



CONTEST DESCRIPTION

Outdoor power and recreation equipment

SECONDARY AND POST-SECONDARY

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1 THE ESSENTIAL SKILLS FOR CAREERS IN THE SKILLED TRADES AND TECHNOLOGY

SCC is currently working with Employment and Social Development Canada (ESDC) in order to bring awareness to the importance of Essential Skills that are absolutely crucial for success in the workforce. Part of this ongoing initiative requires the integration and identification of Essential Skills in contest descriptions, projects, and project documents. The next phase and very important aspect of our Essential Skills (ES) initiative is to provide an ES report card to each competitor at the Skills Canada National Competition. The purpose of the ES report card is to inform the competitor about their current level of essential skills based on their competition scores. With this knowledge, the competitor will be made aware which essential skill may require improvement. Full implementation is expected in the next Skills Canada National Competition.

The following 9 skills have been identified and validated as key essential skills for the workplace in the legend below:

¹Numeracy, ²Oral Communication, ³Working with Others, ⁴Continuous Learning, ⁵Reading Text, ⁶Writing, ⁷Thinking, ⁸Document Use, ⁹Digital

These essential skills have been identified in section 2.4 and/or 3.2 of your Contest Description and if applicable, in your Project and all other supporting project documents.

2 CONTEST INTRODUCTION

2.1 Description of the associated work role(s) or occupation(s).

<http://skillscompetencescanada.com/en/careers/transportation/outdoor-power-and-recreational-equipment/>

2.2 Purpose of the Challenge.

To test each student's skill and knowledge in the areas of inspection, measurement, maintenance and repair of small engines and recreational vehicles. Prepare each student for employment in the industry.

2.3 Duration of contest.

11 Hours

2.4 Skills and Knowledge to be tested.

Theory 35% Practical 65%

All phases of measurement will deal exclusively with metric only.

3 CONTEST DESCRIPTION

3.1 List of documents produced and timeline for when competitors have access to the documents.

DATE OF DISTRIBUTION VIA WEBSITE	
SECONDARY - DOCUMENTS	
4 Stroke Engine Lab	March 2022
Lawn and Garden Maintenance Lab	March 2022
POST SECONDARY - DOCUMENTS	
Motorcycle Electrical Troubleshooting	March 2022
Outboard Powerhead Troubleshooting	March 2022

3.2 Tasks that will be performed during the contest.

- To demonstrate the skill and knowledge involved with the service and repair of two and four stroke engines
- Use of metric precision measuring tools¹
 - Micrometers
 - Dial bore gauge
 - Vernier caliper
 - Feeler gauge
 - Dial indicator
 - Plastigauge®
- Accurately measure and analyze engine components for wear ¹
- Metal cutting, tapping, drilling, filing
- Fuel Injection and Carburetor theory, adjustment procedures⁷
- Use of repair manuals for retrieval of procedures, specifications, and troubleshooting charts^{5,8}
- Accurately perform compression, leak down, and crankcase pressure and vacuum test⁷
- Technical competence and safe work practice/procedures⁷
- Tool handling and recognition⁷
- CVT Transmission service and theory of operation
- Belt, Chain, Gear Final Drive System Service
- Multiplate Clutch and Constant Mesh Transmission operation

- Knowledge of Trade related Tire applications and designs⁷
- General knowledge of 4 Cycle theory
- General knowledge of 2 Cycle theory
- Use of Digital Volt-Ohm Meter⁹
- Electrical Measurements including Volts, Ohms, Amps, and Voltage Drops¹
- Ignition, charging, starting, and lighting system theory, inspection, and diagnosis⁷

Essential Skills – ¹Numeracy, ⁵Reading Text, ⁸Document Use, ⁷Thinking (Critical, Problem Solving, Significant use of Memory), ⁹Digital

4 EQUIPMENT, MATERIAL, CLOTHING

4.1 Equipment and material provided by Skills/Compétences Canada.

- All necessary equipment, engines, hand tools, measuring tools and specialty tools
- DVOM
- Compression Tester
- Leak down Tester
- Tec Angle Torque Wrench
- Dial Torque Wrench
- Micrometer Feed Torque Wrench
- Bit set
- Flashlight
- Screwdrivers
- Pliers
- Sockets, Ratchets, Extensions
- Wrenches
- Back Probes
- Feeler gauges
- Tape Measure
- Manufacturer Specific Tools
- Taps, Drills, Files
- Drill Press

COMPETITORS WILL BE REQUIRED TO USE THE MATERIAL AND EQUIPMENT PROVIDED BY SCC. ALL OTHER MATERIAL AND EQUIPMENT WILL BE REMOVED FROM THE SKILL AREA

4.2 Equipment and material provided by the competitor.

- Competitors are not required to supply any tools.

4.3 Required clothing provided by the competitor.

- Clean provincially supplied clothing or an unmarked t-shirt (work shirt) and work pants

5 SAFETY REQUIREMENTS

5.1 Safety workshop

Upon arrival at the Skill area, Competitors will participate in a Safety workshop and they will be expected to work and maintain a safe working area during the competition. Any Competitor breaking any health, safety and environmental rules, may be required to undertake a second safety workshop, this will not affect the Competitor's competition time.

5.2 Personal protective equipment (PPE) provided by Skills/Compétences Canada

- Nitrile Gloves

5.3 Personal protective equipment (PPE) provided by the competitor.

- Safety Glasses
- CSA approved Safety footwear
- Hearing protection (optional)
- Mechanics Gloves (optional)

Note: Competitors will not be allowed to compete if the above items are not brought and used

6 ASSESSMENT

6.1 Point breakdown

SECONDARY - POINT BREAKDOWN	/100
Engine Teardown and Measurement Lab	40
Hand Skill Project	15
Electrical Circuit Diagnostics and Ohm's Law Lab	15
Lawn Tractor Mowing Deck and Drivetrain Service Lab	15
4 Stroke Engine Diagnostics Lab i.e. Compression & Leak down Tests	15
POST-SECONDARY – POINT BREAKDOWN	/100
Outboard Motor Lower Unit Service, Powerhead Service Lab	25
ATV drive system, Multiplate Clutch, Constant Mesh Transmission Lab	25
Motorcycle EFI Diagnostic, Starting and Charging System Diagnostic Lab	25
2 Stroke Top End Measurement & 4 Stroke DOHC valve Adjustment Lab	25

7 ADDITIONAL INFORMATION

7.1 Interpreter

If a competitor requires the help of an interpreter once onsite during the competition, the Skills/Compétences Canada Provincial/Territorial offices must advise Skills/Compétences Canada National Secretariat a minimum of 1 month prior to the competition or this service might not be guaranteed.

7.2 Ties

7.2.1 Secondary Level Competition:

- Tiebreaker #1: The competitor with the highest score in the Hand Skills Project will be declared the winner.
- Tiebreaker #2: The competitor with the highest score in the Engine Teardown and Measurement Lab will be declared the winner.
- Tiebreaker #3: The competitor with the highest score in Electrical Circuit Diagnostics and Ohm's Law Lab will be declared the winner.

7.2.2 Post-Secondary Level Competition:

- Tiebreaker #1: The competitor with the highest score in the Outboard Motor Lower Unit Service, Powerhead Service Lab will be declared the winner.

- Tiebreaker #2: The competitor with the highest score in the Motorcycle Electrical diagnostic Lab will be declared the winner.
- Tiebreaker #3: The competitor with the highest score in the ATV CVT, and Driveline Service Lab will be declared the winner.

7.3 Test Project change at the competition.

Where the Test Project has been circulated to Competitors in advance, NTC shall change a maximum of 30% of the work content. Please refer to the Competition Rules.

7.4 Competition rules.

Refer to the [competition rules](#) of the Skills Canada National Competition which can be found on our website.

8 NATIONAL TECHNICAL COMMITTEE MEMBERS

Member Organization	Name
Manitoba - Chair	Dustin Blackwell
Ontario – Co-Chair	Roy King
Alberta	Craig French
New Brunswick	Victor Vienneau
Saskatchewan	Cecil Machnee
Nova Scotia	Billy Jardine
Northwest Territories	Gord Olson
Prince Edward Island	David MacMillan
Quebec	Éric Rousseau
British Columbia	Marcie Ladubec

Contact the Skills/Compétences Canada national secretariat for any questions or concerns: Nathalie Maisonneuve (nathaliem@skillscanada.com).