

# Apprenticeship and Certification Study Guide



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# Introduction

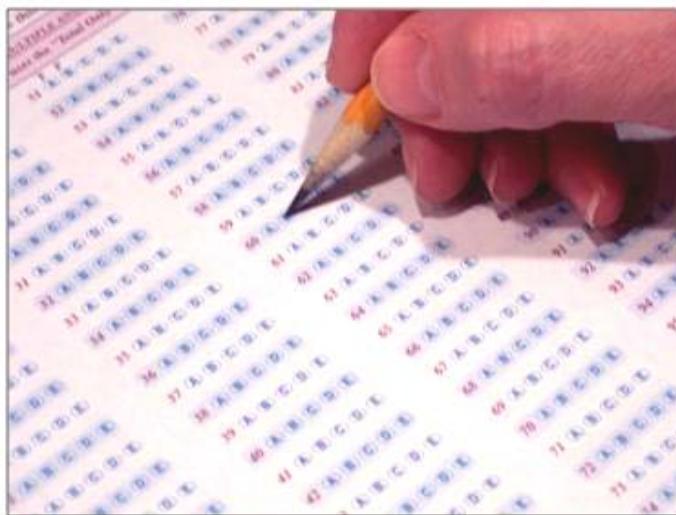
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This Study Guide has been developed by the Newfoundland and Labrador Department of Education and Early Childhood Development, Apprenticeship and Trades Certification Division, to assist apprentices and trade qualifiers as they prepare to write the Red Seal Exam. Red Seal exams are available for all Red Seal trades. For a list of Red Seal trades please refer to the Department of Education and Early Childhood Development website: <https://www.gov.nl.ca/atcd/designated-trades/list-of-designated-trades/>

**Some of the specific goals of this guide are:**

- ⇒ to help you understand the skills and knowledge that might be covered on the exam
- ⇒ to help you identify your strengths and weaknesses
- ⇒ to provide organization and structure for a course of study
- ⇒ to provide a list of resources to help you with your study plan
- ⇒ to support and supplement the teaching and learning process

This study guide outlines the theoretical portion of the program. The intent is not to replace technical training provided under the guidance of instructors. Rather, it is a tool to be used in conjunction with formal training.



# Exam Process

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## Before the Exam

You must contact the nearest Apprenticeship and Trades Certification Divisional office to make request to write the Red Seal exam (*See Appendix A for a list of regional offices*). Upon approval, the Apprenticeship Program Officer (APO) will notify you of your eligibility to write the exam, and provide you with scheduling information. If you require special accommodations due to a disability or language barrier, please contact your regional office for information on applying for this service.

## During the Exam

### You must bring:

- personal identification such as a photo or signature ID or valid Newfoundland and Labrador driver's license
- your notification letter

### The following will be provided:

- a calculator (*see Appendix B for calculator information*)
- all other items required such as pencils, scrap paper, etc.

### Important Note:

Personal cell phones, calculators, or other electronic equipment are NOT allowed into the exam room. If you do bring them, they will be stored away and returned to you when you have completed the exam.

## After the Exam

Results will be mailed to you approximately seven to ten days after completion of the exam. All necessary instructions and information will be provided in the results letter.

The percentage mark you obtained will be provided. You will also be given a section by section breakdown, showing how many questions were in each section, as well as the number of questions in each section you completed successfully.

If you are successful in obtaining a 70% or more on your exam, you will be issued a Newfoundland and Labrador Certificate of Qualification with a Red Seal endorsement.

# Exam Format

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All Red Seal exams are written in multiple-choice format. Each exam has between 100 and 150 questions. A multiple choice question consists of a stem (a complete question) followed by four options (A, B, C, D). The stem contains all the information necessary to answer the question. The options consist of the one correct answer and three “distracters.” Distracters are incorrect. (See Appendix C for a sample answer sheet).

Red Seal exams contain three types of questions:

## Level 1    Knowledge and Recall

Questions at this level test your ability to recall and understand definitions, facts, and principles.

## Level 2    Procedural and Application

Questions at this level test your ability to apply your knowledge of procedures to a new situation.

## Level 3    Critical Thinking

Questions at this level test your ability to interpret data, solve problems and arrive at valid conclusions.

On the following pages, examples of each of the three types of questions are provided.

### Level 1 Examples:

1. Why is a dielectric fitting used to connect copper piping to black steel piping?
  - A. To prevent friction loss.
  - B. To allow expansion between joints.
  - C. To provide a tight joint.
  - D. To prevent electrolysis.



2. What will cause a single interlocked pre-action system to trip during a fire?

- A. Loss of air in sprinkler piping branch lines.
- B. Activation of sprinkler on branch line.
- C. Activation of low pressure alarm.
- D. Activation of fire detection system.



3. On which type of sprinkler system is a detector wire installed as a system activation device?

- A. Dry.
- B. Wet.
- C. Antifreeze.
- D. Pre-action.



### Level 2 Examples:

1. When installing a 1000 gpm fire pump, how many 2 ½ in. hose valves would be installed on the test header?

- A. 2.
- B. 3.
- C. 4.
- D. 6.



2. When installing restraint devices, what size of rod is installed on an 8 in. underground pipe?

- A. 7/8 in.
- B. 3/4 in.
- C. 5/8 in.
- D. 1/2 in.



3. How are cast fittings attached to threaded steel pipe?

- A. Apply thread compound to female thread and tighten with spanner wrench.
- B. Apply thread compound to male thread and tighten with pipe wrench.
- C. Apply Teflon tape to female thread and tighten with pipe wrench.
- D. Apply Teflon tape to male thread and tighten with spanner wrench.



### Level 3 Examples:

1. When determining friction loss in a bulk main, how many feet of schedule #40 pipe is equivalent to using two standard 6 in., 40° elbows?

- A. 10.
- B. 14.
- C. 18.
- D. 22.



2. What is the size of the bolts used with standard 8 in. x 13 ½ in. flanges?

- A. 9/16 in. x 3 in.
- B. 5/8 in. x 3 1/2 in.
- C. 3/4 in. x 3 1/2 in.
- D. 7/8 in. x 4 in.



3. When installing the main for a dry pipe system, what is the required minimum grade?

- A. 1/4 in. per 10 ft.
- B. 1/2 in. per 10 ft.
- C. 1/4 in. per 12 ft.
- D. 1/2 in. per 12 ft.



**Source of Questions:**

<http://www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=221>

## Exam Content

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### Understanding the *Red Seal Occupational Standard (RSOS)*

The Red Seal model has historically been based on the development of the National Occupational Analysis (NOA) which supports the development of multiple-choice format examinations.

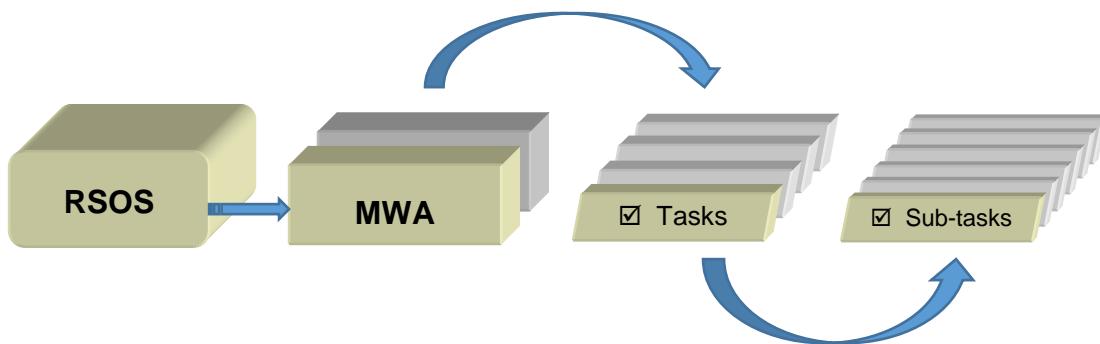
The RSOS was introduced in 2015 and is now taking the place of the NOA. Each RSOS or NOA sets the standard for a Red Seal trade. The Red Seal examination is based on the Red Seal Standard.

The new standards provide greater consistency in learning resources and allow for increased industry involvement in the development of these standards. This new model places increases emphasis on apprenticeship training and assessing skills with industry learning objectives, outcomes and performance criteria.

The RSOS for each trade describes the tasks and sub-tasks; skills and knowledge requirements; summary of essential skills; safety information; trends affecting the trade; technical terms; names of tools and equipment; acronyms; learning objectives and outcomes; industry expected performance and essential skills related to each sub-task.

The RSOS is an excellent tool to use as you study for the Red Seal exam. RSOSs can be found at <http://www.red-seal.ca/resources/n.4.1-eng.html>

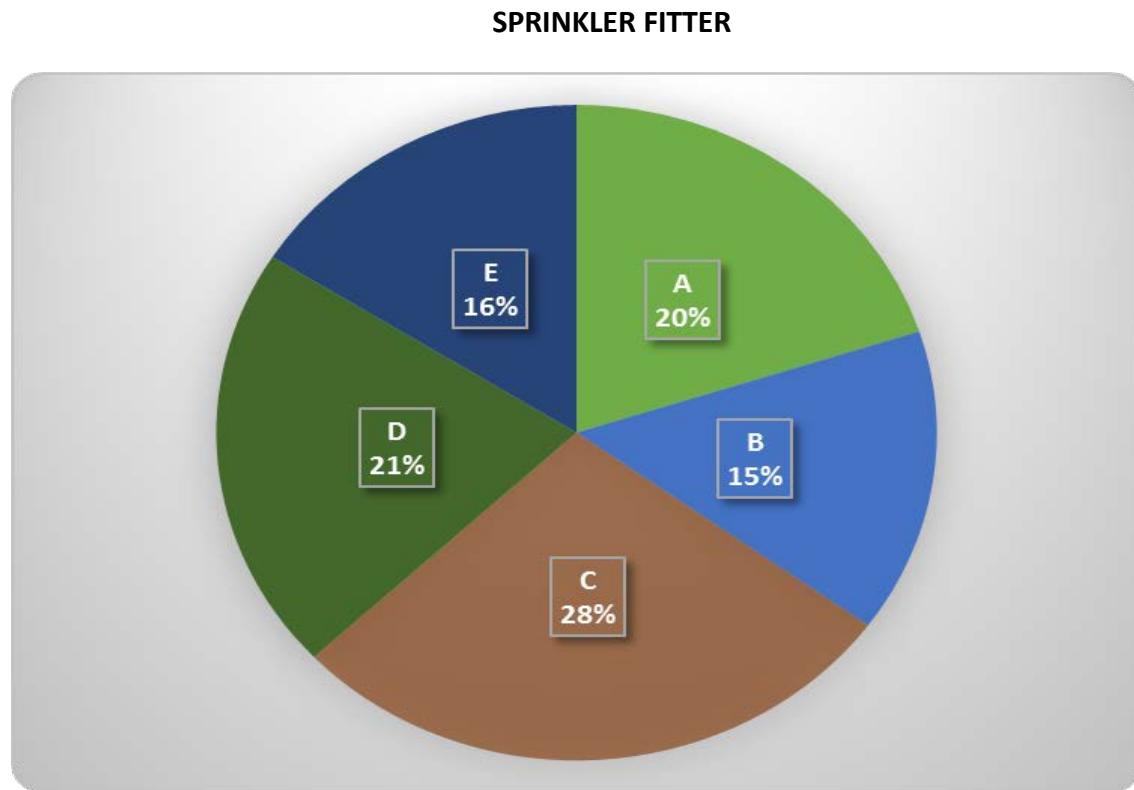
RSOS material is organized into the following categories: **MWA** (*Major Working Activity*). The MWAs are further broken down into **TASKS** (*describes activities within an MWA*) and **SUB-TASKS** (*describe activities within a task – This is what the exam is based on*).



The NOA will continue to be used as the occupational standard for trades that do not yet have an RSOS developed.

## RSOS Pie Chart

The RSOS Pie Chart presents the MWA percentages in the form of a pie chart which tells you the approximate number of questions from each MWA. For example, **20%** of the questions on the **Sprinkler Fitter** exam will be based on **MWA A**.



MWA Titles			
MWA A	Performs Common Occupational Skills	MWA D	Installs and Lays Out Fire Protection Systems and Devices
MWA B	Installs Water Supply	MWA E	Installs, Tests and Maintains (ITM) Fire Protection Systems
MWA C	Installs Piping		

## Exam Breakdown

The **Sprinkler Fitter** exam currently has 120 questions. The following table shows a breakdown of the number of questions that come from each RSOS MWA. It is important to note that the exact number of questions can change at any time. When you are ready to write your exam, you may contact your regional office to verify the number of questions (See Appendix A).

		<b># of Questions</b>
<b>MWA A</b>	<b>Performs Common Occupational Skills</b>	<b>25</b>
<b>Task 1</b>	Performs safety-related functions	
<b>Task 2</b>	Uses and maintains tools and equipment	
<b>Task 3</b>	Organizes work	
<b>Task 4</b>	Commissions systems	
<b>Task 5</b>	Uses communication and mentoring techniques	
<b>MWA B</b>	<b>Installs Water Supply</b>	<b>18</b>
<b>Task 6</b>	Installs underground water supplies	
<b>Task 7</b>	Installs fire pump units	
<b>Task 8</b>	Installs fire department connections	
<b>Task 9</b>	Installs private water supply systems	
<b>MWA C</b>	<b>Installs Piping</b>	<b>32</b>
<b>Task 10</b>	Prepares pipe, tube and fittings for installation	
<b>Task 11</b>	Installs pipe, tube and fittings	
<b>Task 12</b>	Installs piping components	
<b>MWA D</b>	<b>Installs and Lays Out Fire Protection Systems and Devices</b>	<b>26</b>
<b>Task 13</b>	Installs water-based systems	
<b>Task 14</b>	Installs specialty fire suppression systems	
<b>Task 15</b>	Installs detection devices	
<b>Task 16</b>	Installs signal-initiating devices	
<b>MWA E</b>	<b>Inspects, Tests and Maintains (ITM) Fire Protection Systems</b>	<b>19</b>
<b>Task 17</b>	Maintains and repairs fire protection systems	
<b>Task 18</b>	Inspects and tests fire protection systems	
	<b>Total</b>	<b>120</b>

## RSOS Sub-tasks

The following *RSOS Task Profile Checklist* outlines the MWAs, tasks and sub-tasks for your trade. The Red Seal exam is written to test your knowledge and abilities regarding the sub-tasks in the RSOS. This chart can be used to review your current knowledge. You can review by placing a check mark (✓) next to those you understand fully.

Place your focus on those you do not understand and study them until you are comfortable with the material. Think of possible questions in that particular content area.

The RSOS also contains a list of “supporting knowledge and abilities” for each sub-task. They are the skills and knowledge you must have to perform a sub-task. The supporting knowledge and abilities identified under each sub-task will be very helpful as you review. The list can be found in the RSOS, on the Red Seal website, for your trade.

**Task Profile Checklist**  
**Based on RSOS 2017**  
**Sprinkler Fitter**

**MWA A: Performs Common Occupational Skills**

<input type="checkbox"/> <b>Task 1: Performs safety-related functions</b>
<b>Sub-Tasks</b>
<input type="checkbox"/> Maintains safe work environment <input type="checkbox"/> Uses personal protective equipment (PPE) and safety equipment <input type="checkbox"/> Performs lock-out and tag-out procedures <input type="checkbox"/> Performs work in confined space
<input type="checkbox"/> <b>Task 2: Uses and maintains tools and equipment</b>
<b>Sub-Tasks</b>
<input type="checkbox"/> Uses hand tools <input type="checkbox"/> Uses portable and stationary power tools <input type="checkbox"/> Uses measuring and testing equipment <input type="checkbox"/> Uses access equipment <input type="checkbox"/> Uses rigging, hoisting and lifting equipment <input type="checkbox"/> Uses soldering and brazing equipment
<input type="checkbox"/> <b>Task 3: Organizes work</b>
<b>Sub-Tasks</b>
<input type="checkbox"/> Interprets codes, standards, regulations and procedures <input type="checkbox"/> Uses drawings and specifications <input type="checkbox"/> Uses documentation and reference material <input type="checkbox"/> Plans job tasks and procedures <input type="checkbox"/> Prepares work site <input type="checkbox"/> Performs layout of systems
<input type="checkbox"/> <b>Task 4: Commissions systems</b>
<b>Sub-Tasks</b>
<input type="checkbox"/> Commissions water supply systems <input type="checkbox"/> Commissions fire protection systems
<input type="checkbox"/> <b>Task 5: Uses communication and mentoring techniques</b>
<b>Sub-Tasks</b>
<input type="checkbox"/> Uses communication techniques <input type="checkbox"/> Uses mentoring techniques

## MWA B: Installs Water Supply

- Task 6: Installs underground water supplies**
  - Sub-Tasks**
    - Supervises trenching and backfilling (NOT COMMON CORE)
    - Installs underground piping and components (NOT COMMON CORE)
    - Flushes underground system
- Task 7: Installs fire pump units**
  - Sub-Tasks**
    - Determines location of pumps, drivers, controllers and components
    - Installs pumps, drivers, controllers and components
- Task 8: Installs fire department connections**
  - Sub-Tasks**
    - Determines location, size and type of fire department connections
    - Installs fire department connection piping and components
- Task 9: Installs private water supply systems**
  - Sub-Tasks**
    - Installs water tanks
    - Installs related equipment

## MWA C: Installs Piping

- Task 10: Prepares pipe, tube and fittings for installation**
  - Sub-Tasks**
    - Cuts pipe and tube
    - Bends pipe and tube
    - Threads pipe
    - Grooves pipe
    - Drills pipe and tube
    - Grinds pipe
    - Prepares fittings

## MWA C: Installs Piping (Cont'd)

### Task 11: Installs pipe, tube and fittings

**Sub-Tasks**

- Installs steel pipe, tube and fittings
- Installs plastic pipe, tube and fittings
- Installs copper pipe, tube and fittings
- Paints and labels pipe and tube

### Task 12: Installs piping components

**Sub-Tasks**

- Selects sprinklers
- Installs sprinklers and nozzles
- Installs sleeves
- Installs supports and hangers
- Installs seismic-protection
- Installs cross-connection control assemblies
- Installs system drainage

## MWA D: Installs and Lays Out Fire Protection Systems and Devices

### Task 13: Installs water-based systems

**Sub-Tasks**

- Installs wet pipe systems
- Installs dry pipe systems
- Installs antifreeze systems
- Installs preaction/deluge systems
- Installs foam systems
- Installs standpipe systems
- Installs water mist and hybrid systems

### Task 14: Installs specialty fire suppression systems

**Sub-Tasks**

- Installs dry and wet chemical, clean agent and carbon dioxide systems
- Installs portable extinguishers

## MWA D: Installs and Lays Out Fire Protection Systems and Devices (Cont'd)

### Task 15: Installs detection devices

**Sub-Tasks**

- Installs wet and dry pilot lines
- Installs heat-actuated devices (HADs) (NOT COMMON CORE)
- Installs spark detection systems (NOT COMMON CORE)
- Installs air sampling systems (NOT COMMON CORE)
- Installs electrical detection systems (NOT COMMON CORE)

### Task 16: Installs signal-initiating devices

**Sub-Tasks**

- Installs alarm-initiating devices
- Installs supervisory-initiating devices

## MWA E: Inspects, Tests and Maintains (ITM) Fire Protection Systems

### Task 17: Maintains and repairs fire protection systems

**Sub-Tasks**

- Troubleshoots fire protection systems
- Repairs deficiencies
- Performs scheduled maintenance

### Task 18: Inspects and tests fire protection systems

**Sub-Tasks**

- Performs scheduled tests
- Performs scheduled inspections
- Inspects portable fire extinguishers

## Create a Study Plan

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As you prepare for your exam, it is important to plan a schedule. The following two tables will help you stay on track.

The first table is a “**Weekly Study Plan.**” In this table list the areas you will focus your study for each day. You should include items you need to review as well as items you need to study. Remember, more time will be needed for study in areas you find difficult, whereas you may only require review in areas you are more familiar with. As you work through the RSOS sub-task list you can start to fill in this table.

The second table is a “**Study Time Table.**” It is important to create a study schedule where you determine the best days of the week and times of day for you to study.

Print several copies of these tables and fill out for each week of study. It is important to stick to your study schedule.

**Weekly Study Plan for Week of: \_\_\_\_\_**

	<b>Area of Study 1</b>	<b>Area of Study 2</b>	<b>Area of Study 3</b>	<b>Area of Study 4</b>	<b>Area of Study 5</b>	<b>Area of Study 6</b>
<b>Mon.</b>						
<b>Tues.</b>						
<b>Wed.</b>						
<b>Thu.</b>						
<b>Fri.</b>						
<b>Sat.</b>						
<b>Sun.</b>						

**Study Time Table for Week of: \_\_\_\_\_**

	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>	<b>Saturday</b>	<b>Sunday</b>
<b>8:00 AM - 9:00 AM</b>							
<b>9:00 AM - 10:00 AM</b>							
<b>10:00 AM - 11:00 AM</b>							
<b>11:00 AM - 12:00 Noon</b>							
<b>12:00 Noon - 1:00 PM</b>							
<b>1:00 PM - 2:00 PM</b>							
<b>2:00 PM - 3:00 PM</b>							
<b>3:00 PM - 4:00 PM</b>							
<b>4:00 PM - 5:00 PM</b>							
<b>5:00 PM - 6:00 PM</b>							
<b>6:00 PM - 7:00 PM</b>							
<b>7:00 PM - 8:00 PM</b>							

# Resources - Websites

Study information can be drawn from a variety of sources. A sample list of study materials (websites and books) is provided below. These and other helpful resources may be found in a local college bookstore, on the internet, or at your place of employment. You may also be able to borrow them from an apprentice or journeyperson in your trade.

## Study Strategies and Exam Preparation Guide

The *Study Strategies & Exam Preparation Guide* is meant to be used in conjunction with this study guide. It provides direction and information on such areas as study habits, test preparation and test taking techniques.

<https://www.gov.nl.ca/atcd/files/Study-Strategies-and-Exam-Prep-Guide-November-2025.pdf>

## Plan of Training (POT)

A *Provincial Plan of Training* details the full scope of learning for a particular occupation, including both technical training competencies and industry experiences necessary to write a Red Seal exam (and complete the requirements for Red Seal Certification), or to write a provincial examination. The Plan of Training is based on the RSOS.

<https://www.gov.nl.ca/atcd/designated-trades/pots-aacs/>

## Red Seal Website

**Red Seal** is a program that sets common standards to evaluate the skills of tradespeople across Canada. It is a partnership between the Federal Government and the provinces/territories.

The Red Seal model has been based on the National Occupational Analyses (NOA) which supports the development of multiple-choice examinations. A new Red Seal Occupational Standard (RSOS) was introduced in 2015 and is taking the place of the NOA.

<http://www.red-seal.ca/>

## Sprinkler Fitter PRACTICE Exam

This is **NOT** a Red Seal exam. This is a practice exam provided by the Red Seal Standards program. It was developed using similar question types to that of a Red Seal exam. The exam is intended to be used for self-assessment in preparation for writing a Red Seal exam.

<http://www.red-seal.ca/s.1mpl.2.2x.1mQ.5.2st.3.4ns-eng.html?tid=221>

## Red Seal Exam Self-Assessment Guide

Use this self-assessment tool to rate your own understanding and experience with the tasks of the trade that are on the Red Seal examination:

[https://www.red-seal.ca/\\_conf/assets/custom/docms/sprinklersyinstal/self-assessment.pdf](https://www.red-seal.ca/_conf/assets/custom/docms/sprinklersyinstal/self-assessment.pdf)

## Acronyms

Refer to **Appendix 'D'** (Page 28) for a Red Seal copy of the Acronyms.

## Glossary of Terms

Refer to **Appendix 'E'** (Page 29) for a Red Seal copy of the Glossary.

## List of Tools and Equipment

Refer to **Appendix 'F'** (Page 33) for a Red Seal copy of the Tools and Equipment list.

## Resources – Book List

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The books listed below can help you obtain information on specific topics. It is not necessary to use these books specifically, as you may find others that will be equally beneficial.

**If you wish to obtain any of the resources listed, here is the reference information:**

- Alberta Modules, # 1 through #10*, Northern Alberta Institute of Technology, Alberta,
- Use and Care of Tools*, 1<sup>st</sup> edition, 1972, United Association Education
- Rigging*, 1972, United Association Education
- IPT's International Pipe Trades Handbook, 2006, IPT Publishing and Training Limited, Lee, Robert A., ISBN 978-0920855188

## **Disclaimer**

Various external resources (websites, textbooks) have been listed in this study guide to assist an individual in preparing to write a Red Seal exam. This does not mean the Department of Education and Early Childhood Development, Newfoundland and Labrador endorses the material or that these are recommended as the best resources. There may be other resources of equal or greater value to an individual preparing for a Red Seal exam. The Department of Education and Early Childhood Development has no control over the content of external textbooks and websites listed, and no responsibility is assumed for the accuracy of the material.

## **Conclusion**

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We hope this guide has provided you with some useful tools as you prepare for your Red Seal exam. If you have any questions regarding your Red Seal exam please contact your regional office (*see Appendix A for a list of regional offices*).

We appreciate your comments and feedback regarding the usefulness of this study guide. If you have any comments or suggestions, we welcome your feedback. The feedback form at the end of this guide can be used for this purpose.

## Appendix A: Regional Offices

If you have any questions regarding your IP Red Seal exam, please contact one of the following regional offices:

Department of Education and Early Childhood Development

Apprenticeship and Trades Certification Division

Toll Free: 1-877-771-3737

<https://www.gov.nl.ca/atcd/contact-us/staff-listing-and-office-locations/>

Corner Brook
1-3 Union Street Aylward Building, 2 <sup>nd</sup> Floor Corner Brook, NL A2H 5M7  Telephone: (709) 637-2366 Facsimile: (709) 637-2519

Grand Falls-Windsor
42 Hardy Avenue Grand Falls-Windsor, NL A2A 2J9  Telephone: (709) 292-4215 Facsimile: (709) 292-4502

Clarenville
45 Tilley's Road Clarenville, NL A5A 1Z4  Telephone: (709) 466-3982 Facsimile: (709) 466-3987

St. John's
P.O. Box 8700 1170 Topsail Road Mount Pearl, NL A1B 4J6  Telephone: (709) 729-2729 Facsimile: (709) 729-5878

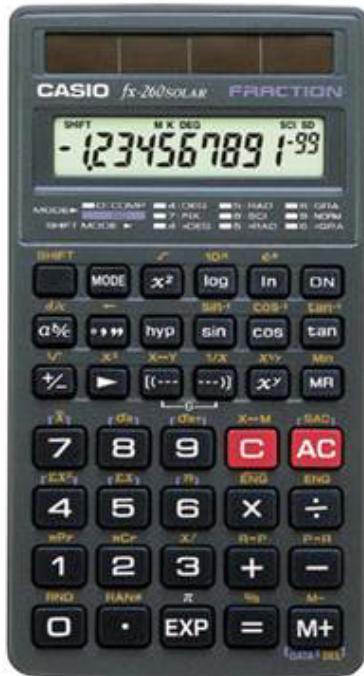
Happy Valley – Goose Bay
163 Hamilton River Road Bursey Building Happy Valley – Goose Bay, NL A0P 1E0  Telephone: (709) 896-6348 Facsimile: (709) 896-3733

## Appendix B: Calculator Use

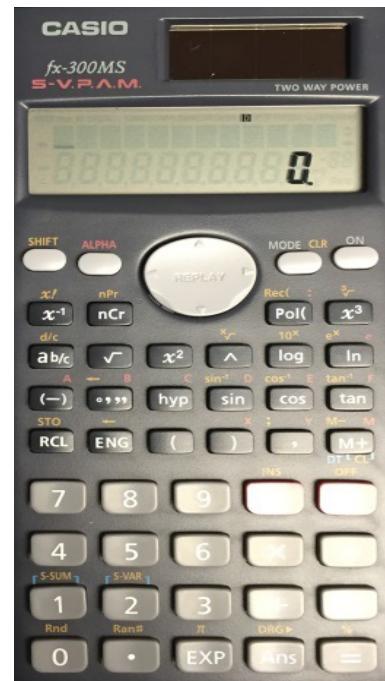
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The picture below shows a calculator with the same functions as the one you will be provided with during your exam. It is advisable to borrow or purchase one with similar functions so that you can familiarize yourself with it before you write your exam.

**Casio FX-260**



**Casio FX-300 MS**



## Appendix C: Answer Sheet Example

With your exam you will be given an answer sheet similar to the one below. When answering multiple choice questions be sure to fill the circle completely and fill the circle that corresponds to the question on the exam.

## **Feedback Form**

### **Study Guide – Sprinkler Fitter**

Please answer the following:

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- (1) This Study Guide is a useful tool for exam preparation.  
 strongly agree     agree     disagree     strongly disagree
  
- (2) The topics contained in the guide are arranged in a logical order.  
 strongly agree     agree     disagree     strongly disagree
  
- (3) The design and format of the guide caught my attention.  
 strongly agree     agree     disagree     strongly disagree
  
- (4) The instructions throughout the guide are clear and to the point.  
 strongly agree     agree     disagree     strongly disagree
  
- (5) The resources listed in this guide are suitable and valuable.  
 strongly agree     agree     disagree     strongly disagree
  
- (6) The guide should contain more information.  
 strongly agree     agree     disagree     strongly disagree

Suggested information/resources to include:

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Additional Comments:

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**Please complete this form and return via fax or mail to the following:**

Department of Education and Early Childhood Development  
Apprenticeship and Trades Certification Division  
Standards and Curriculum Unit  
45 Tilley's Road, Clarenville, NL A5A 1Z4  
Fax: (709) 466-3987

# **RED SEAL DOCUMENT**

APPENDIX D: (Page 28)

## **Acronyms**

APPENDIX E: (Page 29)

## **Glossary**

APPENDIX F: (Page 33)

## **Tools & Equipment**

# **APPENDIX D: Acronyms**

<b>AHJ</b>	Authority Having Jurisdiction
<b>ANS</b>	American National Standards Institute Canadian
<b>CAN/ULC</b>	ULC Standard
<b>CMSA</b>	Control Mode Specific Application
<b>CPVC</b>	Chlorinated Poly Vinyl Chloride
<b>CSA</b>	Canadian Standards Association
<b>DCVA</b>	Double Check Valve Assembly
<b>ESFR</b>	Early Suppression Fast Response
<b>FM</b>	Factory Mutual
<b>HAD</b>	Heat-Actuated Device
<b>ITM</b>	Inspection, Testing and Maintenance
<b>MAPP</b>	Methylacetylene-Propadiene Propane
<b>NBC</b>	National Building Code
<b>NFPA</b>	National Fire Protection Association
<b>NPT</b>	National Pipe Thread
<b>NST</b>	National Standard Thread
<b>OH&amp;S</b>	Occupational Health and Safety
<b>OS&amp;Y</b>	Outside Stem & Yoke
<b>PIV</b>	Post Indicator Valve
<b>PPE</b>	Personal Protective Equipment
<b>PVC</b>	Polyvinyl Chloride
<b>QOD</b>	Quick Opening Device
<b>RP (RPBA)</b>	Reduced Pressure Backflow Assembly
<b>SOS</b>	Safety Data Sheets
<b>TOG</b>	Transportation of Dangerous Goods
<b>ULC</b>	Underwriters Laboratories of Canada
<b>WHMIS</b>	Workplace Hazardous Materials Information System

# APPENDIX E: Glossary

<b>accelerators</b>	quick opening device that speeds up the trip action of a dry pipe valve
<b>air dryer</b>	any one of several types of air dryers, such as refrigerated air dryers and desiccant air dryers
<b>backfill</b>	earth, soil or gravel (aggregate) used in proper placement to bury underground piping
<b>cathodic protection</b>	a method of grounding used primarily on steel water tanks and underground piping to prevent electrolysis
<b>combined dry pipe/preaction system</b>	dry pipe system that employs a supplemental detection system
<b>cross-connection control</b>	assemblies that prevent potentially contaminated water from flowing back into the water supply
<b>deluge system</b>	a system with open sprinkler heads, set up so that when the system is tripped all heads spray simultaneously
<b>dies</b>	equipment used to cut extremal threads in rod or pipe
<b>dry pipe system</b>	a sprinkler system charged with air, primarily used to prevent freezing in a cold environment
<b>escutcheon (plate)</b>	aesthetic or cosmetic plates through which sprinkler heads enter the building space (sometimes called escutcheon plates)

## GLOSSARY (Cont'd)

<b>excess pressure pump</b>	water pump that boosts pressure to prevent false alarms
<b>fire pump assembly</b>	water pump designed to supply or supplement flow and pressure dedicated to fire protection
<b>flow switch</b>	a device that monitors water flow and initiates an alarm signal to a fire alarm panel or equivalent
<b>flushing connection</b>	a connection used to flush water from piping and components; for example, at the end of a water main or hydrant
<b>grade</b>	the slope of a pipe or trench, usually expressed as a ratio of rise (change in elevation) to run (change in distance)
<b>grooving (of pipe)</b>	a process of mechanically joining pipe in which a groove is cut or pressed (rolled) around a pipe to accommodate a coupling
<b>hangers</b>	components installed to allow pipes to be attached overhead or to other support structures
<b>heat-activated detectors (HAD)</b>	heat-activated device, triggered when a specified temperature or rate of increasing temperature is detected
<b>laydown</b>	a pre-determined area where material is stored
<b>mark-ups/asbuilt drawing</b>	a revised set of drawings submitted by a contractor upon completion of a project that reflect all changes made in the specifications and shop drawings during the construction process

## **GLOSSARY (Cont'd)**

<b>preaction systems</b>	a system that may or may not contain supervisory air or nitrogen that can be operated through detection or sprinkler activation
<b>pressure switch</b>	a device used for monitoring high or low pressure in piping system
<b>pump room</b>	also called pump house. A designated area or room in a building or outside a building that contains a fire pump and its components
<b>reaming</b>	a process to restore the pipe to its original inside diameter, usually by removing the internal burr or flare formed when the pipe was cut
<b>seismic/sway bracing</b>	pipe restraint system
<b>shop drawings</b>	a drawing or set of drawings produced by the contractor, supplier, manufacturer or subcontractor for the purpose of installing, fabricating and bidding
<b>sleeve</b>	installed before or after concrete or other structural placement to enable pipes to pass from one area of a structure to another
<b>sling</b>	any metal or synthetic flexible device used to cradle or support a load. Slings are attached to the hoist line of the lifting device to complete the lift
<b>sprinkler guards</b>	devices used to protect heads from damage
<b>standpipe system</b>	a system to which firefighting hoses may be attached

## GLOSSARY (Cont'd)

<b>suppression systems</b>	types include wet/dry chemical, gas, clean agent, mist, hybrid
<b>tamper switch</b>	device which monitors the opening or closing of a valve by sounding a signal in fire alarm panel
<b>thrust block</b>	concrete restraint cast in place at critical point in underground piping installations, in order to prevent hydraulic pressure from moving or separating pipe joints
<b>trim</b>	smaller or auxiliary piping attached to installed devices such as valves and pumps. Often supplied as a "trim package"
<b>valves</b>	device placed in a pressurized piping system in order to control, direct or prevent the movement of chemicals, gases, liquids or other substances
<b>water motor gong</b>	a water-operated local audible alarm
<b>wet pipe system</b>	sprinkler system charged with water

# **APPENDIX E: TOOLS AND EQUIPMENT**

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## **Hand Tools**

adjustable wrenches (various sizes)  
benders (pipe and tube)  
caulking gun  
centre finder/contour marker  
centre punch  
cold chisels (various sizes)  
combination wrenches (metric and imperial)  
crimping tools  
cutters (pipe and tube)  
die and chasers  
drop-in anchor setting tool  
drywall saw  
extension cord  
files (flat, half-round, rat-tail, bastard)  
fitting brushes  
flaring tool  
flashlight  
gasket cutter  
grease gun  
hacksaw  
hammers (ball-peen, claw, sledge)  
hand saw  
head wrench  
hex wrenches (metric and imperial)  
hose wrench  
in-air groovers  
levels  
line-up bars  
markers  
nipple chuck  
oilers  
paint brushes  
pick  
pipe stand  
pipe wrench

## **TOOLS & EQUIPMENT (Cont'd)**

pliers (needle nose, locking, slip joint, side cutting)  
plumb bob  
pry bar (goose neck, wrecking, pinch) ratchet cutters  
rod cutters  
rod dies  
scissors  
scrapers (various sizes)  
screwdrivers (flat, Phillips, Robertson, various sizes)  
snips (heavy duty sheet metal cutting) socket sets (metric and imperial)  
strap/chain wrench  
tripod vice  
trowels (concrete and pointer)  
utility knives  
vice bench vice  
wire brush  
wire cutter

## **Portable and Stationary Power Tools**

air monitoring device  
chop saw  
compressor  
concrete cutting machine  
core driller  
coring machine  
die equipment  
electric drills (portable magnetic base, drill press, cordless, hammer, t-drill)  
flushing machine (hydraulic and hydrophneumatic)  
fusion welding machine  
grinders (wire brush, angle grinders)  
groover (hydraulic, cut, press and roll)  
hand-held electronic tape  
heating torch  
hole saw  
hydraulic bender  
hydraulic cutter  
impact wrenches (electric, pneumatic and wireless)

## **TOOLS & EQUIPMENT (Cont'd)**

oxy-fuel brazing torch  
oxy-fuelcutting torch  
pipe cutter  
pipe threaders/groovers  
plasma cutter  
powder actuated tools  
power vice  
reamer (hand-held or mounted on power threader)  
reciprocating saw  
tamper  
tapping machine and attachments  
testing pump  
threading machine  
vacuum cleaner (wet/dry)  
water pump  
wire wheel (body grinder or angle grinder with wire brush)

## **Measuring and Testing Equipment**

amp/volt meter  
back flow test kit  
battery load tester  
builder's level  
calibrating gauge  
calipers  
dial indicator  
differential pressure gauge  
diffuser  
drafting equipment (scale ruler, compass)  
feeler gauge  
flow meter  
heat lamp  
hoses  
hydrometer  
laser level  
laser plumb  
liquid measuring containers  
magnetic level  
manometer  
multimeter  
pipe diameter tape

## **TOOLS & EQUIPMENT (Cont'd)**

Pitot tubes  
play pipes  
pressure gauge kit  
refractometer  
sight tube  
spirit level  
square  
stop watch  
straightedge  
tachometer  
tape measure  
temperature gauge  
test hoses and securement  
testing pump, excess, hydrostatic test pump  
thread depth gauge(ring/plug)  
torque wrench  
transit  
vernier calliper

## **Hoisting, Lifting and Access**

beam clamps  
cable clamps  
chain block hoist  
chains  
come-alongs (cable or chain) fork-lift  
grip hoist  
jack  
ladder  
overhead hoist  
pipe buggy (pipe cannon)  
pipe dolly (grass hopper)  
portable booms  
power-elevated work platform  
rope  
scaffolding  
shackles  
sling  
snatch blocks  
spreader bar  
stand  
support  
tugger

### **Electronic Equipment (General)**

- digital camera
- calculator
- cellular phone
- computer
- hand-held and stationary
- radios

### **Personal Protective Equipment (PPE) and Safety Equipment**

- air hood
- air monitoring device
- apron
- boots
- confined space entry equipment
- coveralls
- earplugs and earmuffs
- eye wash stations
- face shield
- fall protection equipment
- fire blanket
- fire extinguisher
- fire hoses
- fire-retardant clothing
- first aid kit
- gloves
- goggles
- hard hat
- high voltage rubber insulating blankets and gloves
- knee pads
- reflector vest
- respirators (particle, vapor)
- safety glasses
- self-contained breathing apparatus (SCBA)
- spill kit
- tag- and lock-out devices
- welding partition screen

Department of Education and Early Childhood Development  
Apprenticeship and Trades Certification Division

