Plumber
Level 1

04-2025

Apprenticeship Manitoba

Plumber

Unit: **A1 Learning About Work**

Level: One

Duration: 7 hours

Theory: 7 hours

Practical: 0 hours

Overview:

One sign that an apprentice has become competent in a task or technique is to be asked to share this knowledge. Jobsite skills-exchange has long been fundamental to trade-learning. Even trade veterans rely on peers to refine their knowledge and skill. The opportunity to benefit from this process, however, is shaped by complex factors that include jobsite "politics" and industrial/construction deadlines. As adult trade-learners, apprentices at all levels of training must use their observational, listening and interpersonal skills to benefit from the JP's knowledge and experience. This requires understanding the trade's dynamics, as well as the roles and responsibilities which order workplace/jobsite work-life.

This unit profiles the trade's structure and scope as determined by the Apprenticeship and Certification Act, regulations, Provincial Advisory Committees and the National/Provincial Occupational Analysis from which the training standards are derived (core tasks and skill requirements), as well as its job-ladders and long-term career options and social competencies. This includes information about major areas of working knowledge, activities and interactions at work, and expansive and restrictive workplaces, stressing their application to apprenticeship on-the-job training.

A sound grasp of the roles, workplace relationships, and possibilities introduced in this unit are part of 'learning to learn' in Manitoba's apprenticeship system. Senior apprentices are later offered information about learning to *teach* in this system – a central and time-honoured foundation of Trades journeywork.

Note: No percentage-weightings for test purposes are prescribed for this unit's objectives. Instead, a 'Pass/Fail" grade will be recorded for the unit in its entirety.

Objectives and Content: **Percent of Unit Mark (%)**

1. Describe structure and scope of the Plumber trade. **n/a**

a. The Apprenticeship and Certification Act
   - Apprenticeship and Certification Board and Provincial Advisory Committees
   - Apprenticeship and Certification — General Regulation**,** and specific trade BOARD BY-LAW No 130-2024
   - Policies regarding attendance, evaluation procedures, conduct and progression requirements (Apprenticeship Manitoba, Training provider)

b. Uses of the Red Seal Occupational Standard (RSOS).
   - Technical training in-school curriculum
   - On-the-job record book of hours (Manitoba blue book)
   - Examinations (level placement tests, final certification examinations)

c. Opportunities and future career options

- Generalists and specialists. The move toward specialization is well known to modern tradespeople. Some prefer to specialize and others want to do it all. Supervisory positions require a broad scope
- Lead hands and other immediate supervisors. Apprentices need to know how to become a lead-hand as much as they need to know the benefits and pitfalls of leadership between management and shop floor workers
- Geographic mobility. What does it mean to a construction/industrial worker to have to travel to find work? Are there more opportunities if they do? What are they? What are the drawbacks to being away from home for several weeks at a time?
- Job hierarchies and innovations. What trade specific special training opportunities are available in your trade? Is there travel involved? Is there an opportunity to move up the ladder on a work crew as opposed to staying in the shop?

2. Describe two levels of workplace competency. **n/a**

a. Job competencies related to workplace culture
   - Knowledge of workplace equipment and materials
   - Skills and techniques

b. Social competencies related to workplace culture
   - Frame of reference for evaluation workplace events
   - Language of work
   - Workplace belief systems
   - Rules and meanings
   - Multiculturalism and equity in the workplace

3. Describe accommodation for apprentices with disabilities. **n/a**

a. Technical training
   - Requirements
   - Roles and responsibilities
   - Services and information required by persons with disabilities

b. On-the-job
   - Requirements
   - Roles and responsibilities
   - Services and information required by persons with disabilities

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Apprenticeship Manitoba

Plumber

Unit: **A2 Trade Safety Awareness**

Level: One
Duration: 7 hours
Theory: 7 Hours
Practical: 0 Hours

Overview:

Safe working conditions, injury prevention, and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers, supervisors, and workers. It is imperative to be familiar and apply the Manitoba Workplace Safety and Health Act and Regulations. Safety education is an integral part of apprenticeship training both in school and on-the-job. This unit is an overview of occupational safety and health best practices in Manitoba and covers Personal Protective Equipment, the Workplace Hazardous Materials Information System, and Safe Work Procedures. The unit also describes injury prevention and response. Finally, the unit reinforces these best practices by navigating the SAFE Work Manitoba website through each objective to apply Manitoba's most current safety and health standards. Additionally, trade safety awareness related resources are located on the Apprenticeship Manitoba website link below. Trade specific hazards and safe work practices are supplemented and delivered in-context within technical training units.

- **SAFE Work Manitoba website:** https://www.safemanitoba.com/
- **Safety resources:** http://www.gov.mb.ca/aesi/apprenticeship/generalinfo/instructoreducators.html

Note: No percentage-weightings for test purposes are prescribed for this unit's objectives. Instead, a 'Pass/Fail' grade will be recorded for the unit in its entirety.

Objectives and Content: **Percent of Unit Mark (%)**

1. Define and describe Manitoba safety and health requirements. **n/a**

a. Overview of the *Workplace Safety and Health Act and Regulations*
   - Rights and responsibilities of workers under the *Act*
   - Rights and responsibilities of supervisors under the *Act*
   - Rights and responsibilities of employers under the *Act*

b. Public agencies
   - Workplace Safety and Health (Enforcement)
   - SAFE Work Manitoba (Prevention)
   - Other

c. Codes of practice, guidelines, policies and standards (differences)

d. Worker rights
   - Right to know, participate, refuse
   - Protection from reprisal

e. Workplace safety and health program (worker's involvement)
   - Workplace safety and health committee
   - Participation in investigation and inspection process

2. Identify and describe personal protective equipment (PPE) requirements and standards in the workplace. **n/a**

a. Employer, supervisor and worker responsibilities
b. Hierarchy of control measures
c. Personal protective equipment (PPE)
   - Eye and face protection
   - Hearing protection
   - Foot, head, hand and skin protection
   - Respiratory protection
   - Protective clothing (including Hi-Visibility/Hi-Vis)
   - Fall protection (trade specific)

3. Identify and describe the Workplace Hazardous Material Information System (WHMIS) and procedures. **n/a**

a. Hazard identification
b Product labels, symbols and classification
   - Supplier
   - Workplace
c. Safety Data Sheets (SDS)
d. Chemical and biological hazards
   - Emergency washing
   - Transportation of dangerous goods
   - Storage and handling

4. Identify and describe Safe Work Procedures (SWP). **n/a**

a. Hazard identification
b. Uncontrolled risk
c. SWP development

5. Identify and describe injury prevention.

a. Hazard recognition, evaluation, and control (SAFE acronym)
b. Occupational disease and illness
c. Musculoskeletal
   - Ergonomics
d. Psychological health and safety
   - Harassment and violence
   - Working alone
e. Young workers
f. Physical hazards
g. Chemical and biological hazards, and exposures
   - Dust and fibres
   - Fumes, aerosols, gases and vapours
h. Confined space entry
i. Electrical safety
   - Lockout/tagout procedures
j. Fire types, fire extinguisher classifications and applications

6. Identify and describe injury response. **n/a**

a. Control the scene
b. Incident investigation
   - Near miss
   - Incident

- Serious incident

c. Corrective actions
d. Follow-up
e. Reporting an injury (Workers Compensation Board of Manitoba (WCB))

7. Demonstrate navigation and retrieval of key content areas from SAFE Work Manitoba's website and apply resources directly to unit objectives. **n/a**

a. Legislation
b. Bulletins
c. Templates
d. Shop Talk
e. Other resources

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Apprenticeship Manitoba

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Unit: **A3 Tools and Equipment**

Level: One

Duration: 42 hours

Theory: 30 hours

Practical: 12 hours

Overview:

This unit is designed to introduce the apprentice to procedures for selecting, using, and maintaining tools and equipment in a variety of plumbing-project settings. The principles and practical methods introduced here are pursued in greater depth and complexity throughout technical training.

Objectives and Content:	Percent of Unit Mark (%)
1. Define terminology associated with tools and equipment. a. Refer to Plumber Red Seal Occupational Standard (RSOS).	**5%**
2. Identify hazards and describe safe work procedures pertaining to tools and equipment.	**5%**
3. Identify types of hand tools and describe their applications and procedures for use.	**5%**
4. Identify types of portable and stationary power tools and describe their applications and procedures for use.	**10%**
5. Identify types of measuring and testing equipment and describe their applications and procedures for use.	**10%**
6. Identify types of powder actuated tools and describe their applications and training requirements.	**5%**
7. Describe the procedures used to inspect, maintain and store tools and equipment.	**10%**
8. Demonstrate knowledge of tools and equipment, their applications, maintenance and procedures for safe use.	**20%**
9. Describe and demonstrate hoisting, lifting and rigging equipment, their applications, maintenance, limitations and procedures for use: a. Types of ropes and slings and describe their characteristics, safe working loads and applications. b. Factors to consider when selecting rigging equipment. c. Considerations when rigging material or equipment for lifting. d. Procedures used to inspect equipment, maintain and store rigging, hoisting, and lifting equipment according to manufacturers' specifications.	**15%**

e. Identify and interpret the procedures used to communicate during rigging, hoisting and lifting operations.

10. Describe and demonstrate the selection, assembly and procedures for using access equipment. **15%**

a. Codes and regulations pertaining to types of ladders, scaffolding and hydraulic lifts.
b. Inspect, maintain and store ladders, scaffolding and hydraulic lifts**.**
c. Demonstrate procedures for use of ladders, scaffolding and hydraulic lifts, their applications, and limitations.

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Apprenticeship Manitoba

Plumber

Unit: **A4 Tools and Equipment: Fuel Brazing and Cutting**

Level: One

Duration: 28 hours

Theory: 7 hours

Practical: 21 hours

Overview:

This unit of instruction is designed to provide the apprentice with the knowledge and skills about fuel brazing and cutting.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with fuel brazing and cutting tools and equipment. a. Refer to Plumber Red Seal Occupational Standard (RSOS).	**5%**
2. Identify hazards and describe safe work procedures pertaining to fuel brazing and cutting tools and equipment.	**10%**
3. Identify types of fuel brazing and cutting equipment and describe their components and applications. a. Air-propane b. Air-acetylene c. Oxy-propane d. Oxy-acetylene	**10%**
4. Demonstrate and perform the procedures to operate fuel brazing and cutting equipment. a. Set up b. Adjustment c. Shut down	**75%**

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Apprenticeship Manitoba

Plumber

Unit: **A5 Worksite Activities and Organization**

Level: One

Duration: 14 hours

Theory: 14 hours

Practical: 0 hours

Overview:

This unit of instruction is designed to provide the apprentice with knowledge and skills about organizing work practices, and routine trade activities in the Plumber trade.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with organizing work, and routine trade activities a. Refer to Plumber Red Seal Occupational Standard (RSOS). b. Worksite Types • Residential • Industrial • Commercial • Institutional	**5%**
2. Identify hazards and describe safe work practices pertaining to organizing work, and routine trade activities. a. Personal • Social competencies related to workplace culture. b. Workplace • Worksite specific safety documentation and procedures • Electrical power lines (underground and overhead) • Material handling and storage • Environmental considerations • Risk Assessment (soil stability, excavation and trenching and backfilling)	**10%**
3. Describe Piping System Layout.	**10%**
4. Calculate pipe lengths and piping offsets.	**10%**
5. Describe how to install piping supports.	**10%**
6. Describe excavation and backfilling of trenches, and Installation of fire stopping devices and materials.	**10%**

7. Identify and describe the protection of materials, work area, finished work, and surrounding areas pertaining to worksite activities and organization and their selection, characteristics, and applications. **15%**

a. Protection types
   - Insulated tarps
   - Debris screens
   - Shrink wrap
   - Safety netting
   - Barriers
   - Coverings
   - Other

8. Identify and describe heating of the installation area pertaining to worksite activities and organization. **15%**

a. Heater types
b. Fuels
c. Ventilation
d. Risks

9. Describe the procedures to prepare and protect the worksite. **15%**

a. Work area
b. Jobsite
c. Surrounding areas

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Apprenticeship Manitoba

Plumber

Unit: **A6 Trade Related Communications and Documents**

Level: One

Duration: 14 hours

Theory: 14 hours

Practical: 0 hours

Overview:

This unit of instruction is designed to provide the apprentice with the knowledge and skills about trade related communication techniques and documents in the Plumber trade.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with communication techniques and trade related documents. a. Refer to Plumber Red Seal Occupational Standard (RSOS).	**10%**
2. Identify hazards and describe safe work practices pertaining to communication techniques and trade related documents. a. Personal b. Workplace	**10%**
3. Identify audiences and describe techniques for effective verbal and non-verbal communication. a. Apprentices b. Other tradespersons c. Colleagues d. Supervisors e. Clients	**10%**
4. Identify types of communication devices and describe their purpose and operation.	**10%**
5. Describe the importance of communicating job requirements.	**10%**
6. Explain active listening practices, the importance of speaking clearly using correct industry terminology, and provide feedback on work to be performed.	**10%**
7. Use prompting and questioning techniques to improve communication.	**10%**
8. Identify types of trade related documents and describe their applications. a. Codes and standards b. Company policies	**10%**

c. Schematics, service information and manufacturer’s specifications
d. Technical service bulletins (TSB)
e. Other

9. **Describe the procedures used to prepare and/or complete trade related documents. 10%**
   a. Work and repair orders
   b. Pre-delivery inspection
   c. Receiving materials
   d. Other

10. **Identify and describe document use. 10%**
   a. Plan daily tasks
   b. Prepare worksite and materials
   c. Protect surrounding areas

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Apprenticeship Manitoba

Plumber

Unit: **A7 Routine Trade Activities I: Drawings**

Level: One

Duration: 28 hours

Theory: 10 hours

Practical: 18 hours

Overview:

This unit of instruction is designed to provide the apprentice with knowledge and skills about the techniques, procedures, and conventions used in professional drafting and design. Plumbers require a good, practical grasp of project design basics, as well as the ability to use technical drawings for a variety of trade tasks.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with trade related drawings. a. Refer to Plumber Red Seal Occupational Standard (RSOS).	**5%**
2. Describe metric and imperial systems of measurement and the procedures used to perform conversions associated with drawings.	**5%**
3. Identify drawing projections and views and describe their applications. a. Projections • Orthographic • Oblique • Isometric b. Views • Plans • Section • Detail • Elevation c. Symbols and abbreviations.	**15%**
4. Read and interpret drawings.	**15%**
5. Prepare working drawings from different types of projections.	**60%**

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Apprenticeship Manitoba

Plumber

Unit: A8 Tube, Tubing and Pipe I: Preparation

Level: One

Duration: 28 hours

Theory: 28 hours

Practical: 0 hours

Overview:

This unit of instruction is designed to provide the apprentice with the knowledge and skills about tube, tubing and pipe preparation. Upon completion of this unit, apprentices will be able to show an understanding of materials, pipe, tube and tubing, and fundamentals theory.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with tube, tubing and pipe preparation. a. Refer to Plumber Red Seal Occupational Standard (RSOS).	**10%**
2. Identify hazards and describe safe work practices pertaining to tube, tubing and pipe preparation. a. Personal b. Workplace	**10%**
3. Identify types of tube, tubing and pipe systems. a. Water supply b. Sanitary drainage, waste and vent c. Storm drainage d. Gas	**10%**
4. Identify types of tube, tubing and pipe systems and describe their applications for: a. Plastic piping b. Copper tube and tubing c. Steel piping d. Cast iron piping: ductile, duriron and grey e. Glass piping f. Asbestos-cement piping g. Other	**10%**
5. Explain forces that impact on tube, tubing and pipe systems and perform associated calculations. a. Thermal expansion b. Thermal contraction c. Weight d. Friction loss e. Turbulence	**10%**

f. Galvanic action
g. Environmental

6. Describe the procedures to prepare tube, tubing and piping. 20%

a. Measure
b. Cut
c. Join

7. Calculate tube, tubing and pipe measurements. 30%

a. Run and branch
b. Fitting allowances
c. Pythagorean Theorem

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Apprenticeship Manitoba

Plumber

Unit: **A9 Tube, Tubing and Pipe II: Join**

Level: One

Duration: 28 hours

Theory:	0	hours
Practical:	28	hours

Overview:

This unit of instruction is designed to provide the apprentice with the practical skills about tube, tubing, and pipe joining practices.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with tube, tubing and pipe preparation. a. Refer to Plumber Red Seal Occupational Standard (RSOS).	**10%**
2. Identify hazards and describe safe work practices pertaining to tube, tubing and pipe joining. a. Personal b. Workplace	**10%**
3. Demonstrate tube, tubing and pipe systems applications. a. Plastic piping b. Copper tube and tubing c. Steel piping d. Cast iron piping e. Glass piping f. Other	**80%**

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Apprenticeship Manitoba

Plumber

Unit: A10 Interior Drainage, Waste and Vent Systems I

Level: One

Duration: 70 hours

Theory: 46 hours

Practical: 24 hours

Overview:

This unit of instruction is designed to provide the apprentice with knowledge and skills about residential sanitary drainage systems.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with residential sanitary drainage. a. Refer to Plumber Red Seal Occupational Standard (RSOS).	**5%**
2. Identify hazards and describe safe work practices pertaining to residential sanitary drainage system.	**5%**
3. Interpret codes and regulations pertaining to residential sanitary drainage systems. a. Dimension b. Length	**10%**
4. Interpret information pertaining to residential sanitary drainage systems found on drawings and specifications.	**5%**
5. Identify tools and equipment relating to residential sanitary drainage systems and describe their applications and procedures for use.	**10%**
6. Identify the methods of back flow protection used in residential sanitary drainage systems. a. Backwater valves b. Gate valves	**10%**
7. Identify types of residential sanitary drainage systems and describe their properties and characteristics.	**5%**
8. Identify residential sanitary drainage system components and describe their purpose and applications. a. Piping b. Fixtures c. Drains	**15%**

d. Traps
e. Cleanouts
f. Joints and connections
g. Backwater valves
h. Fire stopping
i. Sewage sumps
j. Macerating toilet system
k. Expansion joints

9. Identify the factors to consider when sizing residential sanitary drainage system components. **15%**

a. Hydraulic load
b. Code requirements
c. Future loads when sizing piping close to or at next size up on the chart.

10. Perform applied projects. **20%**

a. Residential
b. Sanitary
c Drainage systems
d. Venting systems

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Apprenticeship Manitoba

Plumber

Unit: **A11 Trade Related Mathematics I**

Level: One

Duration: 21 hours

Theory: 21 hours

Practical: 0 hours

Overview:

This unit of instruction is designed to provide the apprentice with knowledge of the Imperial and metric systems, formulas and formula transposition, areas and volumes, elevations and grades, densities and pressures, and offsets and percentages.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Use mathematical properties to solve problems involving whole, fractional, decimal and numbers, with an emphasis on trade-related problems.	**35%**
a. Add and subtract fractions when presented as proper, improper, or mixed fractions.	
b. Multiply, divide, reduce, and expand common fractions.	
c. Perform standard operations with whole numbers, integers and/or real numbers with and without a calculator, using both decimal and common fractions.	
d. Convert between common and decimal fractions.	
e. Perform calculations involving exponents and roots.	
f. Apply the order of operations correctly.	
g. Apply the properties of percentages and multiples to problems involving scaling, wastage, material discounts, mark-up and sales taxes.	
h. Use principles of precision and accuracy to communicate values and margins of error.	
i. Isolate and compare relevant features of different problems, objects, and the like.	
2. Use metric and customary (Imperial) measurement systems to perform trade-related operations and problems.	**25%**
a. Explain the metric and customary (Imperial) systems of measurement, including common units used in those systems and the metric system's use of base units and prefixes.	
b. Perform calculations using metric and customary units of measurement.	
c. Convert within and between measurement systems.	
3. Calculate the perimeter, area, and volume of simple and complex shapes, using both metric and customary units of measurement.	**25%**
a. Calculate perimeters and areas of triangles, quadrilaterals (squares, rectangles, etc) and polygons.	
b. Calculate circumferences and areas of circles.	
c. Calculate volumes of prisms, spheres, and cylinders.	
d. Calculate chord lengths, arc length, sector area and segment area.	

4. Identify and describe special right angle triangles. 10%

a. 45°
b. 30° - 60°
c. 22-1/2°

5. Identify and describe grade. 5%

a. Simple
b. Percentage
c. cm/m
d. in/ft

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Apprenticeship Manitoba

Plumber

Unit: **A12 Trade Related Science I**

Level: One
Duration: 14 hours
Theory: 14 hours
Practical: 0 hours

Overview:

This unit of instruction is designed to provide the apprentice with knowledge associated with metals and alloys.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with trade related science.	**25%**
a. Metals	
b. Alloys	
c. Refer to Plumber Red Seal Occupational Standard (RSOS)	
2. Describe characteristics and properties of metals and alloys.	**25%**
a. Conduction	
b. Melting point	
c. Specific heat	
d. Linear expansion	
e. Ductility	
f. Shear strength	
g. Tensile strength	
h. Compressive strength	
i. Working (safe) strength	
j. Malleable	
k. Ferrous/non-ferrous	
l. Anneal, harden, temper	
m. Harden	
n. Temper	
3. Identify and describe metals with respect to sciences.	**25%**
a. Most common metals	
b. Cost efficiency of metals	
c. Properties of metals	
d. Problems in linear expansion	
e. Bi-metal strip and its uses	
f. Various solder	
g. Wrought iron	

h. Corrosion (oxidation): chemical and electrochemical
i. Methods in preventing corrosion
j. Galvanic series
k. Corrosion resistant materials

4. Identify and describe alloys with respect to sciences. 25%

a. Most common alloys
b. Properties of alloys
c. Cost efficiency of alloys
d. Problems in linear expansion
e. Bimetallic alloy and its uses
f. Various solder
g. Wrought iron
h. Corrosion (oxidation): chemical and electrochemical
i. Methods in preventing corrosion
j. Galvanic series
k. Corrosion resistant materials

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Apprenticeship Manitoba

Plumber

Unit: **A13 Introduction to Basic Electricity**

Level: One

Duration: 21 hours

Theory: 11 hours

Practical: 10 hours

Overview:

This unit is designed to provide the apprentice with a good, practical grasp of electricity, science and computers.

Objectives and Content:	**Percent of Unit Mark (%)**
1. Define terminology associated with electricity as related to the trade. a. Refer to Plumber Red Seal Occupational Standard (RSOS).	**5%**
2. Identify hazards and describe safe work practices pertaining to electricity.	**5%**
3. Interpret electrical related information found on drawings and specifications.	**15%**
4. Identify tools and equipment used to test electrical circuits and describe their applications and procedures for use.	**15%**
5. Explain Ohm's law and describe its applications and associated calculations.	**10%**
6. Identify types of current and describe their characteristics and applications.	**10%**
7. Identify and describe types of electrical circuits, their characteristics, operation and applications. a. Electron theory b. Basic series circuits c. Parallel circuit d. Millivoltage e. 24 volt circuit f. 110 volt circuit g. Open and closed circuits (controls) h. Relay circuit i. Voltage drops in circuit	**20%**
8. Identify and describe types of electrical equipment and components, and their characteristics, and demonstrate their operation and applications. a. Thermopile and thermocouple	**20%**

b. Transformer
c. Thermostats
d. Safety controls
e. Connectors and connections
f. Wire sizes and types
g. Meters
h. Code requirements
i. Single-phase motors

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Apprenticeship Manitoba

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Unit: **A14 Gas Code I**

Level: One

Duration: 28 hours

Theory: 23 hours

Practical: 5 hours

Overview:

This unit of instruction is designed to provide the apprentice with knowledge and skills about gas code and related concepts.

Objectives and Content:		**Percent of Unit Mark (%)**
1.	**Define terminology associated with gas code.**	**10%**
2.	**Identify hazards and describe safe work practices pertaining to gas code.**	**10%**
3.	**Interpret codes and regulations pertaining to gas.**	**10%**
4.	**Interpret information pertaining to gas found on drawings and specifications.**	**10%**
5.	**Describe the identification systems and methods for gas.**	**10%**
6.	**Identify tools and equipment relating to gas and describe their applications and procedures for use.**	**10%**
7.	**Identify gas systems and describe their characteristics and applications.**	**10%**
8.	**Identify types of gas and describe their properties and characteristics.**	**10%**
9.	**Explain the systems of measurement for gas.**	**10%**
10.	**Describe the procedures used to install fittings and accessories for steel piping.**	**10%**

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