

# Provincial Occupational Analysis

Nova Scotia

## Automotive Glass Technician Trade

Nova Scotia Apprenticeship Agency  
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## STRUCTURE OF ANALYSIS

To facilitate the understanding of the occupation, the work performed is divided into the following categories:

<b>Block</b>	the largest division within the analysis which reflects a distinct set of operations relevant to the occupation.
<b>Task</b>	the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform in a block.
<b>Sub-task</b>	the smallest division of work activities that, combined together, fully describe all duties of a task.
<b>Required Knowledge</b>	the elements of knowledge that an individual must acquire to adequately perform a task.
<b>Key Competencies</b>	activities that a person should be able to do in order to be called competent in the trade.

The appendices located at the end of the analysis are described as follows:

<b>Appendix A – Tools and Equipment</b>	a non-exhaustive list of tools and equipment used in this trade.
<b>Appendix B – Blocks and Tasks Weighting</b>	the block and task weighting chart identifies the approximate number of questions on the certification examination pertaining to each task within a block.
<b>Appendix C – Pie Chart</b>	a graph which identifies the approximate number of questions on the certification examination from each particular skill block.
<b>Appendix D – Task Profile Chart</b>	a chart which outlines the blocks, tasks and sub-tasks of this analysis. This chart is a useful self-assessment tool to determine your current knowledge and skills based on the tasks and sub-tasks of the trade.

# ANALYSIS

The Automotive Glass Technician trade in Nova Scotia means the repair, removal and installation of glass and windshields in motorized and automotive vehicles and any equipment or accessories essential to the operation thereof.

In performing the trade, the technician:

- protects herself/himself and others by using protective equipment and following safety practices;
- communicates with clients, co-workers and supervisors;
- becomes knowledgeable about all types of automotive glass, catalogues and software; describes procedures, prices and parts;
- stores and handles glass;
- inspects vehicles for damage, including water or air leaks;
- determines the damage to glass, trim and components;
- estimates the cost of repair or replacement of glass and related components;
- selects automotive glass tools, safety equipment and replacement glass, trim and components;
- installs new materials by preparing and using vehicle bonding materials;
- repairs and replaces structural and non-structural stationary glass and movable glass;
- repairs trim and related components;
- performs leak tests and uses adhesives, sealers, primers and solvents; and
- creates and/or reads a template sketch.

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Task 1 Uses documentation.

**Required Knowledge**

K 1	sources of specifications and information
K 2	industry terminology
K 3	vehicle construction
K 4	estimate formats
K 5	work order formats
K 6	applicable repair procedure documents
K 7	insurance provider policies
K 8	location of safety and environmental regulations
K 9	Workplace Hazardous Materials Information System (WHMIS) and Material Safety Data Sheets (MSDS)
K 10	Occupational Health and Safety (OH&S)

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**Sub-task**

**1.01 Uses manufacturers' and industry specifications and repair procedures.**

**Key Competencies**

**A competent automotive glass technician must be able to:**

1.01.01	locate and access documentation such as printed and electronic materials
1.01.02	interpret documents such as repair procedures, specifications and environmental regulations
1.01.03	follow and apply information found in documentation
1.01.04	refer to tool and equipment operation manuals

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**Sub-task**

**1.02 Interprets estimates.**

**Key Competencies**

**A competent automotive glass technician must be able to:**

1.02.01	verify vehicle and customer information
1.02.02	identify repairs required according to the estimate to verify procedure and time required
1.02.03	identify additional components and damages missed on original estimate to complete repair
1.02.04	locate and access insurance provider policies

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**Sub-task****1.03 Uses work orders.****Key Competencies**

**A competent automotive glass technician must be able to:**

- 1.03.01 follow instructions on work order
- 1.03.02 refer to work order to obtain information on vehicle and to plan the tasks
- 1.03.03 record parts, sublets and labour applied to tasks
- 1.03.04 summarize tasks that have been completed
- 1.03.05 submit work orders to administration for billing purposes

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**Sub-task****1.04 Interprets safety and environmental regulations.****Key Competencies**

**A competent automotive glass technician must be able to:**

- 1.04.01 locate and access regulation documentation such as WHMIS and MSDS, occupational health and safety information and company policies
- 1.04.02 follow governmental safety regulations to enforce safety procedures within the shop
- 1.04.03 locate and access safety and first aid materials
- 1.04.04 interpret safety symbols such as on corrosive, explosive, pressurized and poisonous materials

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**Task 2 Uses and maintains tools and equipment.****Required Knowledge**

- K 1 types of hand tools such as cold knives, suction cups, glass cutters, caulking guns and hook tools
  - K 2 types of power tools such as ultra-violet lamp, drill, rivet gun, belt sander and reciprocating cut-out tool
  - K 3 operating procedures for tools and equipment
  - K 4 vehicle construction
  - K 5 types of personal protective equipment (PPE) used for work involving hand and power tools
  - K 6 types of PPE such as hearing, eye, skin and breathing protection
  - K 7 PPE operations
  - K 8 workplace safety and health regulations
-



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**Sub-task****2.01 Uses and maintains hand tools.****Key Competencies**

***A competent automotive glass technician must be able to:***

- 2.01.01 select and use tools, equipment, hardware and fasteners according to manufacturers' specifications
- 2.01.02 clean hand tools to ensure proper operation and to prevent transfer of contaminants to vehicle
- 2.01.03 check tools for damage, excess wear and proper operation
- 2.01.04 store hand tools to organize and secure tools

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**Sub-task****2.02 Uses and maintains power tools.****Key Competencies**

***A competent automotive glass technician must be able to:***

- 2.02.01 select and use power tools and equipment according to manufacturers' specifications
- 2.02.02 lubricate power tools according to manufacturers' specifications
- 2.02.03 adjust power tools
- 2.02.04 check tools for wear, damage and malfunction
- 2.02.05 follow recommended maintenance limitations on power tools
- 2.02.06 store power tools to organize and secure tools

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**Sub-task****2.03 Uses personal protective equipment (PPE).****Key Competencies**

***A competent automotive glass technician must be able to:***

- 2.03.01 select and use PPE required for task such as, hearing protection, respirators, solvent-resistant gloves and eye protection
- 2.03.02 inspect and maintain PPE to ensure it is ready to use
- 2.03.03 store PPE such as respirators, coveralls and other non-disposable items
- 2.03.04 check operation of PPE prior to use

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Task 3 Organizes work.

**Required Knowledge**

K 1	vehicle construction
K 2	types of glass
K 3	industry terminology
K 4	repair procedures
K 5	parts and materials
K 6	WHMIS and MSDS and their locations
K 7	OH&S
K 8	PPE
K 9	workers' rights and responsibilities
K 10	location of safety equipment such as eye wash station, fire fighting equipment and first aid kit
K 11	emergency procedures
K 12	safe disposal and recycling procedures
K 13	jurisdictional disposal and recycling regulation
K 14	insurance provider policies and guidelines

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**Sub-task**

**3.01 Prepares damage estimate.**

**Key Competencies**

**A competent automotive glass technician must be able to:**

3.01.01	record information such as customer name, vehicle identification number (VIN), make and model, glass description, electrical components, trim and mouldings
3.01.02	visually assess damage to vehicle glass to document repair required, pre-existing, related and non-related damage
3.01.03	locate and access insurance provider policies
3.01.04	photograph vehicle as required
3.01.05	complete written estimate of glass damage by listing parts, materials, time and labour required
3.01.06	remove vehicle glass to access and assess hidden damage after obtaining permission

---

**Sub-task**

**3.02 Organizes replacement parts and materials.**

**Key Competencies**

**A competent automotive glass technician must be able to:**

3.02.01	verify that necessary parts and materials are available
3.02.02	notify supervisor of missing, damaged and incorrect parts
3.02.03	store parts
3.02.04	inspect and prepare parts prior to installation

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**Sub-task****3.03                    Communicates with others.****Key Competencies*****A competent automotive glass technician must be able to:***

- 3.03.01            use understandable trade-related terminology for effective communication with other repairers
- 3.03.02            request assistance from others when needed
- 3.03.03            explain technical information in plain language to office staff and customers
- 3.03.04            communicate with related professionals such as appraisers, partspersons and automotive painters
- 3.03.05            guide and instruct apprentices to pass along knowledge and skills
- 3.03.06            operate communication equipment

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**Sub-task****3.04                    Prepares work area.****Key Competencies*****A competent automotive glass technician must be able to:***

- 3.04.01            ensure that work area is clear and clean before starting work
- 3.04.02            select and bring tools and equipment to work area

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**Sub-task****3.05                    Prepares vehicle.****Key Competencies*****A competent automotive glass technician must be able to:***

- 3.05.01            determine location of hazard-producing components such as air bags and ultra-sonic detectors
- 3.05.02            protect self against hazard-producing components according to manufacturers' specifications
- 3.05.03            prepare and protect surrounding area, paint surfaces and air ducts
- 3.05.04            remove hardware, trim, accessories and panels
- 3.05.05            remove and preserve vapour barrier

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**Sub-task****3.06 Maintains safe work environment.*****Key Competencies******A competent automotive glass technician must be able to:***

- 3.06.01 keep shop clean and organized
- 3.06.02 recognize and eliminate fire hazards such as contaminated rags and build up of vapours
- 3.06.03 recognize and eliminate hazardous conditions such as fumes, lack of grounding and static electricity
- 3.06.04 record disposal of hazardous materials such as waste thinners, paints and oils
- 3.06.05 recognize and eliminate personal injury hazards such as sparks, static electricity and sharp metal
- 3.06.06 perform basic first aid
- 3.06.07 identify types of fire extinguishers
- 3.06.08 locate and use fire extinguishers, first aid kits and eye wash stations

Task 4 Replaces stationary glass.

**Required Knowledge**

- K 1 types of stationary glass
- K 2 removal and installation tools and techniques
- K 3 stationary glass applications
- K 4 bonding and priming material specifications such as expiry date and drying times
- K 5 types of bonding materials
- K 6 types of trim and mouldings
- K 7 stationary glass handling techniques
- K 8 glass identification such as National Auto Glass Society (NAGS), Original Equipment Manufacturer (OEM) and DOT Number
- K 9 glass options such as antenna, heated glass, rain sensors and heads-up display

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**Sub-task**

**4.01 Removes stationary glass.**

**Key Competencies**

**A competent automotive glass technician must be able to:**

- 4.01.01 inspect and disconnect applicable wiring
- 4.01.02 remove glass from mounting materials using methods such as cutting urethane or removing from rubber gasket
- 4.01.03 dispose of or store glass according to shop procedures

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**Sub-task****4.02            Installs stationary glass.*****Key Competencies******A competent automotive glass technician must be able to:***

- 4.02.01            inspect glass for defects such as scratches, chipped edges and pitting
- 4.02.02            prepare pinch weld using methods such as cutting old urethane and cleaning
- 4.02.03            inspect pinch weld for conditions such as damage, corrosion and defects
- 4.02.04            test fit glass in opening and check for defects
- 4.02.05            prepare glass according to manufacturers' specifications
- 4.02.06            apply primer and urethane or moulding
- 4.02.07            insert glass in opening and verify alignment
- 4.02.08            secure glass in place
- 4.02.09            verify installation of glass to detect conditions such as water leaks and wind noise
- 4.02.10            verify operation of electrical components such as heated glass, sensors, wipers and MIL lights
- 4.02.11            install trim
- 4.02.12            ensure safe drive-away time has been reached according to sealant manufacturers' specifications, before returning vehicle to customer

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**Task 5** Repairs laminated glass.**Required Knowledge**

- K 1 construction of laminated glass
  - K 2 laminated glass applications and limitations
  - K 3 repair tools and techniques
  - K 4 repair adhesive specifications such as expiry date and drying times
  - K 5 glass identification such as National Auto Glass Society (NAGS), Original Equipment Manufacturer (OEM) and DOT Number
  - K 6 glass options such as antenna, heated glass, rain sensors and heads-up display
- 

**Sub-task****5.01** Repairs laminated glass.**Key Competencies**

***A competent automotive glass technician must be able to:***

- 5.01.01 inspect glass to determine reparability
- 5.01.02 remove loose glass and contamination from fracture or chip
- 5.01.03 apply vacuum to remove air and moisture
- 5.01.04 inject repair resin into the fracture or chip
- 5.01.05 cure resin with ultraviolet light
- 5.01.06 remove excess resin
- 5.01.07 verify repair

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**Task 6** Replaces moveable glass.**Required Knowledge**

K 1	types of moveable glass
K 2	removal and installation tools and techniques
K 3	moveable glass applications
K 4	component operation
K 5	types of fasteners
K 6	safety equipment and procedures
K 7	hardware components such as regulators, window guides, channel guides and latches, fasteners and bolts
K 8	types of trim, accessories, panels and vapour barriers
K 9	moveable glass handling techniques
K 10	glass identification such as National Auto Glass Society (NAGS), Original Equipment Manufacturer (OEM) and DOT Number

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**Sub-task****6.01** Removes moveable glass.**Key Competencies**

*A competent automotive glass technician must be able to:*

6.01.01	inspect and disconnect applicable wiring
6.01.02	access hardware and position glass for removal
6.01.03	identify and remove fasteners such as pressure clips, mechanical clips, rivets and bolts
6.01.04	extract glass from vehicle
6.01.05	inspect vehicle for damage and vacuum all areas such as seat, seat belt retractors, window regulators, heating and cooling vents and door panels for broken glass
6.01.06	dispose of or store glass according to shop procedures

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**Sub-task****6.02** Installs moveable glass.**Key Competencies**

*A competent automotive glass technician must be able to:*

6.02.01	inspect glass for defects such as scratches, chipped edges and pitting
6.02.02	insert glass in opening and attach with applicable hardware and fasteners
6.02.03	verify fit and operation of glass
6.02.04	verify operation of electrical components such as air bags
6.02.05	install trim



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Task 7 Replaces laminated safety glass.

**Required Knowledge**

- K 1 removal, installation and measurement tools and techniques  
K 2 glass type and application, such as windshields, and back, side, roof glass and mirrors  
K 3 types of mounting devices, trim and components

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**Sub-task**

**7.01 Produces a template.**

**Key Competencies**

**A competent automotive glass technician must be able to:**

- 7.01.01 check original glass size and type  
7.01.02 check frame opening, mounting device and gasket  
7.01.03 select template material  
7.01.04 remove glass  
7.01.05 draw template according to body opening and installation method  
7.01.06 inspect template for fit

---

**Sub-task**

**7.02 Prepares for glass cutting.**

**Key Competencies**

**A competent automotive glass technician must be able to:**

- 7.02.01 select glass type as per application  
7.02.02 select tools and safety equipment required for glass cutting

---

**Sub-task**

**7.03 Cuts glass.**

**Key Competencies**

**A competent automotive glass technician must be able to:**

- 7.03.01 position glass on top of template  
7.03.02 cut glass following approved procedures  
7.03.03 grind or polish glass to finish edges  
7.03.04 prepare glass according to installation method  
7.03.05 install glass according to installation method

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Task 8 Replaces specialty glass.

**Required Knowledge**

- K 1 types of specialty glass (sun roofs, convertible back windows, etc.)
- K 2 removal and installation tools and techniques
- K 3 specialty glass applications
- K 4 component operation
- K 5 types of fasteners and adhesives
- K 6 safety equipment and procedures
- K 7 hardware components such as regulators, window guides, channel guides and latches, fasteners and bolts
- K 8 types of trim and accessories
- K 9 glass identification such as National Auto Glass Society (NAGS), Original Equipment Manufacturer (OEM) and DOT Number

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**Sub-task**

**8.01 Removes specialty glass.**

**Key Competencies**

***A competent automotive glass technician must be able to:***

- 8.01.01 inspect and disconnect applicable wiring
- 8.01.02 access hardware and position glass for removal
- 8.01.03 identify and remove fasteners such as pressure clips, mechanical clips, rivets and bolts
- 8.01.04 remove glass from mounting materials using methods such as cutting urethane or removing from rubber gasket
- 8.01.05 extract glass from vehicle
- 8.01.06 inspect vehicle for damage and vacuum all areas such as seat, seat belt retractors, window regulators, heating and cooling vents and door panels for broken glass
- 8.01.07 dispose of or store glass according to shop procedures

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**Sub-task****8.02 Installs specialty glass.*****Key Competencies******A competent automotive glass technician must be able to:***

- 8.02.01 inspect glass for defects such as scratches, chipped edges and pitting
- 8.02.02 prepare glass according to manufacturers' specifications
- 8.02.03 insert glass in opening and attach with applicable hardware, fasteners or adhesives
- 8.02.04 verify fit and operation of glass
- 8.02.05 verify operation of electrical components such as air bags
- 8.02.06 secure glass in place
- 8.02.07 verify installation of glass to detect conditions such as water leaks and wind noise
- 8.02.08 install trim
- 8.02.09 ensure safe drive-away time has been reached according to sealant manufacturers' specifications, before returning vehicle to customer

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Task 9      Installs after-market frame and glass.

**Required Knowledge**

- K 1            removal and installation tools and techniques
- K 2            after-market frame and glass applications
- K 3            types of fasteners and adhesives
- K 4            safety equipment and procedures
- K 5            hardware components
- K 6            types of trim and accessories
- K 7            glass identification such as National Auto Glass Society (NAGS), Original Equipment Manufacturer (OEM) and DOT Number

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**Sub-task**

**9.01            Creates opening.**

**Key Competencies**

***A competent automotive glass technician must be able to:***

- 9.01.01        determine suitability of part and location
- 9.01.02        place template
- 9.01.03        prepare and protect surrounding areas
- 9.01.04        cut opening

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**Sub-task**

**9.02            Installs after-market frame and glass.**

**Key Competencies**

***A competent automotive glass technician must be able to:***

- 9.02.01        prepare part according to manufacturers' specifications
- 9.02.02        apply pinch weld primer
- 9.02.03        verify fit and operation of part
- 9.02.04        insert part in opening and attach with applicable hardware, fasteners or adhesives
- 9.02.05        verify operation of electrical components such as air bags
- 9.02.06        verify installation of part to detect conditions such as water leaks and wind noise
- 9.02.07        install trim if applicable
- 9.02.08        ensure safe drive-away time has been reached according to sealant manufacturers' specifications before returning vehicle to customer

# APPENDICES

The listing of these tools and equipment implies, on the part of the qualified worker, the ability to select, inspect, maintain, set up and use these devices with proficiency and safety. Automotive Glass Technicians commonly use the following tools and equipment:

### **Safety Gear and Personal Protective Equipment**

Coveralls, dust mask, eye wash station, face shield, fire blanket, fire extinguishers, fire hoses, first aid kit, gloves, goggles, hearing protection (ear plugs, ear muffs), knee pads, respirator (particulate and gas), safety footwear, safety glasses, shower

### **Hand Tools**

Adjustable wrench, Alan wrenches (long), awl or metal punch, banana knife or similar, caulking gun (manual), channel cleaning tool, cold knife, door glass support suction cups, door handle clip remover, fiber stick, gasket locking tool (assorted), glass pliers and cutter, glass rule, glass stand, hammers (metal and rubber), hook tool for rubber jobs, magnetic screw driver set (regular and stubby), magnetic screw retriever, magnetic tips (Philips, slotted and Torx), moulding removal tools (assorted), nozzle cutter, panel remover tool, piano wire, pliers (needle nose, regular and locking), power window bypass kit, propane torch, pry bar, rear view mirror removal tool (assorted), sash cord for rubber jobs, sash nut socket, sealant scraper, sharpening stone and file, small and large screw drivers for prying and probing, small penlight, standard and metric ¼” drive socket set, standard and metric wrench set, tape measure, tool box (3 drawer), utility knives (short and long), volt meter/test light, windshield wire grips, windshield wire insert tool, wiper puller, wire brush, whisk broom

### **Power Tools**

Belt sander, bench grinder, big daddy rivet gun with long nose extension, caulking gun (power), cordless drill, heat gun, oscillating windshield knife (Fein), polisher, power windshield sealant chopper knife (equalizer express), reciprocating knife (BTB), rivet gun (standard), small body grinder, solder gun, ultra-violet lamp, urethane oven, vacuum cleaner, vacuum cups, windshield repair kit

### **Other Tools**

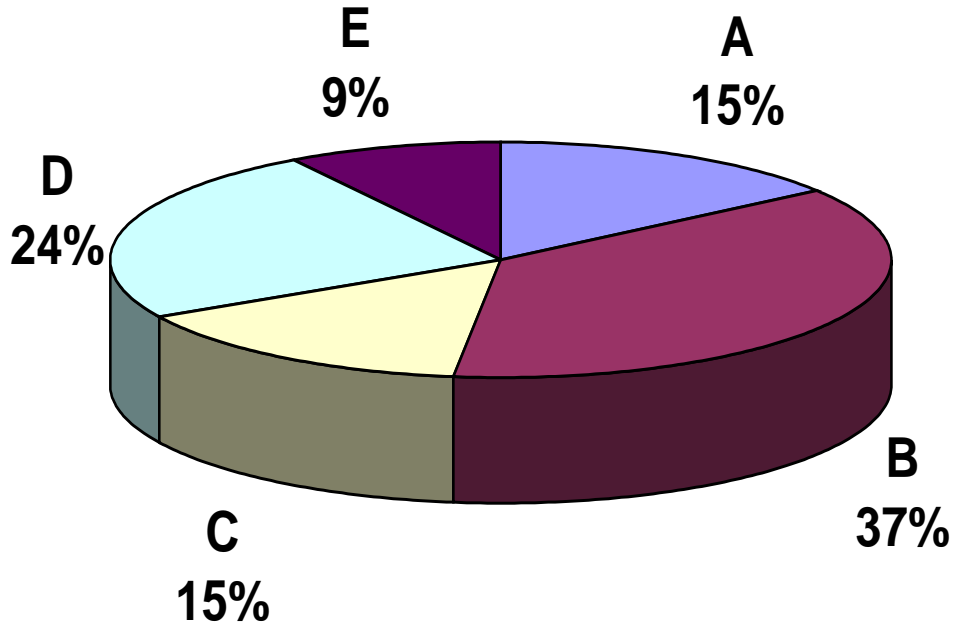
Digital camera, leak testing equipment, voltmeter

### **Mobile Tool Requirements**

Air pig, booster cables, broom, dust pan, garbage pail with lid, cab organizer (files, catalogues, invoices etc.), extension cord, first aid kit, glass rack, glass stand, hand seamer, hard hat, heat gun, inverter, mobile lighting, nozzle cutter, padded roof protector, portable cutting table, power window bypass kit, propane torch, seat covers, small body grinder, small Milwaukee belt sander, step ladder, stool, storage cabinets and shelving, tarp, tote tool tray, trouble light, urethane oven, vacuum cleaner, vacuum cups, volt meter/test light, wheel step, windshield repair kit

The Blocks and Tasks Weighting indicates the approximate number of questions assigned to each Block and Task on the provincial certification examination.

BLOCK A	OCCUPATIONAL SKILLS	PERCENTAGE WEIGHTING <b>15%</b>
Task 1	Uses documentation.	4%
Task 2	Uses and maintains tools and equipment.	6%
Task 3	Organizes work.	5%
BLOCK B	STRUCTURAL AND NON - STRUCTURAL STATIONARY GLASS	PERCENTAGE WEIGHTING <b>37%</b>
Task 4	Replaces stationary glass.	<b>37%</b>
BLOCK C	LAMINATED GLASS	PERCENTAGE WEIGHTING <b>15%</b>
Task 5	Repairs laminated glass.	<b>15%</b>
BLOCK D	MOVEABLE GLASS	PERCENTAGE WEIGHTING <b>24%</b>
Task 6	Replaces moveable glass.	<b>24%</b>
BLOCK E	GLASS FABRICATION AND SPECIALTY GLASS	PERCENTAGE WEIGHTING <b>9%</b>
Task 7	Replaces laminated safety glass.	4%
Task 8	Replaces specialty glass.	4%
Task 9	Installs after-market frame and glass.	1%



**TITLES OF BLOCKS**

BLOCK A	Occupational Skills	BLOCK D	Moveable Glass
BLOCK B	Structural and Non - structural Stationary Glass	BLOCK E	Glass Fabrication and Specialty Glass
BLOCK C	Laminated Glass		

\* The Block Percentages indicate the approximate number of questions assigned to each Block on the provincial certification examination.

For example, the pie chart above demonstrates that Block A represents 25% of the exam content. If the certification exam you are writing contains 100 questions, you will have approximately 25 questions from Block A on your exam. (25% of 100 questions = 25 questions.)



## BLOCK A OCCUPATIONAL SKILLS

**Task 1** Uses documentation.

**Sub-task**

- Uses manufacturers' and industry specifications and repair procedures.
- Interprets estimates.
- Uses work orders.
- Interprets safety and environmental regulations.

**Task 2** Uses and maintains tools and equipment.

**Sub-task**

- Uses and maintains hand tools.
- Uses and maintains power tools.
- Uses personal protective equipment (PPE).

**Task 3** Organizes work.

**Sub-task**

- Prepares damage estimate.
- Organizes replacement parts and materials.
- Communicates with others.
- Prepares work area.
- Prepares vehicle.
- Maintains safe work environment.

BLOCK B STRUCTURAL AND NON - STRUCTURAL STATIONARY GLASS

**Task 4** Replaces stationary glass.

**Sub-task**

- Removes stationary glass.
- Installs stationary glass.

BLOCK C LAMINATED GLASS

**Task 5** Repairs laminated glass.

**Sub-task**

- Repairs laminated glass.

BLOCK D MOVEABLE GLASS

**Task 6** Replaces moveable glass.

**Sub-task**

- Removes moveable glass.
- Installs moveable glass.

BLOCK E GLASS FABRICATION AND SPECIALTY GLASS

**Task 7** Replaces laminated safety glass.

**Sub-task**

- Produces a template.
- Prepares for glass cutting.
- Cuts glass.

**Task 8** Replaces specialty glass.

**Sub-task**

- Removes specialty glass.

- Installs specialty glass.

**Task 9** Installs after-market frame and glass.

**Sub-task**

- Create opening.
- Installs after-market frame and glass.