place with spring clamps closely spaced to ensure a seamless joint
H-20.02.07P	remove clamps and excess adhesive	clamps and excess adhesive are removed after adhesive has dried
H-20.02.08P	profile edges	edges are profiled according to approved shop drawings
H-20.02.09P	machine countertop for cut-outs	countertop is machined for cut-outs according to approved shop drawings and mechanical requirements
H-20.02.10P	sand and polish components	components are sanded and polished to desired finish
H-20.02.11P	***incorporate*** solid surface material into other materials	solid surface material is ***incorporated*** into other materials

RANGE OF VARIABLES

tools and equipment includes: routers, hole saws, specialty adhesive guns, palm sanders, seaming tools, vacuum system, clamps, polishers

incorporate includes: a solid surface edge to a laminate countertop

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
H-20.02.01L	demonstrate knowledge of solid surface material, and their characteristics and applications	identify solid surface material, and describe their characteristics and applications
		describe solid surface ***material properties*** that vary by manufacturer, and describe their characteristics and applications
		identify solid surface ***material dimensions***, and describe their characteristics and applications
		describe manufacturers' specifications and certification program requirements to work with and warranty solid surface material
		identify solid surface material adhesives, and describe their characteristics and applications
		identify types of sinks, and describe their characteristics and applications
		describe use of solid surface material in custom applications
H-20.02.02L	demonstrate knowledge of procedures to fabricate solid surface material	identify ***tools and equipment*** used to fabricate solid surface material, and describe their procedures for use
		describe thermal forming processes
		describe integration of solid surface material into laminate edges
		describe procedures to fabricate solid surface material
		describe ***polishing methods***, and their characteristics and applications

RANGE OF VARIABLES

material properties include: polishing and seaming ability, brittleness, colour, photo and chemical sensitivity, pliability, profile and edge treatment, stability

material dimensions include: sheet sizes, thicknesses

tools and equipment includes: routers, hole saws, specialty adhesive guns, palm sanders, seaming tools, vacuum system, clamps, polishers

polishing methods include: wet and dry sanding, compound polishing

H-20.03 Installs solid surface material

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	NV	yes	NV	yes	yes	yes	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
H-20.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
H-20.03.02P	cut, fit and scribe solid surface material	solid surface material are cut, fit and scribed according to site conditions
H-20.03.03P	seam joints on-site	joints are seamed on-site according to ***industry standards*** and site conditions
H-20.03.04P	sand, polish and clean solid surface material	solid surface material are sanded, polished and cleaned to ensure seamless joints
H-20.03.05P	pre-fit ***fixtures***	***fixtures*** are pre-fit according to manufacturers' specifications
H-20.03.06P	secure solid surface material	solid surface material are secured using ***adhesives*** according to manufacturers' specifications
H-20.03.07P	repair solid surface material on-site	solid surface material is repaired on-site according to manufacturers' specifications

RANGE OF VARIABLES

tools and equipment includes: routers, sanders, seaming tools, clamps, specialty adhesive guns, caulking guns

industry standards include: AWMAC, AWI, WI, CKCA, shop-specific standard

fixtures include: sinks, faucets, cooktops, soap dispensers

adhesives include: silicone, manufacturers' glues

KNOWLEDGE

	Learning Outcomes	Learning Objectives
H-20.03.01L	demonstrate knowledge of solid surface material, and their characteristics and applications	identify solid surface material, and describe their characteristics and applications
		describe solid surface ***material properties*** that vary by manufacturer, and describe their characteristics and applications
		identify solid surface ***material dimensions***, and describe their characteristics and applications

		describe manufacturers' specifications and certification program requirements to work with and warranty solid surface material
		identify solid surface material ***adhesives***, and describe their characteristics and applications
		identify types of ***fixtures***, and describe their characteristics and applications
		describe use of solid surface material in custom application
H-20.03.02L	demonstrate knowledge of procedures to install solid surface material	identify ***tools and equipment*** used to install solid surface material, and describe their procedures for use
		describe handling and transportation procedures for solid surface material
		describe procedures to install solid surface material
		describe ***fixture*** installation methods
		describe ***polishing methods***, and their characteristics and applications
		describe repair techniques used during installation of solid surface material

RANGE OF VARIABLES

material properties include: polishing and seaming ability, brittleness, colour, photo and chemical sensitivity, pliability, profile and edge treatment, stability

material dimensions include: sheet sizes, thicknesses

adhesives include: silicone, manufacturers' glues

fixtures include: sinks, faucets, cooktops, soap dispensers

tools and equipment includes: routers, sanders, seaming tools, clamps, specialty adhesive guns, caulking guns

polishing methods include: wet and dry sanding

TASK H-21 Creates decorative woodwork

TASK DESCRIPTOR

Decorative woodwork is included in the cabinetmaker trade as a specialized skill, either done on its own or applied as part of a product. Marquetry is the assembly of veneer pieces to form patterns or images. Wood carving is shaping wood using tools such as chisels and carving knives. Woodturning is the shaping of wood on a lathe.

H-21.01 Performs marquetry (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
no	yes	NV	yes	NV	yes	yes	no	no	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
H-21.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
H-21.01.02P	select ***materials***	***materials*** are selected according to design, colours and textures of wood
H-21.01.03P	cut and shape material pieces	material pieces are cut and shaped according to approved shop drawings
H-21.01.04P	tape material pieces	material pieces are taped to create chosen design or picture according to approved shop drawings
H-21.01.05P	apply adhesive to substrate and press material	adhesive is applied to substrate and material pressed
H-21.01.06P	remove excess adhesive and tape	excess adhesive and tape is removed by sanding and scraping material pieces
H-21.01.07P	final sand and finish material pieces	material pieces are final sanded and finished according to customer requirements

RANGE OF VARIABLES

tools and equipment include: saws, knives, sanders, rulers, straightedge, guillotines, pressing tools
materials include: wood veneers, reconstituted veneers

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
H-21.01.01L	demonstrate knowledge of marquetry, and its characteristics and applications	describe marquetry, and its characteristics and applications
		identify ***materials*** used in marquetry and describe their characteristics and applications and properties
		identify ***wood veneer characteristics***, applications and properties
		describe marquetry applications
H-21.01.02L	demonstrate knowledge of procedures to assemble marquetry	identify ***tools and equipment*** used to assemble marquetry, and describe their procedures for use
		describe procedures to assemble marquetry

RANGE OF VARIABLES

materials include: wood veneers, reconstituted veneers
wood veneer characteristics include: species, grains, movement, colour, burls, figuring
tools and equipment include: saws, knives, sanders, rulers, straightedge, guillotines, pressing tools

H-21.02 Performs carving (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
no	yes	NV	yes	NV	yes	yes	no	no	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
H-21.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
H-21.02.02P	identify ***types of carving***	***types of carving*** are identified
H-21.02.03P	select and break out wood and laminated pieces for carving	wood and laminated pieces for carving are selected and broken out according to application and ***characteristics***
H-21.02.04P	lay out design on rough piece	design is laid out on rough piece according to desired shape or form to guide carving process
H-21.02.05P	remove excess material	excess material is removed prior to fine carving
H-21.02.06P	secure work piece	work piece is secured using clamps or fasteners to prevent piece from moving while carving

H-21.02.07P	hand carve work piece	work piece is hand carved according to desired shape or form
H-21.02.08P	clean up work piece	work piece is cleaned up according to desired shape or form

RANGE OF VARIABLES

tools and equipment include: carving knives, gouges, power carving tools, files, rasps, mallets, sanding tools, bandsaw, fine knives, scrapers, sandpaper, clamping tools

types of carving includes: chip, relief, sculpting

characteristics include: hardwood, softwood, grains, movement, colour, burls, figuring

KNOWLEDGE

	Learning Outcomes	Learning Objectives
H-21.02.01L	demonstrate knowledge of wood carving, and its characteristics and applications	describe wood carving, and its characteristics and applications
		identify wood species, and describe their ***characteristics*** and applications and properties
		identify ***types of carving***, and describe their characteristics and applications
H-21.02.02L	demonstrate knowledge of procedures to carve	identify ***tools and equipment*** used to carve, and describe their procedures for use
		describe procedures to carve

RANGE OF VARIABLES

characteristics include: hardwood, softwood, grains, movement, colour, burls, figuring

types of carving includes: chip, relief, sculpting

tools and equipment include: carving knives, gouges, power carving tools, files, rasps, mallets, sanding tools, bandsaw, fine knives, scrapers, sandpaper, clamping tools

H-21.03 Performs woodturning

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
no	yes	NV	yes	NV	yes	yes	no	yes	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
H-21.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
H-21.03.02P	select stock	stock is selected to avoid ***defects*** and meet ***material characteristics*** and desired finish
H-21.03.03P	remove excess material	excess material is removed prior to mounting
H-21.03.04P	mount stock onto lathe	stock is mounted onto lathe using face plate or centre-to-centre method to prepare for turning
H-21.03.05P	turn and machine stock	stock is turned and machined to desired profile
H-21.03.06P	verify measurements	measurements are verified by checking size of piece using caliper
H-21.03.07P	prepare for finish	piece is sanded using various grits of sandpaper to prepare for finish

RANGE OF VARIABLES

tools and equipment include: lathes, copiers, turning tools (gouges, chisels), CNC machine, band saws, calipers

defects include: cracks, splits, knots

material characteristics include: species, size, grains, movement, colour, burls, figuring

KNOWLEDGE

	Learning Outcomes	Learning Objectives
H-21.03.01L	demonstrate knowledge of wood turning, and its characteristics and applications	describe wood turning, ***material characteristics*** and their characteristics and applications
H-21.03.02L	demonstrate knowledge of procedures to turn wood	identify ***tools and equipment*** used to turn wood, and describe their procedures for use
		describe procedures to turn wood
		identify finishing applications used in turning process

RANGE OF VARIABLES

material characteristics include: species, size, grains, movement, colour, burls, figuring

tools and equipment include: lathes, copiers, turning tools (gouges, chisels), CNC machine, band saws, calipers

TASK H-22 Restores woodwork

TASK DESCRIPTOR

Restoring woodwork requires the cabinetmaker to repair building components such as furniture, historic windows and doors, cabinets and millwork components. They must also match the new component to the original.

H-22.01 Repairs woodwork for restoration purposes

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
no	yes	NV	yes	NV	yes	yes	yes	no	yes	NV	NV	NV

	SKILLS	
	Performance Criteria	**Evidence of Attainment**
H-22.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to application requirements
H-22.01.02P	determine restoration requirements	restoration requirements are determined by examining damaged ***woodwork***
H-22.01.03P	select materials	materials are selected to match existing ***woodwork*** and hardware
H-22.01.04P	lay out and produce ***joints***	***joints*** are laid out and produced to match existing construction
H-22.01.05P	replicate parts	parts are replicated to match existing ***woodwork***
H-22.01.06P	repair ***imperfections***	***imperfections*** are repaired
H-22.01.07P	maintain structural and visual integrity of pieces	structural and visual integrity of pieces is maintained using modern and historic procedures according to project specifications
H-22.01.08P	apply adhesives	adhesives compatible to existing adhesive and finishes are applied

H-22.01.09P	scrape, sand and prepare piece for finishing	piece is prepared for finishing by scraping and sanding using modern and historic procedures according to project specifications
H-22.01.10P	replace, install and adjust hardware	hardware is replaced, installed and adjusted after finishing

RANGE OF VARIABLES

tools and equipment include: hand tools, power tools, stationary equipment, automated equipment
woodwork includes: windows, doors, furniture, mouldings
joints include: mortise and tenon, dovetail, rabbet, butt, dowel, dado
imperfections include: scratches, dents, chips, rot, gouges, breaks, missing parts, stains

	KNOWLEDGE	
	Learning Outcomes	**Learning Objectives**
H-22.01.01L	demonstrate knowledge of woodwork, and their characteristics and applications	describe wood characteristics and applications
		identify ***furniture styles***, and describe their characteristics and applications
		identify moulding styles, and describe their characteristics and applications
		identify ***joints***, and describe their characteristics and applications
		identify adhesives used in woodwork restoration, and describe their characteristics and applications
		identify historical hardware
H-22.01.02L	demonstrate knowledge of procedures to repair woodwork for restoration	identify ***tools and equipment*** used to repair woodwork for restoration, and describe their procedures for use
		describe procedures to repair woodwork for restoration
		describe methods for furniture disassembly and assembly
		describe modern and historic procedures for restoration

RANGE OF VARIABLES

furniture styles include: Chippendale, French provincial, Victorian, Westminster, Shaker
joints include: mortise and tenon, dovetail, rabbet, butt, dowel, dado
tools and equipment include: hand tools, power tools, stationary equipment, automated equipment

H-22.02 Refinishes woodwork

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
no	yes	NV	yes	NV	yes	yes	yes	no	yes	NV	NV	NV

SKILLS

	Performance Criteria	Evidence of Attainment
H-22.02.01P	select and use ***finishing tools and equipment***	***finishing tools and equipment*** are selected and used according to required characteristics and period of piece
H-22.02.02P	strip old finishes	old finishes are stripped to maintain or match finish of existing components
H-22.02.03P	maintain integrity of piece	integrity of piece is maintained by matching colour and ***finishes*** according to application requirements
H-22.02.04P	disguise imperfections	imperfections are disguised by staining, bleaching and toning according to application requirements

RANGE OF VARIABLES

finishing tools and equipment include: brushes, rollers, shaders, spray guns, sponges, rags
finishes include: stains, bleaches, lacquers, waxes, oils, dyes, shellacs

KNOWLEDGE

	Learning Outcomes	Learning Objectives
H-22.02.01L	demonstrate knowledge of woodwork, and their characteristics and applications	describe wood characteristics and applications
		identify ***furniture styles***, and describe their characteristics and applications
		identify moulding styles, and describe their characteristics and applications
		identify strippers and describe their characteristics and applications
		identify new and old ***finishes***, and describe their characteristics and applications
		describe historical finishing techniques
H-22.02.02L	demonstrate knowledge of procedures to refinish woodwork	identify ***finishing tools and equipment*** used to refinish woodwork, and describe their procedures for use
		describe procedures to refinish woodwork
		describe methods for furniture disassembly and assembly

RANGE OF VARIABLES

furniture styles include: Chippendale, French provincial, Victorian, Westminster, Shaker
finishes include: stains, bleaches, lacquers, waxes, oils, dyes, shellacs
finishing tools and equipment include: brushes, rollers, shaders, spray guns, sponges, rags

APPENDIX A
ACRONYMS

AHJ	authorities having jurisdiction
AWI	Architectural Woodwork Institute
AWMAC	Architectural Woodwork Manufacturers Association of Canada
CAD	computer-aided design
CAM	computer-aided manufacturing
CKCA	Canadian Kitchen Cabinet Association
CNC	computer numerical control
CSA	Canadian Standards Association
GP	general purpose
HPDL	high pressure decorative laminate
HVLP	high volume low pressure
LVLP	low volume low pressure
MDF	medium density fibreboard
NBC	National Building Code
SDS	safety data sheet
OH&S	Occupational Health and Safety
PPE	personal protective equipment
PVA	polyvinyl acetate
PVC	polyvinyl chloride
RTA	ready to assemble
RPM	revolutions per minute
WHMIS	Workplace Hazardous Materials Information System
WI	Woodwork Institute

APPENDIX B

TOOLS AND EQUIPMENT / OUTILS ET ÉQUIPEMENT

Hand Tools / Outils à main

bench hook	valet d'établi
brushes	pinceaux
burnisher	brunissoir
chalk line	cordeau
chisels (wood, carving, turning)	ciseaux (à bois, à sculpter, du tour à bois)
clamps (bar, C)	serre-joints (à coulisse, en C)
doweling jig	gabarit à goujons
file card	carde à lime
files (wood, metal, laminate)	lime (à bois, à métaux, pour stratifiés)
glass cutter	coupe-verre
grease gun	pistolet graisseur
hammer	marteau
honing stones	pierres à affûter
J-roller	rouleau en j
levels	niveaux
mallet (rubber, dead blow, wood)	maillet (en caoutchouc, sans rebond, en bois)
measuring cup	tasse graduée
mitre trimmer	taille-onglet
moisture meter	hygromètre
nail sets	chasse-clous
oilcan	burette d'huile
planes (jack, smooth, fore, block, router, rabbet)	rabots (varlope, rabot, demi-varlope, rabot à recaler, guimbarde, guillaume à feuillure)
pliers (side cutters, linesman, needle nose)	pinces (pince coupante de côté, pince de monteur de lignes, pince à bec effilé)
pocket screw jig	gabarit manuel de perçage pour vis cachées
pry bar	levier
putty knife	couteau à mastic
sanding block	bloc de ponçage
saws (back, hack, dovetail, coping, keyhole, hand)	scies (à dos, à métal, à queue d'aronde, à chantourner, à guichet, égoïne)
scraper (cabinet, paint)	grattoir (à meuble, à peinture)
scratch awl	pointe à tracer
screwdrivers	tournevis

spokeshave	vastringue
utility knife	couteau universel
viscosity cup	godet de viscosité
wet mil gauge	jauge de broyage humide
wheel dresser	dresse-meule
wood rasp	râpe à bois
wrenches	clés

Portable Pneumatic and Power Tools / Outils pneumatiques et mécaniques portatifs

air compressor	compresseur à air
angle grinder	meuleuse d’angle
biscuit jointer	fraiseuse à lamelles
drill and bits	perceuse et fraises
driver and bits	visseuse et pointes de tournevis
flush trimmer	pareur à chanfrein
glue gun	pistolet encolleur
heat gun	pistolet à air chaud
iron	fer
laminate trimmer	dresseuse de stratifié
nail/staple gun (pneumatic, electric, gas-powered)	cloueuse/agrafeuse (pneumatique, électrique, à essence)
power plane	rabot électrique
powder-actuated tools	outils à charge explosive
router and bits	toupie et fraises
sanders (detail, random orbital, belt, palm)	ponceuse (de détails, orbitale aléatoire, à courroie, à main)
saws (reciprocating, circular, jig, mitre, table)	scies (alternative, circulaire, sauteuse, à onglets, circulaire à table)
spray system	système de pulvérisation

Stationary Power Tools and Equipment / Outils et équipement mécaniques fixes

air compressor	compresseur à air
air dryer	assécheur d’air
band saw	scie à ruban
bench grinder	meuleuse d’établi
case clamp	presse à boîtier
clamp rack	support à serres rotatives
continuous gluing machine	encolleuse en continu
conveyorized glue applicator	encolleuse sur convoyeur
copy grinder	rectifieuse à copier
curing ovens	étuve à durcir

double-ended (twin) saw	scie double
drawer press	presse à tiroirs
drill press	perceuse à colonne
drying system	système de séchage
dust collector	collecteur de poussière
gang saw	scie à lames multiples
glue roller	rouleaux encolleurs
guillotine	guillotine
hinge boring machine	machine de perçage pour charnières
horizontal boring machine	machine horizontale de perçage
horizontal copying lathe	tour horizontal à copier
jointer	dégauchisseuse
lift tables	tables élévatrices
mortising machine	mortaiseuse
moulders	moulurières
multi-boring machine	perceuse multibroche
multi-spindle shaper	façonneuse multibroche
overhead pin router	toupie sur support vertical
panel saw (horizontal, vertical)	scie à panneau (horizontale, verticale)
pneumatic press (clamping)	presse pneumatique (serrage)
postforming machine	machine de postformage
press (hot, cold)	presse (à chaud, à froid)
profile and moulding sanding machine	ponceuse de chant et de moulure
radial arm saw	scie radiale
sanders (disc, wide belt, edge belt, spindle, oscillating, stroke)	ponceuse (à disque, à courroie large, de chant à courroie, à cylindre, oscillante, à courroie longue)
scroll saw	scie à chantourner
shaper	façonneuse
spider clamps (clamp carrier)	support à serre-joint
spray booth	cabine de pulvérisation
spraying systems	systèmes de pulvérisation
table saw	scie circulaire à table
thickness planer	planeuse à rabotage
vacuum press	presse sous vide
veneer saw	scie à placage
veneer splicer	jointeuse-colleuse de placage
wood lathe	tour à bois

Automated and CNC Equipment / Équipement automatisé et équipement CNC

automatic wide belt sander	ponceuse à courroie large automatique
beam saw	scie à poutre automatique
CNC machining center	centres d'usinage CNC
case clamp	presse à boîtier
copying lathe	tour à copier
dovetailer	machine à queue d'aronde
doweling machine	goujonneuse
edge banding machine	plaqueuse de chant
gang saw	scie à lames multiples
mortising machine	mortaiseuse
multiblade rip saw	scie à refendre multilames
panel stacker	empileur de panneaux
power feeders	alimentateurs de production
optimizing saw (computerised)	optimiseur de débit (informatisé)

Shop-manufactured Related Devices/Dispositifs connexes fabriqués en atelier

arc cutter	découpeuse à arc
assembling tables	tables d'assemblage
assembly jigs	gabarit pour assemblage
auxiliary fence	guide de coupe auxiliaire
cauls	plaques de presse
centre finders	centreurs
cove-cutting fences	guides de coupe de gorges (de plinthe)
custom benches	établis spéciaux
featherboards	presseurs à peigne
forklift	chariot élévateur à fourche
locating spacers	cales de positionnement
machining jigs	montages pour usinage
pallet jack	transpalette à main
push blocks	blocs-poussoirs
push sticks	poussoirs
roller line	piste à rouleaux
sanding blocks	blocs de ponçage
saw horses	chevalets de sciage
shooting board	planche à cadrer
sliding tables	tables coulissantes
steam bending box	boîte de cintrage à la vapeur
straight edge	règle droite
templates	gabarits

Layout Tools/Outils de traçage

angle finder	détecteurs d’angle
calipers	compas d’épaisseur
chalk line	cordeau
combination square	équerre à combinaison
compasses	compas
computer software	logiciel d’ordinateur
contour gauge	calibres de forme
drawing board	planche à dessin
laser level	niveau laser
manual level	niveau à main
framing square	équerre de charpentier
hand calculator	calculatrice
imperial and metric scale rules	règles graduées en unités impériales et métriques
marking gauge	trusquin
measuring tape	ruban à mesurer
personal computer	ordinateur personnel
plumb bob	fil à plomb
scratch awl	pointe à tracer
set square	équerre à dessin
speed square	équerre d’angle à chevron
spring clamps	pinces à ressort
steel square	équerre en acier
straight edges	règles droites
stud finder	détecteur de montants
sliding T-bevel	fausse équerre
T square	équerre en T
trammel points	pointes de compas d’ellipse
try square	équerre de menuisier
writing tools (pencil, marker)	outils d’écriture (crayon, marqueur)

Metalworking Tools / Outils pour le travail des métaux

centre punch	pointeau à centrer
file	lime
hack saw	scie à métal
metal shears	cisailles à métaux

Personal Protective Equipment and Safety Equipment / Équipement de protection individuelle et équipement de sécurité

apron	tablier
coveralls	combinaison de travail
dust mask	masque antipoussières
ear protection	protecteurs d’oreille
eye wash station	douche oculaire
face shield	protecteur facial
fire extinguisher	extincteur
first aid kit	trousse de premiers soins
fresh air system and hood	système d’aération et capuchon
hair net	filet pour cheveux
head protection	casque de protection
gloves	gants de sécurité
goggles	lunettes à coques
respirator	appareil respiratoire
safety boots	bottes de sécurité
safety glasses	lunettes de sécurité

APPENDIX C
GLOSSARY / GLOSSAIRE

adhesive	substance that is used to bond together materials by surface attachment	**adhésif**	substance utilisée pour assembler les matériaux par collage
architectural millwork	furniture, cabinets and machined wood products such as doors, windows, stairways, mouldings, panelling, sidelights, transoms and trims	**ouvrages de menuiserie architecturale**	signifie les meubles et les produits en bois usiné comme les portes, les fenêtres, les escaliers, les moulures, les panneaux, les carreaux latéraux vitrés, les impostes, les garnitures, etc.
automated equipment	electronically-controlled machines designed to perform a process or sequence without computer numeric control	**matériel automatisé**	machine à commande électronique conçue pour effectuer un processus ou une suite d'opérations sans l'aide de commande numérique par ordinateur
balusters	upright supporting a hand rail of a staircase or balcony	**balustre**	montant soutenant la main courante d'un escalier ou d'un balcon
balustrade	row of repeating balusters surmounted by a capping or rail	**balustrade**	rangée de balustres identiques surmontée d'un chapiteau ou d'une main courante
bleaching	to apply a chemical solution to wood surfaces for lightening the colour	**blanchiment**	opération consistant à passer une solution chimique sur les surfaces du bois pour en éclaircir la couleur
break out	to perform a rough-cut of material	**dégrossir**	couper grossièrement des pièces de bois
cabinet	finished product that is attached to the wall or floor	**armoire**	produit fini fixé au mur ou au plancher
carving	to shape by cutting into a hard material such as wood, plastic, stone	**sculptage**	façonnage effectué en taillant dans des matériaux durs comme le bois, le plastique ou la pierre
CNC equipment	a stand-alone piece of machinery with computer numeric controls	**équipement CNC**	équipement autonome à commande numérique par ordinateur

evacuation kit	kit containing a first aid kit and important information such as employee list, plant layout and company records	**trousse d'évacuation**	ensemble contenant une trousse de premiers soins et des renseignements importants comme la liste des employés, le plan d'aménagement de l'usine et les dossiers de l'entreprise
final assembly	final phase of production which involves fitting together previously sub-assembled components	**assemblage final**	phase finale de la production qui consiste à assembler les composants préalablement assemblés
finishing	application of finishing materials to wood surfaces for protection and to enhance appearance	**finition**	application de produits de finition sur les surfaces du bois pour les protéger et améliorer leur aspect
furniture	finished product that is free standing	**meuble**	produit fini autoportant
gables	vertical side in a cabinet or piece of furniture	**pièces latérales**	face verticale ou cloison d'une armoire ou d'un meuble
hand stitcher	machine used to fabricate and repair tears in veneer sheets before pressing to substrate	**brocheuse à la main**	machine utilisée dans la réparation d'éclats dans les feuilles de placage avant le pressage au matériau de support
jigs	devices specifically designed and built for the safe performance of repetitive work. They may be used either to hold the work in place or to guide the tools during machining or assembly processes	**gabarits**	dispositifs conçus et fabriqués spécialement pour la bonne réalisation des travaux répétitifs; ils peuvent être utilisés soit pour maintenir la pièce en position, soit pour guider les outils lors des processus d'usinage et de montage
laminating	adhering of 2 or more pieces of wood or composite material to achieve a desired width or thickness	**stratification**	collage de deux ou plusieurs morceaux de bois ou de matériau composite en vue d'obtenir la largeur ou l'épaisseur souhaitée
layout	process of setting out patterns and shapes of parts and components of cabinet/furniture and architectural woodwork components	**tracé**	processus qui consiste à établir les modèles et les formes en grandeurs réelles des pièces et des éléments constitutifs des meubles et des ouvrages de menuiserie
marquetry	craft of covering a structure with veneer forming decorative patterns, designs or pictures	**marqueterie**	travail d'artisanat consistant à recouvrir la structure d'un placage formant des motifs, des images ou des dessins décoratifs

prototype	preliminary version or full-scale model of a cabinet or furniture item, built to ascertain the soundness of the design features. It also helps the production planning process	**prototype**	version préliminaire d'un modèle de grandeur réelle d'une armoire ou d'un meuble, construit pour vérifier la qualité des caractéristiques conceptuelles; il aide également lors du processus de planification de la production
reconstituted veneers	veneers made from natural timber veneers, dyed all the way through, then laminated together and re-sliced to make veneers in unique patterns and colours	**placages reconstitués**	placages faits à partir de feuilles de placage de bois d'œuvre naturel teintes dans toute l'épaisseur, puis contrecollées et recoupées afin de créer des motifs et des couleurs uniques
restoring	to repair and reconstruct furniture and cabinet components	**restauration**	réparation et reconstruction des éléments constitutifs des meubles
riser	vertical part of the stairs that joins one tread to the next	**contremarche**	la face verticale de l'escalier couvrant l'espace entre deux marches
scribe	process to cut a component to fit the profile of an uneven surface	**chantourner**	tracer une ligne pour découper un composant de manière à l'adapter au profil d'une surface inégale
shop drawing	technical drawing used to communicate detailed specifications and dimensions of furniture and cabinet items	**dessin d'atelier**	dessin technique utilisé pour indiquer les caractéristiques et les dimensions détaillées des meubles
template	pattern guide or model used for laying out or for verifying the accuracy of machined parts	**modèles**	guide ou modèle utilisé pour tracer ou pour vérifier la précision des pièces usinées
tread	horizontal component of the stairs that is walked on	**marche**	la surface horizontale d'un escalier sur laquelle on pose le pied
turning	shaping of wood or metal on a lathe	**tournage**	façonnage du bois ou du métal à l'aide d'un tour
veneer (n)	thin layer of wood, sliced, cut or sawn to even thickness	**placage**	fine couche de bois, tranchée, coupée ou sciée et d'une épaisseur uniforme
veneer leaves	individual pieces of veneer	**feuille de placage**	pièces de placage individuelles
veneering (v)	to prepare and cover surfaces with veneer	**plaquer**	préparer et recouvrir les surfaces de fines couches de bois ou de placage
volute	end of a hand rail that is shaped like a spiral	**volute**	main courante en forme de spirale

Workplace Hazardous Materials Information System (WHMIS)	Canadian legislation governing the provision of information about hazardous materials in the workplace; incorporates global harmonized system (GHS)	**Système d’information sur les matières dangereuses utilisées au travail (SIMDUT)**	règlementation canadienne régissant l’information sur l’utilisation de matières dangereuses au travail; comprend le système général harmonisé (SGH)