



More skills ... more opportunities

# Professional Skills Record

## Machinist

### NOC 7231

## **ACKNOWLEDGEMENTS**

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This project is the result of the collaboration of the following dedicated adult educational consultants in Prince Edward Island:

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This handbook is designed to help skilled trades Journeypersons manage the skills and learning of their Apprentices who are using a Professional Skills Record.

## 1 Why Do I Need this Handbook?

Eighty percent of all learning in a trade happens on the job. This means the apprentice has the responsibility to learn and you, as their journeyperson, have the responsibility to mentor and teach.

Signing off for the learning an apprentice has completed under your supervision is a huge responsibility. With all the skills needed in a trade, it is important that both you and the apprentice have a tool to help you record and sign off on that learning.

## 2 But We Have Logbooks

When a tradesperson registers as an apprentice in most provinces or territories in Canada, they are given a Logbook.

A Logbook:

- is issued by the apprenticeship authority within a jurisdiction
- is created from the National Occupational Analysis (NOA) in a trade
- is a list of all the general skill areas (**Blocks and Tasks**) in a trade
- records an apprentice's progress in the general skill areas of a trade
- is signed off by a journeyperson to guarantee that an apprentice is performing these tasks to Industry Standard.

A Logbook lists the Blocks and Tasks from the NOA **but** the Interprovincial Red Seal exam and trades training courses in colleges and trade schools use **all** the information in the NOA. This includes the Blocks, Tasks, **Sub-tasks and the Knowledge and Abilities** listed in the NOA.

Each apprentice needs a tool that lists **all** the skills and learning they need in their trade career. Then, if they have one employer or several employers over their entire term of apprenticeship, both the apprentice and the journeyperson know what learning has been completed:

- the journeyperson knows what skills they are signing off to verify what has been taught; and
- the apprentice knows what they need to learn to be successful in their Red Seal exam.

### **3 What is a National Occupational Analysis (NOA)?**

The Canadian Council of Directors of Apprenticeship, which is made up of managers and directors of apprenticeship from every province and territory in Canada, guides a Human Resources and Skills Development Canada (HRSDC) sponsored program to develop NOAs.

Under this partnership, joint planning committees made up of tradespeople who have a Certificate of Qualification, Red Seal endorsement from each province and territory in Canada, come together in Ottawa every four to five years to review and revise the NOA in all of the 45 skilled trades.

Each NOA is accepted as the national standard in that trade. The NOA is then used to:

- identify and group tasks performed by skilled workers in each trade in every province and territory in Canada
- group these tasks by Blocks, Tasks, Sub-tasks, Knowledge, Skills and Abilities (also called "**competencies**") required in a trade
- give information on the breakdown of questions from all sections of the NOA in the Interprovincial Red Seal exam
- create all the questions for the Red Seal exam
- create curriculum for trade school programs and Block Release/Period/Level\* programs in a trade.

\* *The in-school portion of apprenticeship has several names across Canada. In some provinces and territories it is called Block Release, in others it is called Period Training or Level.*

## 4 If there is an NOA, why do we need a Professional Skills Record (PSR)?

The NOA is designed to be used for creating curriculum and for developing test questions for the Red Seal exam.

The PSR is designed to be used by an apprentice and a journeyperson in the workplace. The PSR provides a fair and objective assessment tool to record the apprentice's learning and skills.

The PSR has been developed **with** apprentices during a three-year research project on PEI called Trade Essentials. Recommendations made by the apprentices who tested the tool have been built into the document.

The PSR was then validated by teams of tradespeople who have a Certification of Qualification, Red Seal endorsement in each trade who came together and discussed what an apprentice is expected to learn from their journeyperson in the workplace.

The apprentice has the main responsibility for completing the PSR. It is designed as a self-assessment tool so the apprentice can keep track of his/her skills and learning and make plans to fill any technical skills training gaps.

The PSR takes information from the NOA and:

- lays it out in a chart
- lists the percentage and number of questions for the Red Seal exam from each task on every page
- takes the skills from the NOA and describes them in terms of what a tradesperson does on the job, for example:
  - In the **NOA**, the skill says – “knowledge of blueprints and drawings”
  - In the **PSR**, the skill says – “read and interpret blueprints and drawings”
- has a rating chart so the apprentice can judge his/her level of learning and have it all recorded for you to review
- provides you, the journeyperson, with a tool to discuss details of an apprentice's skill areas that are great and areas that may need to improve
- helps the apprentice make a plan so he/she can improve skills
- helps you know what skills you still have to teach the apprentice.



## 5 Am I expected to teach all the skills in a PSR?

No. A PSR contains **all** the skills and learning a tradesperson has to learn over all their years as an apprentice. You, as their journeyman, can help make this tool useful by completing the sign-off on the learning and skill you know they have. Some of the ways you can assess the skills your apprentice has are:

- **OBSERVATION** – you watch them use their knowledge, skills and abilities or competencies to perform a task or sub-task

For example, you ask them to select a tool for a specific job, then watch them use that tool to do a task.

- **INTERVIEW** – you have a discussion with your apprentice to find out if they can demonstrate an understanding of what they are doing

For example, you ask them to tell you about any safety precautions that have to be followed before they start a certain task.

- **DOCUMENTATION** – an apprentice may have a document that provides proof of skills they already have. You can use the PSR to sign-off on tasks the document covers. The document or certificate could be from:

- another employer,
- a trade school or college,
- an industry training course,
- another province or territory,
- or even from another country.

For example, you need all your employees to be trained in WHMIS. A new apprentice you just hired shows you a WHMIS certificate he/she have from a job they were working on a couple of months ago in northern Canada.

Apprentices will also tell you, through their self-assessments, the best way they think they can prove the skills they have. This can help guide you, as their mentor, to choose a way to assess your apprentice that works best for both of you.

## 6 Are there any tips on how to be a good mentor to my apprentice?

Mentoring has always been the foundation of apprenticeship. In trades, a mentor is a person who has a great deal of learning and skills from experience in a trade who helps a less experienced person by guiding, teaching and sharing their skills and learning.

Along with having learning and experience in their trade, the most successful mentors are:

- **Patient** - and understand the apprentice needs time to learn and practise their skills to become as good as their mentor.
- **Organized** - and set a schedule to meet regularly with their apprentice to track their learning and make plans for new learning.
- **Positive** - and supportive in helping an apprentice tackle new learning and encourage them to keep working on skills they find difficult to learn.
- **Respectful** - so that other employees in the workplace accept the apprentice and are willing to help and encourage the new apprentice.

As a mentor, you are a role model for your apprentice. To create a successful relationship between you and your apprentice you can:

- **Lead by example.** If you set safety and quality assurance as firsts on your list each and every day, so will your apprentice.
- **Build trust.** If you want your apprentice to trust and respect you, you can show trust in them by assigning them some responsibility as soon as you see an opportunity.
- **Communicate.** Communication is a two-way street. Be willing to listen as you give directions and be available to your apprentice when they need you. Always treat every question seriously. If your apprentice has the confidence to ask, it is important to give a respectful answer.
- **Be reliable.** Your apprentices need to know they can depend on you when they run into a problem. Create supportive relationships with other employees so if you are away from the workplace, your apprentice feels confident in approaching another employee for help.

## 6.1 Tips

- **Give clear instructions.** When assigning a task and giving direction, give step-by-step instructions, then ask your apprentice to repeat the instructions. This gives them the opportunity to ask questions on things that might not be clear to them.

### Checklist for giving instructions:

- ✓ **explain the task**
  - ✓ **show them how it is done**
  - ✓ **answer their questions**
  - ✓ **oversee the work**
  - ✓ **give them time to practise**
  - ✓ **give feedback on how they are doing**
  - ✓ **take time to show them how to do the task better**
- **Give feedback.** Giving feedback often helps your apprentice to have a clear understanding of what you want them to do and how you want them to perform. The PSR helps you to give feedback because each knowledge, skills and ability (competency) statement is clear.

There are three types of feedback that work best in the workplace:

**Positive** feedback means you want your apprentice to continue what they are doing. People are motivated by hearing they are doing a good job. They usually do more and try harder.

**Constructive** feedback means you want your apprentice to change how or what they are doing. Offering support and guidance to your apprentice to make the changes you need usually brings the best results.

**Direct** feedback focuses on what you have seen, not on secondhand information. Focus on how the apprentice is doing and what you have planned for them to do.

- **Give your apprentice experience in many skills.** Sometimes apprentices end up performing the same set of skills over and over again because they are really good at them. They are required to learn the scope of the entire trade during their apprenticeship. If you have the capability, it would be helpful to take advantage of the opportunity to cover a wide range of skills by moving your apprentice from one set of skills to another on a regular basis.
- **Track and Document learning.** Every employer cannot offer an apprentice training in every skill in a trade because each workplace is unique. Some workplaces are specialists in one area of a trade.

As a journeyperson, you have the responsibility to sign off on the skills your apprentice learns under your guidance in your workplace. A PSR can help you identify those skills.

Setting a regular review date once every month or two, and keeping that time just for you and your apprentice, can increase their scope in their trade and increase their knowledge which will be an asset in the workplace.

This meeting time gives you the best opportunity to:

- monitor your apprentice's progress,
- make a plan with him/her to learn more skills, and
- find out if there are any problem areas where he/she may need help.

Regular meeting dates also help your apprentice to be prepared and able to track his/her learning. This can be done by using a Professional Skills Record (PSR).

## 7 So how do I use a Professional Skills Record (PSR) with my apprentice?

The PSR is laid out in a chart. Each skill your apprentice has to learn has an action word to tell them how they are supposed to perform a skill. It gives you a level you can use to judge whether they are performing that skill properly. **Industry standard** is the term used to describe when your apprentice can complete a task to the level and quality of performance required by industry without assistance or supervision.

When you see the words "demonstrate an understanding of," you may find it easier to ask them questions about the skill to make sure they know what they are doing.

**PROFESSIONAL SKILLS RECORD (PSR)  
JOURNEYPERSON'S HANDBOOK**

Your apprentice has the responsibility to complete the "Knowledge, Skills and Abilities – Competencies" section.

When you are sure your apprentice has proven to you they have completed the learning they say they have, you verify it by initialing the sub-task.

Trade Name  IP Exam – 125 Questions  BLOCK A 5% - 6 questions on the IP  <u>Learning Category</u> OCCUPATIONAL SKILLS
<b>Task 1 – A</b> 3 questions on the IP exam  <u>Learning Outcome</u> <b>Uses and maintains tools and equipment</b>
<p style="text-align: center;">Journeyman Sign-off Task 1</p> <p>Complete <input style="width: 30px; height: 15px; margin-left: 10px;" type="checkbox"/></p> <p>Incomplete <input style="width: 30px; height: 15px; margin-left: 10px;" type="checkbox"/></p>



Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 1.01</b>	<b>1.01.01</b> Identify boring tools	<b>1.01.02</b> Identify hand cutting tools
<u>Learning Objective</u> <b>Uses hand tools</b>	<b>Rating</b> ___ <b>Complete</b>	<b>Rating</b> ___ <b>Complete</b>
<b>JP Sign-off</b> ___	<b>Proof</b> ___ <input style="width: 20px; height: 15px; margin-left: 5px;" type="checkbox"/>	<b>Proof</b> ___ <input style="width: 20px; height: 15px; margin-left: 5px;" type="checkbox"/>
	<b>Use</b> ___ <input style="width: 20px; height: 15px; margin-left: 5px;" type="checkbox"/>	<b>Use</b> ___ <input style="width: 20px; height: 15px; margin-left: 5px;" type="checkbox"/>



When your apprentice proves to you that he/she has finished enough sub-tasks to have a good grasp of the task, you verify that learning by initialing "complete".



If your apprentice has not completed enough sub-tasks or you do not agree with the ratings they have given themselves, initial "incomplete".

<p><b>Task I</b> <b>Learning Needs</b></p> <p><b>Sub-Tasks</b> <u>Learning Objectives</u> to be completed Comments</p>
--



If you have any sub-tasks you want your apprentice to work on, list them in this section and add any comments you have.

You might

- set a timeframe when you want these skills to improve
- suggest some manuals they could read
- suggest they go to their local college or training school for technical skills help
- suggest they go for help to an adult education facility if they need any academic help, for example, help in math or help in using the code book.

You have now created a learning plan for your apprentice using a PSR.

Your apprentice can then begin working on these sub-tasks or follow up on suggestions you have made to help them be successful in their trade career. By using a PSR, you now have a documented, written performance review that you can use in later sessions with your apprentice.

The PSR can help you give a fair assessment of your apprentice's ability to perform each technical skill task. If you are assigned an apprentice from another employer, province, territory or country, you can use the PSR to review his/her skills so you do not waste your valuable time teaching them skills they already know and can do.



# PROFESSIONAL SKILLS RECORD

A tool for recording and recognizing skills and learning of trade apprentices

## Machinist

NOC 7231

A project of:  
The Province of PEI  
and  
Human Resources and Skills Development Canada



Human Resources and  
Skills Development Canada

Ressources humaines et  
Développement des compétences Canada





The **Professional Skills Record (PSR)** is a technical skills assessment tool designed to be used in the workplace by an apprentice and a journeyperson. The PSR has taken the content from the National Occupational Analysis (NOA) and arranged it so apprentices can use it to measure their progress in their trade from the time they sign up for apprenticeship through to Red Seal certification.

This PSR has been through a validation process with a team of trade professionals with Certificate of Qualification, Red Seal endorsement, who reached agreement on the wording of each and every knowledge and skill (*competency*) to make it measurable.

The PSR was originally designed as a tool to help apprentices move through a Recognition for Skills and Learning (RSL) process so they can receive recognition for skills they have, no matter where they learned them. Through completion of a PSR, they can avoid relearning what they already know and can do by entering the apprenticeship Block/Period/Level in-school process at a higher level. For example, move directly into Block/Period/Level three rather than relearning Block/Period/Level One and Two.

Feedback from testing and validation of the PSR has opened many new possibilities for using this tool. The PSR can be used:

- as a tool for valid assessment in a Recognition for Skills and Learning (RSL) process
- as a tool that new Canadians and people planning to emigrate can use, to assess their skills against Canadian standards, receive recognition for skills they already have and, if necessary, make a plan to fill any technical skill gaps they may still have
- in the secondary-school system and in post-secondary trades training so students can know the full scope of the trade they are entering
- as a tool to guide journeypersons while they are mentoring apprentices so they are aware of all the skills apprentices need to learn to be fully competent in their professional trade designation.

**INFORMATION SITES:**

PROJECT

SITE

CANADIAN

RED SEAL SITE

[www.tradeessentials.ca](http://www.tradeessentials.ca)

[www.red-seal.ca](http://www.red-seal.ca)

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## Machinist Trade Information

Name: \_\_\_\_\_ Full Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_  
Phone: Home \_\_\_\_\_ Work \_\_\_\_\_ Cell \_\_\_\_\_

## Technical Skills Journeyperson Assessor/s

Name: \_\_\_\_\_ Business Name: \_\_\_\_\_  
Phone: Home: \_\_\_\_\_ Work: \_\_\_\_\_ Cell: \_\_\_\_\_ Business Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_

Name: \_\_\_\_\_ Business Name: \_\_\_\_\_  
Phone: Home: \_\_\_\_\_ Work: \_\_\_\_\_ Cell: \_\_\_\_\_ Business Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_

Name: \_\_\_\_\_ Business Name: \_\_\_\_\_  
Phone: Home: \_\_\_\_\_ Work: \_\_\_\_\_ Cell: \_\_\_\_\_ Business Address: \_\_\_\_\_  
Email Address: \_\_\_\_\_

Apprenticeship Program Start Date \_\_\_\_\_ Completion Date: \_\_\_\_\_ Red Seal Certification Date \_\_\_\_\_

Apprenticeship Training Officer:

Signature: \_\_\_\_\_

Provincial/Territorial Apprenticeship Manager:

Signature: \_\_\_\_\_

Province/Territory: \_\_\_\_\_

## Professional Skills Record (PSR) Development

### Professional Skills Record (PSR)

The Professional Skills Record (PSR) is designed as a tool of assessment. Learning and skills are validated through the PSR when they are signed-off by a journey person in the trade in which the apprenticeship is being served.

All skills and learning assessed in this PSR are measured against the standards listed in the National Occupational Analysis (NOA). The NOA is recognized by the Canadian Council of Directors of Apprenticeship (CCDA) as the national standard for the occupation of Machinist.

### PSR Machinist Document Validation

**To conduct a reliable assessment through a formal recognition process, skills and learning statements must be measurable. To assess skills and learning using a PSR in the trades, the Knowledge, Skills and Abilities listed in the NOA have been made into measurable competency statements by adding an “action word.” This action word describes the skill and learning level which must be reached by an apprentice on the job in order to meet industry standards. Each PSR has been validated by a trades team, all of whom hold a Certificate of Qualification with Red Seal endorsement, and who reached consensus on each action word used in every knowledge, skill and ability statement.**

## Where Technical Trade Learning Happens

This Professional Skills Record (PSR) records and recognizes directly related trade technical skills and knowledge learned through:

- **Formal Learning** – structured learning that occurs in formal education and training institutions (for example, high school, trades school, apprenticeship programs, registered union and industry training programs)
- **Non-formal Learning** – learning that happens through planned, structured training or education outside the formal education system (for example, workshops, seminars, community school)
- **Informal/Experiential Learning** – learning that results from experience, occurs outside a structured environment, and is controlled by the learner (for example, experience on-the-job, volunteer work, self-study and life experiences). Informal or experiential learning must be current and essential to the trade.

*Definitions: Adopted and/or interpreted from Work-related Informal Learning: Research and Practice in the Canadian Context, CAPLA 2008*

## Academic Trade Certification Requirement

**Trade Designation: Machinist National Occupational Classification (NOC) 7231**

One of the following prerequisites must be met before writing the Interprovincial Red Seal exam: an academic Grade 12 certificate or a General Education Diploma (GED) or successful assessment in the following Essential Skills.

Essential Skills common to all trades are listed in Appendix B of this document. Specific Essential Skills for the Machinist trade are listed on the Red Seal website: [www.red-seal.ca](http://www.red-seal.ca). (Once on that site, you will find the Essential Skills Profiles under “National Occupational Analysis.”)

A document can prove valuable learning that is recognized by industry and learning institutions.  
**Record and save every document earned in industry, trade school or union.**

Document Record							
Document Name	Issued By	Place Issued	Date Issued	Evidence of recognition for:			Recognition Awarded
				Block/s <u>Learning Category/s</u> Completed	Task/s <u>Learning Outcome/s</u> Completed	Academic Requirement	

## Prior Learning Assessment and Recognition (PLAR). . . Recognition for Skills and Learning (RSL)

PLAR is a formal recognition process in which a variety of tools are used to help people identify, demonstrate and receive recognition for skills and learning they have from the workplace, educational institutions, credentialing organizations or regulatory bodies.

The **Professional Skills Record (PSR)** is a tool designed to assist a trades apprentice to record skills and learning, and then receive recognition for the skills and learning through a PLAR trades process called:

### RECOGNITION FOR SKILLS AND LEARNING (RSL)

Traditionally, 80% of learning in a trade happens in the workplace. Through a **Recognition for Skills and Learning (RSL)** process, an apprentice can advance in a trade when they prove they have the required hours, skills and learning for that trade. Proof of skills and learning is **recorded** by the apprentice in a **PSR** and **verified** when signed-off by a journeyman in that trade.

Through the completion of a **PSR**, an apprentice can avoid relearning what they already know and can do. Through an **RSL** process, a trade apprentice can submit a PSR for assessment to:

- advance in Block/Period/Level in-school training by not having to complete a Block/Period/Level in which proof is provided that skills and learning have already been achieved for that Block/Period/Level.
- transfer common skills from one trade to another - **Skills and learning must be transferred prior to writing the Interprovincial Red Seal exam. The same skills and learning cannot be recognized toward certification in two trades.**
- compare skills and learning in a trade from another country to Canadian standards (**as stated in the National Occupational Analysis**) and receive recognition for the skills and learning that meets Canadian standards.



The following assessment indicators (Rating, Proof, Use) have been developed to help record and then assess skills and learning in accordance with the standards of the trade outlined in the National Occupational Analysis (NOA).

Assessment Standard ONE		
Rating: Self-assessment performance rating in the workplace		
Workplace Performance	Rating	Examples of Workplace position/s
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to meet or shorten task timelines</li> <li>- beyond the expected level and quality of performance required by industry</li> <li>- can <b>manage, lead and train others</b> to perform this task and series of sub-tasks</li> </ul>	<b>6</b>	<b>Journey person with a Certificate of Qualification, Red Seal endorsement and/or Gold Seal tradesperson</b> who is an expert in their field <ul style="list-style-type: none"> <li>- Project Manager/Foreman</li> <li>- Highly skilled and experienced Manager/Supervisor</li> <li>- Expert who comes from industry to serve as an instructor in a trades training program</li> </ul>
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to meet or shorten task timelines</li> <li>- to the highest level and quality of performance required by industry</li> <li>- take the initiative to <b>respond to unexpected situations when they arise and supervise others</b></li> </ul>	<b>5</b>	<b>Highly skilled and experienced journey person with a Certificate of Qualification, Red Seal endorsement</b> to whom co-workers turn for <b>direction and help</b>
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to meet task timelines</li> <li>- to the <b>highest level and quality required by industry without supervision</b></li> </ul>	<b>4</b>	<b>Experienced, skilled journey person with a Certificate of Qualification, Red Seal endorsement</b>
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to the level and quality required by industry <b>without assistance or supervision</b></li> </ul>	<b>3</b>	<b>Newly certified journey person with a Certificate of Qualification, Red Seal endorsement</b>
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to the required level and quality of performance <b>with direction, some assistance and supervision</b></li> </ul>	<b>2</b>	<b>Apprentice working under the direction of a journey person with a Certificate of Qualification, Red Seal endorsement</b>
Can perform this task and series of sub-tasks: <ul style="list-style-type: none"> <li>- to the required level and quality of performance <b>with assistance and constant supervision</b></li> </ul>	<b>1</b>	<b>A helper or new apprentice</b> who must work directly under the <b>constant supervision of a journey person with a Certificate of Qualification, Red Seal endorsement</b>

**Proof: Self-assessment options to prove skills and learning have been achieved**

**Type of Proof – Observation ... Interview ... Documentation**

**Observation**

When you choose “Observation” to prove that you can perform a task, the person who verifies your work must be Red Seal Certified in the trade in which you are an apprentice.

**Interview**

When you choose “Interview” to prove that you can perform the task, the person who verifies your work must be Red Seal Certified in the trade in which you are an apprentice. In the case of a panel, at least one person on the panel must be Red Seal Certified in the trade in which you are an apprentice.

**Documentation**

When you choose “Documentation” to prove that you can perform a task, the document must be from a certified training school or from an industry training course. Course content must be part of the requirements of your trade. If the document is from another country, it must be verified as equivalent to Canadian requirements in the trade.

**NOTE: Gather all your documents and keep them with your PSR.**

## Assessment Standard THREE

**Use: Self-assessment rating to help make a plan for additional learning and skill updates needed to be successful in achieving goals in a trade**

**Use of Knowledge, Skills and Abilities – 1 Daily 2 Often 3 Seldom 4 Never**

Show how often you use a skill. This will help you to know:

- ◆ what skills you do well because you do them on a regular basis
- ◆ what skills you have to update if you want to transfer to another employer or move to another province or territory
- ◆ what skills you have to get from a training school, industry program or other employer

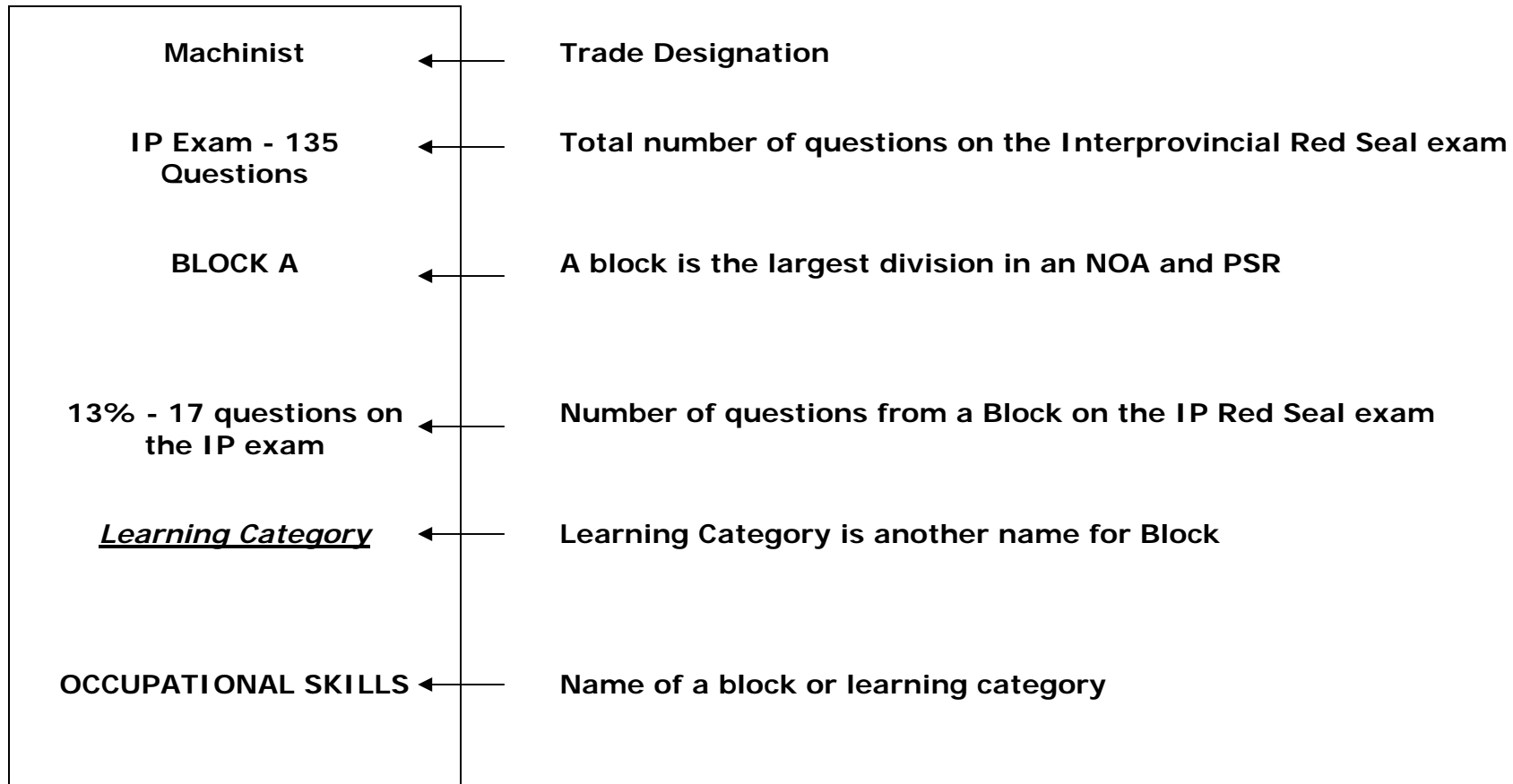
### Completing this PSR can help you:

- ◆ know the full scope of your trade by exploring all the technical skills in your trade
- ◆ highlight the skills you already have
- ◆ identify any gaps that you may have to fill so you can be successful in writing your Interprovincial Red Seal certification exam
- ◆ create a plan you can follow to fill these technical skills gaps

## Professional Skills Record (PSR) Components

Information from the National Occupational Analysis (NOA) is the foundation document for the Professional Skills Record (PSR). The PSR has been designed so that information is easily found to help a trade apprentice take control and direct his/her own individual skills and learning path.

Information in the PSR includes:



## Professional Skills Record (PSR) Components (cont'd)

Task 1 – A

7 questions on the IP exam

Learning Outcome

Uses tools and equipment

- ← Task Number and Block/Category (letter number)
- ← Number of questions on the IP Red Seal exam from the task
- ← Learning Outcome is another name for a task
- ← Task or learning outcome description

Journeyperson Sign-off Task 1

Complete

Incomplete

- ← Journeyperson's initials verify that an apprentice can perform the task to industry standards.
- ← Journeyperson's initials indicate "incomplete" when the apprentice requires more work because the task is not being performed to industry standards.

**Professional Skills Record (PSR) Set-up (cont'd)**

**Task 1**  
**Learning Needs**

Sub-Tasks  
**Learning Objectives**

To be completed  
 Comments

Journeyman lists any Sub-Tasks (Learning Objectives that an apprentice must improve before they can have their Task (Learning Outcome) signed off).



**When completed, this column becomes a learning plan for the apprentice.**

**Sub-Task**  
**1.02**

**Learning Objective**

Uses power tools

**JP Sign-off** \_\_\_\_\_

← Sub-Task      Number

← Learning Objective is another name for sub-task

← Sub-task or learning objective description

← Journeyman assesses and signs off when the apprentice can perform a sub-task or learning objective to industry standard

## How to Self-Assess Skills and Learning Using a PSR

For easier use, the self-assessment charts have been shortened into an assessment key which is located at the top of each two-page section in a PSR. The "3" rating is considered "Industry Standard."

- RATING:**
- 6 - Expert perform a task beyond expected level and quality of performance, lead and/or teach others
  - 5 - Highly skilled perform a task to the highest level and quality of performance, supervise others
  - 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
  - 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
  - 2 - Complete a task with some assistance and supervision
  - 1 - Complete task with assistance and constant supervision

**TYPE OF PROOF:**      O - Observation      I - Interview      D - Documentation

**USE:**                    1 - Daily                    2 - Often                    3 - Seldom                    4 - Never

## How to Record Skills and Learning Using a PSR

Self-assessment takes place where the learning of skills takes place in each of the Knowledge, Skills and Abilities. (Knowledge, Skills and Abilities can also be called Competencies).

### 1.02.01

Implement application of all power tools such as electric, pneumatic and hydraulic portable

← Skill and Learning that must meet industry standard.

Rating   5  

← Choose and insert a number from the RATING key that best describes your level of performance in the workplace.

Proof   I  

← Choose and insert a letter from the PROOF key that indicates your best choice to provide proof that you have this knowledge, skill and ability in the trade.

Use   2  

← Choose and insert a number from the USE key that indicates how often you use the knowledge, skills and ability (competency).

Complete



← Insert a check mark in the box to indicate completion of the competency to industry standard.

Tips to making sure you get recognition for all your skills and learning:

- take your **time** when you are working on your PSR
- do not try to complete **too much** at any one time
- be **fair and honest** with yourself; remember, this is a **self-assessment** tool
- **focus** on each task (*learning outcome*) and sub-task (*learning objective*)



**Machinist**  
**IP Exam - 135 Questions**

**BLOCK A**  
**13% - 17 questions on the IP exam**

Learning Category  
**OCCUPATIONAL SKILLS**

**Task 1 - A**  
**7 questions on the IP exam**

Learning Outcome  
**Uses tools and equipment**

Journeyman  
 Sign-off  
 Task 1

Complete

Incomplete

**Task 1**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

**Rating:**

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
 2 - Complete a task with some assistance and supervision  
 1 - Complete task with assistance and constant supervision

**Type of Proof:** O - Observation I - Interview D - Documentation

**Use:** 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 1.01</b>  <u>Learning Objective</u> <b>Uses hand tools</b>  JP Sign-off ____	<b>1.01.01</b> Demonstrate the application of all types of hand tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.01.02</b> Convert between imperial and metric systems  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.01.03</b> Apply hand-eye coordination  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.01.04</b> Organize hand tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.01.05</b> Maintain hand tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>1.01.06</b> Store hand tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.01.07</b> Recognize worn, damaged or defective hand tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			
<b>SUB-TASK 1.02</b>  <u>Learning Objective</u> <b>Uses power tools</b>  JP Sign-off ____	<b>1.02.01</b> Demonstrate the application of all types of power tools such as electric, pneumatic and hydraulic  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.02.02</b> Determine and follow appropriate operating procedures  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.02.03</b> Apply hand-eye coordination  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.02.04</b> Organize power tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.02.05</b> Maintain power tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>1.02.06</b> Store power tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>1.02.07</b> Recognize worn, damaged or defective power tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			

**Task 1 - A  
(cont'd)**

Learning Outcome  
**Uses tools and equipment**

**Task 1  
Learning Needs**

Sub-Tasks  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<p><b>SUB-TASK 1.03</b></p> <p><u>Learning Objective</u> <b>Uses measuring tools</b></p> <p>JP Sign-off _____</p>	<p><b>1.03.01</b> Use all types of measuring devices such as micrometers, vernier calipers, gear tooth verniers, protractors, sine bars and gauge blocks</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.03.02</b> Convert between imperial and metric systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.03.03</b> Organize measuring devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.03.04</b> Maintain measuring devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.03.05</b> Store measuring devices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>1.03.06</b> Recognize worn, damaged or defective measuring tools</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				
<p><b>SUB-TASK 1.04</b></p> <p><u>Learning Objective</u> <b>Uses hoisting, lifting and rigging equipment</b></p> <p>JP Sign-off _____</p>	<p><b>1.04.01</b> Recognize all types of hoisting and lifting equipment such as jacks, chain hoists and overhead cranes</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.04.02</b> Determine applications of hoisting, lifting and rigging procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.04.03</b> Determine limitations of lifting equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.04.04</b> Perform hoisting and lifting equipment maintenance</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.04.05</b> Communicate using hand signals</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>1.04.06</b> Recognize worn, damaged or defective hoisting and lifting equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				

**Task 1 - A  
(cont'd)**

Learning Outcome  
**Uses tools and equipment**

**Task 1  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

**Rating:**

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others

5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others

4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision

**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**

2 - Complete a task with some assistance and supervision

1 - Complete task with assistance and constant supervision

**Type of Proof:** O - Observation I - Interview D - Documentation

**Use:** 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

<p><b>SUB-TASK 1.05</b></p> <p><u>Learning Objective</u> <b>Uses layout tools and equipment</b></p> <p>JP Sign-off _____</p>	<p><b>1.05.01</b> Demonstrate the application of all types of layout tools and equipment such as height gauges, angle plates, scribes and surface tables</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.05.02</b> Convert between imperial and metric systems</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.05.03</b> Organize layout tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.05.04</b> Maintain layout tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.05.05</b> Store layout tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>1.05.06</b> Recognize worn, damaged or defective layout tools and equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				
<p><b>SUB-TASK 1.06</b></p> <p><u>Learning Objective</u> <b>Uses personal protective equipment (PPE) and safety equipment</b></p> <p>JP Sign-off _____</p>	<p><b>1.06.01</b> Select and use all types of PPE such as respiratory, hearing, eye and body protection</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.06.02</b> Determine approved PPE and safety equipment operations</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.06.03</b> Follow workplace safety and health regulations</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.06.04</b> Establish location of PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.06.05</b> Inspect and maintain PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>1.06.06</b> Store PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.06.07</b> Recognize worksite hazards</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.06.08</b> Recognize worn, damaged or defective PPE and safety equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

**Task 1 - A  
(cont'd)**

Learning Outcome  
**Uses tools and equipment**

**Task 1  
Learning Needs**

**Sub-Tasks  
Learning Objectives  
to be completed  
Comments**

Knowledge, Skills and Abilities - Competencies

<p><b>SUB-TASK 1.07</b></p> <p><u>Learning Objective</u> <b>Uses basic welding equipment</b></p> <p>JP Sign-off _____</p>	<p><b>1.07.01</b> Demonstrate the application of all types of welding equipment such as oxyacetylene and metal inert gas (MIG)</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.07.02</b> Determine basic welding operating procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.07.03</b> Perform basic welding and heating applications such as bending, heat treating and tacking</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.07.04</b> Apply hand-eye coordination</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.07.05</b> Organize welding equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>1.07.06</b> Maintain welding equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.07.07</b> Store welding equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>1.07.08</b> Recognize worn, damaged or defective welding equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

**Task 2 - A**  
**4 questions on the IP exam**  
Learning Outcome  
**Organizes work**

Journeyperson  
 Sign-off  
 Task 2

Complete

Incomplete

**Task 2 Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 2.01</b>  <u>Learning Objective</u> <b>Interprets documentation</b>  JP Sign-off _____	<b>2.01.01</b> Interpret first and third angle projection  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>2.01.02</b> Translate symbols such as surface finishes, scales and tolerances  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>2.01.03</b> Read and interpret types of documentation such as work orders, technical data and reference manuals  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>2.01.04</b> Use reference material such as Machinery's Handbook, tool specifications and material specifications  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>2.01.05</b> Read and interpret drawings such as blueprints, engineering drawings and sketches  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
	<b>SUB-TASK 2.02</b>  <u>Learning Objective</u> <b>Plans sequence of operation</b>  JP Sign-off _____	<b>2.02.01</b> Determine machining operations such as turning, milling and grinding  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>2.02.02</b> Determine material characteristics such as composition, properties, application and machinability  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>2.02.03</b> Estimate time required to complete each operation  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>2.02.04</b> Recognize heat treatment required  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
	<b>2.02.06</b> Prioritize operations  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____				

**Task 2 - A  
(cont'd)**

Learning Outcome  
**Organizes work**

**Task 2  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<p><b>SUB-TASK 2.03</b></p> <p><u>Learning Objective</u> <b>Maintains safe work environment</b></p> <p>JP Sign-off _____</p>	<p><b>2.03.01</b> Follow Workplace Hazardous Materials Information System (WHMIS)</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.03.02</b> Follow federal and provincial/territorial safety regulations such as the Occupational Health and Safety Act (OHSA)</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.03.03</b> Determine types and operation of fire extinguishing equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.03.04</b> Comply with disposal and recycling procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.03.05</b> Determine work hazards such as those associated with the operation of hand and power tools, cutting, grinding and machining equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>2.03.06</b> Apply work place housekeeping procedures and practices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.03.07</b> Utilize absorbent materials</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.03.08</b> Perform lockout procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.03.09</b> Recognize potential hazards specific to each machining and work location</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.03.10</b> Handle and store hazardous materials</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>2.03.11</b> Organize and maintain a clean and safe work area</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				
<p><b>SUB-TASK 2.04</b></p> <p><u>Learning Objective</u> <b>Communicates with others</b></p> <p>JP Sign-off _____</p>	<p><b>2.04.01</b> Communicate using technical terminology</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.04.02</b> Effectively use verbal and written communications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.04.03</b> Use communication equipment and media such as Internet, email and fax</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.04.04</b> Translate technical information into lay person's terms</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.04.05</b> Communicate with other related professionals such as engineers, supervisors and co-workers</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>2.04.06</b> Communicate with other related professionals such as engineers, supervisors and co-workers</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>2.04.07</b> Communicate with customers</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			

**Task 3 - A**  
**3 questions on the IP exam**  
Learning Outcome  
**Processes material**

Journeyperson  
 Sign-off  
 Task 3

Complete

Incomplete

**Task 3 Learning Needs**

**Sub-Tasks Learning Objectives**  
 to be completed  
 Comments

**Rating:**

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**  
 2 - Complete a task with some assistance and supervision  
 1 - Complete task with assistance and constant supervision

**Type of Proof:** O - Observation I - Interview D - Documentation

**Use:** 1 - Daily 2 - Often 3 - Seldom 4 - Never

**Knowledge, Skills and Abilities - Competencies**

<b>SUB-TASK 3.01</b> <u>Learning Objective</u> <b>Selects workpiece material</b>  <b>JP Sign-off</b> ____	<b>3.01.01</b> Analyze types and grades of material  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>3.01.02</b> Determine material characteristics such as composition, properties, application and machinability  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>3.01.03</b> Interpret identification markings such as ASME systems, ANSI systems, colour codes and number systems  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>3.01.04</b> Assess material measurements  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>3.01.05</b> Determine material type and shape required  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____
	<b>3.01.06</b> Visually inspect material for faults such as bends, cracks and size deviations  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____				
<b>SUB-TASK 3.02</b> <u>Learning Objective</u> <b>Performs layout</b>  <b>JP Sign-off</b> ____	<b>3.02.01</b> Implement layout procedures  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>3.02.02</b> Select layout media such as dyes, paint, markers and coating  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>3.02.03</b> Apply geometry and trigonometry principles  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>3.02.04</b> Use charts and scientific calculators  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	
	<b>SUB-TASK 3.03</b> <u>Learning Objective</u> <b>Marks workpiece for identification</b>  <b>JP Sign-off</b> ____	<b>3.03.01</b> Implement marking procedures such as etching, engraving, colour coding and stamping  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>3.03.02</b> Mark workpiece without compromising the integrity of the workplace  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____		

**Task 3 - A  
(cont'd)**

Learning Outcome  
Processes material

**Task 3  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<p><b>SUB-TASK 3.04</b></p> <p><u>Learning Objective</u> <b>Performs basic heat treatment</b></p> <p>JP Sign-off _____</p>	<p><b>3.04.01</b> Demonstrate an understanding of changes to the material structure following the application of heat (Metallurgy)</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.04.02</b> Apply types of heat treatment processes such as hardening, normalizing, annealing and stress relieving</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.04.03</b> Assess tempering colours</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.04.04</b> Perform basic procedures such as flame hardening and quenching</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.04.05</b> Apply hardness tests such as scratch, Brinell and Rockwell</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	
	<p><b>SUB-TASK 3.05</b></p> <p><u>Learning Objective</u> <b>Applies material testing</b></p> <p>JP Sign-off _____</p>	<p><b>3.05.01</b> Test material after heat treatment (Metallurgy)</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.05.02</b> Recognize types of defects and faults</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.05.03</b> Visually inspect material</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.05.04</b> Perform basic non-destructive testing (NDT) such as dye penetrant</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	
	<p><b>SUB-TASK 3.06</b></p> <p><u>Learning Objective</u> <b>Deburs workpiece</b></p> <p>JP Sign-off _____</p>	<p><b>3.06.01</b> Demonstrate deburring techniques</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.06.02</b> Use deburring tools such as files, chisels, rotary deburrers, scrapers and abrasive stones</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.06.03</b> Assess and identify burrs and rough edges</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.06.04</b> Remove burrs to meet specifications</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.06.05</b> Secure workpiece</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>SUB-TASK 3.07</b></p> <p><u>Learning Objective</u> <b>Inspects workpiece</b></p> <p>JP Sign-off _____</p>	<p><b>3.07.01</b> Apply inspection procedures and techniques such as incoming, in-process and final</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.07.02</b> Assure required dimensions and dimensional accuracy are achieved</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.07.03</b> Apply geometric dimensioning and tolerancing</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.07.04</b> Perform inspection techniques such as visual and manual verification using inspection equipment</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.07.05</b> Measure gears</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>SUB-TASK 3.08</b></p> <p><u>Learning Objective</u> <b>Sketches parts</b></p> <p>JP Sign-off _____</p>	<p><b>3.08.01</b> Perform sketching techniques</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.08.02</b> Apply third angle projection techniques</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.08.03</b> Recognize dimensioning practices</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>3.08.04</b> Sketch in third angle projection</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	



**Task 4 - A**  
**3 questions on the IP exam**  
Learning Outcome  
**Maintains machines and tooling**

Journeyperson  
 Sign-off  
 Task 4

Complete

Incomplete

**Task 4 Learning Needs**

**Sub-Tasks Learning Objectives**  
 to be completed  
 Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 4.01</b> <u>Learning Objective</u> <b>Cleans machines</b>  JP Sign-off ____	<b>4.01.01</b> Follow manufacturers' specifications  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.01.02</b> Follow cleaning techniques and requirements  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.01.03</b> Use appropriate cleaning solvents  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.01.04</b> Use cleaning equipment  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.01.05</b> Utilize machine lockout procedures  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
	<b>4.01.06</b> Determine sensitive components  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.01.07</b> Clean chips from inactive machine  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____			
<b>SUB-TASK 4.02</b> <u>Learning Objective</u> <b>Lubricates machines</b>  JP Sign-off ____	<b>4.02.01</b> Follow manufacturers' specifications  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.02.02</b> Determine types of lubricants  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.02.03</b> Determine lubrication points  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.02.04</b> Follow maintenance schedule  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.02.05</b> Use lubrication equipment such as grease gun, oil gun and oil feeders  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
	<b>4.02.06</b> Check oil levels  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>4.02.07</b> Perform preventative maintenance  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____			

**Task 4 - A  
(cont'd)**

Learning Outcome  
Maintains machines and tooling

**Task 4  
Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 4.03</b>  <u>Learning Objective</u> <b>Sharpens tooling</b>  JP Sign-off _____	<b>4.03.01</b> Determine tool geometry such as rake angles, relief angles and chip breakers  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.03.02</b> Determine types of tool sharpening equipment such as tool and cutter, pedestal and drill grinders  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.03.03</b> Set up grinding equipment  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.03.04</b> Perform sharpening operations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK 4.04</b>  <u>Learning Objective</u> <b>Applies cutting fluid and coolant</b>  JP Sign-off _____	<b>4.04.01</b> Determine types of cutting fluids such as oil and water soluble fluids  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.04.02</b> Determine types of coolants and application techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.04.03</b> Perform mixing procedures  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.04.04</b> Maintain concentration of soluble fluids  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.04.05</b> Follow a maintenance schedule  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>4.04.06</b> Determine when to apply cutting fluid and coolant  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK 4.05</b>  <u>Learning Objective</u> <b>Troubleshoots equipment</b>  JP Sign-off _____	<b>4.05.01</b> Recognize machine operations and components  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.05.02</b> Review previous problems and potential machine malfunctions  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.05.03</b> Visually inspect equipment  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.05.04</b> Identify and isolate problem  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.05.05</b> Take corrective action  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK 4.06</b>  <u>Learning Objective</u> <b>Maintains machine alignment</b>  JP Sign-off _____	<b>4.06.01</b> Use all types of alignment equipment such as dial indicator, precision level and square  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.06.02</b> Make adjustments  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>4.06.03</b> Determine where and when alignment is required  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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**Machinist**

**BLOCK B**  
**9% - 12 Questions on the IP exam**

Learning Category  
**BENCH WORK**

**Task 5 - B**  
**8 questions on the IP exam**

Learning Outcome  
**Performs hand processes**

Journeyperson  
 Sign-off  
 Task 5

Complete

Incomplete

**Task 5 Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 5.01</b>  <u>Learning Objective</u> <b>Files workpiece</b>  <b>JP Sign-off</b> ____	<b>5.01.01</b> Recognize all types of cuts such as coarse, bastard and smooth  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.01.02</b> Use all types of files such as single cut, double cut and needle files  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.01.03</b> Determine shapes and size of files such as round, flat and square  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.01.04</b> Select file types and file material for job requirement  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.01.05</b> Select filing technique for job requirement  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>5.01.06</b> Install handle onto file  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				
<b>SUB-TASK 5.02</b>  <u>Learning Objective</u> <b>Saws workpiece</b>  <b>JP Sign-off</b> ____	<b>5.02.01</b> Recognize tooth pitch of saw blades  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.02.02</b> Use saw blade tooth set such as raker, wave and straight  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.02.03</b> Perform sawing techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.02.04</b> Recognize holding techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.02.05</b> Select saw blade  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>5.02.06</b> Install and tension blade  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				

5 - B  
(cont'd)

Learning Outcome  
Performs hand processes

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 5.03</b>  <u>Learning Objective</u> <b>Performs hole making operations</b>  JP Sign-off ____	<b>5.03.01</b> Recognize holding techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.03.02</b> Identify types of tooling such as drills, reamers and hones  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.03.03</b> Select drill size such as fractional, metric, letter and number  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK 5.04</b>  <u>Learning Objective</u> <b>Performs threading operations</b>  JP Sign-off ____	<b>5.04.01</b> Identify holding techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.04.02</b> Recognize taps such as taper, plug, bottom and pipe  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.04.03</b> Determine thread, pitch and form  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.04.04</b> Develop thread cutting techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.04.05</b> Calculate and select tap drill size  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>5.04.06</b> Cut threads  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.04.07</b> Adjust die  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.04.08</b> Repair threads using tools such as nut dies and thread files  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.04.09</b> Apply cutting fluids for cooling and chip removal  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK 5.05</b>  <u>Learning Objective</u> <b>Performs hole making operations</b>  JP Sign-off ____	<b>5.05.01</b> Identify types of inserts such as single coil, double coil, key insert and tabbed insert  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.05.02</b> Recognize special taps  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.05.03</b> Select hole size for inserts  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.05.04</b> Use installation tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK 5.06</b>  <u>Learning Objective</u> <b>Broaches workpiece</b>  JP Sign-off ____	<b>5.06.01</b> Identify keyseat and other broach forms  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.06.02</b> Recognize types and sizes of keys  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.06.03</b> Select broaches, bushings and shims  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.06.04</b> Produce a keyway and other broach forms  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.06.05</b> Perform calculations such as depth of keyway  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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5 - B  
(cont'd)

Learning Outcome  
Performs hand processes

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 5**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

<b>SUB-TASK</b> 5.07  <u>Learning Objective</u> <b>Performs pressing operations</b>  JP Sign-off ____	<b>5.07.01</b> Identify types of presses such as arbour and hydraulic  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.07.02</b> Determine supporting techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.07.03</b> Regulate pressure  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.07.04</b> Align parts  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK</b> 5.08  <u>Learning Objective</u> <b>Bends workpiece</b>  JP Sign-off ____	<b>5.08.01</b> Determine holding techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.08.02</b> Determine bending temperature  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.08.03</b> Shape workpiece  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK</b> 5.09  <u>Learning Objective</u> <b>Finishes workpiece</b>  JP Sign-off ____	<b>5.09.01</b> Identify lapping and honing techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.09.02</b> Recognize polishing and blending techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.09.03</b> Chose appropriate abrasives  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>5.09.04</b> Select lapping and honing abrasives  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____

**6 - B**  
**4 questions on the IP exam**  
Learning Outcome  
**Refurbishes components**

Journeyperson  
 Sign-off  
 Task 6

Complete

Incomplete

**Task 6 Learning Needs**

**Sub-Tasks Learning Objectives**  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 6.01</b>  <u>Learning Objective</u> <b>Analyzes components</b>  JP Sign-off ____	<b>6.01.01</b> Identify fits, clearances and tolerances  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.01.02</b> Troubleshoot and document defect  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.01.03</b> Perform visual inspection  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.01.04</b> Perform basic NDT such as dye penetrant  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK 6.02</b>  <u>Learning Objective</u> <b>Plans procedures</b>  JP Sign-off ____	<b>6.02.01</b> Assess original specifications and application of components  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.02.02</b> Determine repair techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.02.03</b> Plan and implement repair sequence  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK 6.03</b>  <u>Learning Objective</u> <b>Disassembles components</b>  JP Sign-off ____	<b>6.03.01</b> Recognize retention techniques such as snap rings, blocking collars and interference fits  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.03.02</b> Remove mechanical components such as bearings, seals and adapters  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.03.03</b> Determine damage requiring repair  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK 6.04</b>  <u>Learning Objective</u> <b>Assembles components</b>  JP Sign-off ____	<b>6.04.01</b> Identify bearings  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.04.02</b> Determine types of oil seals  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.04.03</b> Recognize adhesives and joining techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>6.04.04</b> Install mechanical components  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
				<b>6.04.05</b> Test fit and function  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	

**Machinist**

**BLOCK C**  
9% - 12 Questions on the IP exam

Learning Category  
**DRILL PRESSES**

**7 - C**  
7 questions on the IP exam

Learning Outcome  
**Sets up drill presses**

Journey person  
Sign-off  
Task 7

Complete

Incomplete

**Task 7**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> 7.01  <u>Learning Objective</u> <b>Selects drill press types</b>  JP Sign-off ____	<b>7.01.01</b> Determine drill press types such as radial arm drill, sensitive drill press and pedestal drill  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.01.02</b> Recognize capacity of drill press  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.01.03</b> Determine work holding devices and their applications  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____			
	<b>SUB-TASK</b> 7.02  <u>Learning Objective</u> <b>Plans drill press sequence</b>  JP Sign-off ____	<b>7.02.01</b> Identify size and types of cutting tools  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.02.02</b> Determine drill press operations such as centre drilling, drilling, counterboring, countersinking, spot facing, tapping and renaming  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.02.03</b> List order of drill press operations  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.02.04</b> Recognize capacity of drill press  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.02.05</b> Optimize sequence of drill press operations  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
	<b>SUB-TASK</b> 7.03  <u>Learning Objective</u> <b>Selects jigs, fixtures and work holding devices</b>  JP Sign-off ____	<b>7.03.01</b> Identify types of work holding devices such as vises, V-blocks and angle plates  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.03.02</b> Determine types of jigs and fixtures  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.03.03</b> Determine clamping pressure  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.03.04</b> Recognize capacity or work holding device  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.03.05</b> Match jig, fixture and work holding devices for the job setup  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
<b>SUB-TASK</b> 7.04  <u>Learning Objective</u> <b>Sets up jigs, fixtures and work holding devices</b>  JP Sign-off ____	<b>7.04.01</b> Recognize types of work holding devices such as vises, V-blocks, angle plates and clamps  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.04.02</b> Recognize types of jigs and fixtures  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>7.04.03</b> Position, align and secure jigs and fixtures in work holding devices  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____			

7 - C  
(cont'd)

Learning Outcome  
Sets up drill presses

**Task 7**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<p><b>SUB-TASK</b> <b>7.05</b></p> <p><u>Learning Objective</u> <b>Selects tooling</b></p> <p>JP Sign-off _____</p>	<p><b>7.05.01</b> Identify types of tooling such as drills, reamers and taps</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.05.02</b> Determine cutting tool characteristics such as shape, grade, geometry and capacity</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.05.03</b> Select cutting tools and tool holders to match machining operation and material of workpiece</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>			
	<p><b>SUB-TASK</b> <b>7.06</b></p> <p><u>Learning Objective</u> <b>Sets up tooling</b></p> <p>JP Sign-off _____</p>	<p><b>7.06.01</b> Locate types of tooling such as drills, reamers and taps</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.06.02</b> Identify cutting tool characteristics such as shape, grade, geometry and capacity</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.06.03</b> Execute installation and positioning techniques</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.06.04</b> Mount tooling in holders and in spindles</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	
	<p><b>SUB-TASK</b> <b>7.07</b></p> <p><u>Learning Objective</u> <b>Sets up workpiece</b></p> <p>JP Sign-off _____</p>	<p><b>7.07.01</b> Determine workpiece characteristics such as shape, material and size</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.07.02</b> Establish clamping pressure</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.07.03</b> Position and secure workpiece in work holding device</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>		
	<p><b>SUB-TASK</b> <b>7.08</b></p> <p><u>Learning Objective</u> <b>Selects speeds and feeds</b></p> <p>JP Sign-off _____</p>	<p><b>7.08.01</b> Evaluate cutting tool capacities such as depth of cut and chip load</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.08.02</b> Determine cutting tool materials such as carbide, high speed steel (HSS) and ceramic</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.08.03</b> Identify size and types of cutting tools such as drills and reamers</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.08.04</b> Determine rigidity of machine tool, workpiece and setup</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>7.08.05</b> Calculate speeds and feeds</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>



8 - C  
 5 questions on the IP exam  
 Learning Outcome  
 Operates drill presses

Journey person  
 Sign-off  
 Task 8  
 Complete   
 Incomplete

Task 8  
 Learning Needs  
 Sub-Tasks  
 Learning Objectives  
 to be completed  
 Comments

**Rating:**  
 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others  
 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others  
 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision  
 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision  
 2 - Complete a task with some assistance and supervision  
 1 - Complete task with assistance and constant supervision

**Type of Proof:** O - Observation I - Interview D - Documentation

**Use:** 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> <b>8.01</b> <u>Learning Objective</u> <b>Drills holes</b>  <b>JP Sign-off</b> ____	<b>8.01.01</b> Execute drilling techniques such as pecking, trepanning and deep-hole drilling  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>8.01.02</b> Correlate tool geometry and material  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>8.01.03</b> Recognize tool wear  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____		
	<b>SUB-TASK</b> <b>8.02</b> <u>Learning Objective</u> <b>Cuts countersinks, counterbores, chamfers and spot faces</b>  <b>JP Sign-off</b> ____	<b>8.02.01</b> Identify reference material to determine fastener size and types  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>8.02.02</b> Identify reference material to determine counterbore diameter and corresponding pilot diameter  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>8.02.03</b> Meet required surface finish  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>8.02.04</b> Select countersinks and spot faces  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____
<b>SUB-TASK</b> <b>8.03</b> <u>Learning Objective</u> <b>Performs tapping</b>  <b>JP Sign-off</b> ____	<b>8.03.01</b> Determine tap types such as spiral flute, straight flute, spiral point and skip tooth  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>8.03.02</b> Recognize thread types such as UNF, UNC, Acme, NPT, NPS and metric  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>8.03.03</b> Determine required surface finish  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>8.03.04</b> Apply tapping procedures such as use of tapping attachments and manual centering  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____	<b>8.03.05</b> Apply cutting fluids for lubrication and chip removal  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____
	<b>8.03.06</b> Make adjustments to tapping attachments  <b>Rating</b> ____ <b>Complete</b> <b>Proof</b> ____ <input type="checkbox"/> <b>Use</b> ____				

8 - C  
(cont'd)

Learning Outcome  
Operates drill presses

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> <b>8.04</b>  <u>Learning Objective</u> <b>Finishes holes</b>  JP Sign-off _____	<b>8.04.01</b> Determine hole finishing techniques such as boring, honing and reaming  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>8.04.02</b> Verify required surface finish of hole  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>8.04.03</b> Recognize tool wear  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>8.04.04</b> Apply cutting fluids for lubrication and chip removal  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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**Task 8**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

**Machinist**

**BLOCK D**  
**22% - 30 Questions on the IP exam**

Learning Category  
**LATHES**

**9 - D**  
**16 questions on the IP exam**

Learning Outcome  
**Sets up lathes**

Journey person  
 Sign-off  
 Task 9

Complete

Incomplete

**Task 9 Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 9.01</b>  <u>Learning Objective</u> <b>Selects lathe types</b>  JP Sign-off ____	<b>9.01.01</b> Determine lathe types such as engine lathes, turret lathes and vertical lathes  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.01.02</b> Recognize capacity of lathe such as swing and size  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.01.03</b> Determine work holding devices  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____		
	<b>SUB-TASK 9.02</b>  <u>Learning Objective</u> <b>Plans lathe sequence</b>  JP Sign-off ____	<b>9.02.01</b> Recognize lathe operations such as turning, threading, boring and grinding  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.02.02</b> Evaluate machining capacity of lathe  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.02.03</b> List sequence of lathe operations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.02.04</b> Optimize sequence of lathe operations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>SUB-TASK 9.03</b>  <u>Learning Objective</u> <b>Selects work holding devices</b>  JP Sign-off ____	<b>9.03.01</b> Identify types of work holding devices such as four-jaw chuck, three-jaw chuck, face plate and fixtures  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.03.02</b> Determine clamping pressure  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.03.03</b> Evaluate capacity of work holding device  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.03.04</b> Select work holding device to match work piece requirements  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
<b>SUB-TASK 9.04</b>  <u>Learning Objective</u> <b>Sets up work holding devices</b>  JP Sign-off ____	<b>9.04.01</b> Mount all types of work holding devices such as four-jaw chuck, three-jaw chuck, face plate and fixtures  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.04.02</b> Identify mounting types such as cam lock and threaded spindle nose  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>9.04.03</b> Position, align and secure work holding device  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____		

**Task 9**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<p><b>SUB-TASK</b> <b>9.05</b></p> <p><u>Learning Objective</u> <b>Selects tooling</b></p> <p>JP Sign-off _____</p>	<p><b>9.05.01</b> Identify types of tooling such as indexable insert and HSS</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.05.02</b> Recognize cutting tool characteristics such as shape, grade, geometry and capacity</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.05.03</b> Select cutting tools and tool holders to match machining operation and material of workpiece</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	
	<p><b>9.06.01</b> Prepare types of tooling such as turning, boring, drilling and grinding</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.06.02</b> Interpret cutting tool characteristics such as shape and dimensions</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.06.03</b> Determine installation and positioning techniques</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.06.04</b> Mount tooling in holders and in lathes</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>9.07.01</b> Recognize types of accessories such as taper attachments, steady rests and follower rests</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.07.02</b> Recognize contact material for steady rests and follower rests such as bronze pads, brass pads and rollers</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.07.03</b> Select accessory to match workpiece requirements</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	
	<p><b>9.08.01</b> Mount types of accessories such as taper attachments, steady rests and follower rests</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.08.02</b> Perform setup and alignment techniques</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.08.03</b> Position, fasten and adjust accessories</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>9.08.04</b> Perform calculations such as taper and parallelism correction</p> <p>Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____</p>

9 - D  
(cont'd)

Learning Outcome  
Sets up lathes

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 9**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

<b>SUB-TASK</b> <b>9.09</b>  <u>Learning Objective</u> <b>Sets up workpiece</b>  JP Sign-off ____	<b>9.09.01</b> Recognize workpiece characteristics such as shape, material and size  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>9.09.02</b> Determine setup and alignment techniques such as dialling-in and shimming  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>9.09.03</b> Position and secure workpiece in work holding device  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK</b> <b>9.10</b>  <u>Learning Objective</u> <b>Selects speeds and feeds</b>  JP Sign-off ____	<b>9.10.01</b> Determine cutting tool capacities such as depth of cut and chip load  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>9.10.02</b> Determine cutting tool materials such as carbide, HSS and ceramic  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>9.10.03</b> Recognize size and types of cutting tools such as boring bars, facing tools and turning tools  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>9.10.04</b> Determine rigidity of machine tool, workpiece and setup  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>9.10.05</b> Calculate speeds and feeds  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
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**10 - D**  
**14 questions on the IP exam**  
Learning Outcome  
**Operates lathes**

Journeyperson  
 Sign-off  
 Task 10

Complete

Incomplete

**Task 10**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> <b>10.01</b>  <u>Learning Objective</u> <b>Turns surfaces</b>  <b>JP Sign-off</b> ____	<b>10.01.01</b> Meet required surface finish  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.01.02</b> Apply tool geometry  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.01.03</b> Prepare workpiece for machining operations using procedures such as centre drilling, machining steady rest band and facing  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.01.04</b> Turn internal and external surfaces  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.01.05</b> Recognize tool wear  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
	<b>SUB-TASK</b> <b>10.02</b>  <u>Learning Objective</u> <b>Faces surfaces</b>  <b>JP Sign-off</b> ____	<b>10.02.01</b> Meet required surface finish  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.02.02</b> Apply tool geometry  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.02.03</b> Prepare workpiece for machining operations using procedures such as centre drilling, machining steady rest band and facing  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.02.04</b> Face internal and external surfaces  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
<b>SUB-TASK</b> <b>10.03</b>  <u>Learning Objective</u> <b>Turns tapers</b>  <b>JP Sign-off</b> ____	<b>10.03.01</b> Meet required surface finish  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.03.02</b> Determine types of tapers such as Morse, Brown & Sharpe and non-standardized  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.03.03</b> Apply tool geometry  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.03.04</b> Follow procedures for turning tapers such as using taper turning attachments, using compound rests and tail stock offsets  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.03.05</b> Calculate tapers  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
	<b>10.03.06</b> Turn internal and external tapers such as machine tapers and self-holding tapers  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.03.07</b> Recognize tool wear  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____			
<b>SUB-TASK</b> <b>10.04</b>  <u>Learning Objective</u> <b>Knurls</b>  <b>JP Sign-off</b> ____	<b>10.04.01</b> Meet required surface finish  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.04.02</b> Determine tools and tool holders  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.04.03</b> Select knurling wheels for pattern and size  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.04.04</b> Recognize tool wear affecting knurling efficiency  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>10.04.05</b> Verify that knurled surface meets specifications  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____

**Rating:**

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- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 10 Learning Needs**

**Sub-Tasks Learning Objectives**  
to be completed  
Comments

<p><b>SUB-TASK 10.05</b></p> <p>Learning Objective <b>Parts off workpiece</b></p> <p>JP Sign-off _____</p>	<p><b>10.05.01</b> Meet required surface finish</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.05.02</b> Determine types of parting tools such as carbide and HSS</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.05.03</b> Apply tool geometry</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.05.04</b> Recognize tool wear</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		
	<p><b>SUB-TASK 10.06</b></p> <p>Learning Objective <b>Drills</b></p> <p>JP Sign-off _____</p>	<p><b>10.06.01</b> Meet required surface finish</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.06.02</b> Recognize drilling techniques such as pecking, trepanning and deep-hole drilling</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.06.03</b> Apply tool geometry</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.06.04</b> Recognize tool wear</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.06.05</b> Set up and secure workpiece</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>10.06.06</b> Apply cutting fluids for cooling and chip removal</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>					
<p><b>SUB-TASK 10.07</b></p> <p>Learning Objective <b>Finishes holes</b></p> <p>JP Sign-off _____</p>	<p><b>10.07.01</b> Meet required surface finish</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.07.02</b> Recognize hole finishing techniques such as drilling, reaming, boring and honing</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.07.03</b> Recognize tool wear</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>10.07.04</b> Apply cutting fluids for cooling and chip removal</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

10 - D  
(cont'd)

Learning Outcome  
Operates lathes

Task 10  
Learning Needs

Sub-Tasks  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> 10.08  <u>Learning Objective</u> Cuts grooves  JP Sign-off ____	<b>10.08.01</b> Meet required surface finish  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.08.02</b> Recognize types of grooving tools such as carbide and HSS  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.08.03</b> Apply tool geometry  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.08.04</b> Recognize tool wear  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.08.05</b> Set up and position workpiece for grooving internal and external surfaces  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK</b> 10.09  <u>Learning Objective</u> Cuts threads  JP Sign-off ____	<b>10.09.01</b> Recognize types of common threads such as UNC, NPT, Acme and metric  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.09.02</b> Determine procedures and techniques to produce internal and external threads  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.09.03</b> Recognize single and multi-start threads  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.09.04</b> Perform thread calculations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.09.05</b> Identify left and right hand thread  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>10.09.06</b> Use die heads and tapping heads  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.09.07</b> Grind cutting tool to produce thread form  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.09.08</b> Set up machine to cut external and internal threads  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.09.09</b> Set up machine to cut special threads  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.09.10</b> Recognize tool wear  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____

<b>SUB-TASK</b> 10.10  <u>Learning Objective</u> Turns eccentrics  JP Sign-off ____	<b>10.10.01</b> Recognize procedures for turning eccentric diameter  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.10.02</b> Calculate centre offset  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.10.03</b> Recognize tool wear  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>10.10.04</b> Set up and position workpiece for turning eccentrics  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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**Machinist**

**BLOCK E**  
**22% - 30 Questions on the IP exam**

Learning Category  
**MILLS**

**11 - E**  
**17 questions on the IP exam**

Learning Outcome  
**Sets up milling machines**

Journey person  
 Sign-off  
 Task 11

Complete

Incomplete

**Task 11 Learning Needs**

**Sub-Tasks Learning Objectives**  
 to be completed  
 Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 11.01</b>  <u>Learning Objective</u> <b>Selects mill types</b>  JP Sign-off ____	<b>11.01.01</b> Identify milling machine types such as vertical, horizontal, ram and turret, and horizontal boring mill  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>11.01.02</b> Recognize capacity of milling machine  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>11.01.03</b> Identify work holding devices  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____		
	<b>SUB-TASK 11.02</b>  <u>Learning Objective</u> <b>Plans milling sequence</b>  JP Sign-off ____	<b>11.02.01</b> Identify milling techniques such as climb milling, conventional milling and boring  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>11.02.02</b> Determine milling machine operations such as facing, contouring, cutting T-slots and dovetails, and boring  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>11.02.03</b> Determine roughing and finishing operations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>11.02.04</b> Evaluate machining capacity of milling machine  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>11.02.06</b> Prioritize sequence of milling operations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>11.02.07</b> Operate horizontal boring mills  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____			
<b>SUB-TASK 11.03</b>  <u>Learning Objective</u> <b>Selects work holding devices</b>  JP Sign-off ____	<b>11.03.01</b> Identify clamping pressure  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>11.03.02</b> Interpret capacity of work holding device  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>11.03.03</b> Select work holding device to match workpiece requirements  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____		

11 - E  
(cont'd)

Learning Outcome  
Sets up milling machines

Task 11  
Learning Needs

Sub-Tasks  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<p><b>SUB-TASK</b> 11.04</p> <p><u>Learning Objective</u> Sets up work holding devices</p> <p>JP Sign-off _____</p>	<p><b>11.04.01</b> Determine types of work holding devices such as vises, angle plates and V-blocks</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>11.04.02</b> Perform mounting and aligning techniques and procedures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>11.04.03</b> Position, align and secure work holding device to match workpiece requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>			
	<p><b>SUB-TASK</b> 11.05</p> <p><u>Learning Objective</u> Selects tooling</p> <p>JP Sign-off _____</p>	<p><b>11.05.01</b> Determine types of tooling such as HSS tooling, carbide tooling and carbide inserts</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>11.05.02</b> Evaluate cutting tool characteristics such as shape, grade, geometry and capacity</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>11.05.03</b> Select cutting tools and tool holders to match machining operation and material of workpiece</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		
	<p><b>SUB-TASK</b> 11.06</p> <p><u>Learning Objective</u> Sets up tooling</p> <p>JP Sign-off _____</p>	<p><b>11.06.01</b> Determine types of tooling such as HSS tooling, carbide tooling and carbide inserts</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>11.06.02</b> Perform installation and positioning techniques</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>11.06.03</b> Mount tooling in tool holders</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>11.06.04</b> Recognize insert wear</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>11.06.05</b> Replace inserts</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>
	<p><b>11.06.06</b> Mount tool holder in machines</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>					
<p><b>SUB-TASK</b> 11.07</p> <p><u>Learning Objective</u> Selects milling accessories</p> <p>JP Sign-off _____</p>	<p><b>11.07.01</b> Identify types of accessories such as rotary tables and indexing heads</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>11.07.02</b> Select accessory to match workpiece requirements</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>				

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 11 Learning Needs**

**Sub-Tasks Learning Objectives**  
to be completed  
Comments

<p><b>SUB-TASK 11.08</b></p> <p><u>Learning Objective</u> <b>Selects milling accessories</b></p> <p>JP Sign-off _____</p>	<p><b>11.08.01</b></p> <p>Identify types of accessories such as rotary tables and indexing heads</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.08.02</b></p> <p>Evaluate setup and alignment techniques</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.08.03</b></p> <p>Position, fasten and adjust accessories to match workpiece requirements</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.08.04</b></p> <p>Perform calculations such as direct, simple, angular and differential indexing</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	
	<p><b>11.09.01</b></p> <p>Interpret workpiece characteristics such as shape, material and size</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.09.02</b></p> <p>Determine clamping pressure</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.09.03</b></p> <p>Establish datum point</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.09.04</b></p> <p>Perform setup and alignment techniques such as dialling-in workpiece</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.09.05</b></p> <p>Position and secure workpiece in work holding device</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>
	<p><b>11.09.06</b></p> <p>Establish workpiece zero reference point</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.09.07</b></p> <p>Align machine to datum using edge finder and digital readout system</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>			
<p><b>SUB-TASK 11.10</b></p> <p><u>Learning Objective</u> <b>Selects speeds and feeds</b></p> <p>JP Sign-off _____</p>	<p><b>11.10.01</b></p> <p>Determine cutting tool capacities such as depth of cut and chip load</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.10.02</b></p> <p>Identify cutting tool materials such as carbide, HSS and ceramic</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.10.03</b></p> <p>Assess size and types of cutting tools such as boring bars, end mills and face mills</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.10.04</b></p> <p>Determine rigidity of machine tool, workpiece and setup</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>	<p><b>11.10.05</b></p> <p>Calculate speeds and feeds</p> <p>Rating ____ Complete <input type="checkbox"/></p> <p>Proof ____ <input type="checkbox"/></p> <p>Use ____ <input type="checkbox"/></p>

12 - E  
13 questions on the IP exam  
Learning Outcome  
Operates milling machines

Journeyperson  
Sign-off  
Task 12  
  
Complete   
Incomplete

**Task 12**  
**Learning Needs**  
  
**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> 12.01  <u>Learning Objective</u> Faces surfaces  JP Sign-off ____	<b>12.01.01</b> Meet required surface finish  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.01.02</b> Recognize methods of milling such as climb milling and conventional milling  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.01.03</b> Apply tool geometry  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.01.04</b> Machine vertical, horizontal and angled surfaces  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.01.05</b> Recognize tool wear  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>12.01.06</b> Calculate dimensions from reference point  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				
<b>SUB-TASK</b> 12.02  <u>Learning Objective</u> Mills profiles and pockets  JP Sign-off ____	<b>12.02.01</b> Meet required surface finish  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.02.02</b> Determine types and applications of specialized cutters  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.02.03</b> Apply tool geometry  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.02.04</b> Follow procedures for cutting pockets and profiles such as T-slots, dovetails and keyways  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.02.05</b> Recognize tool wear  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>12.02.06</b> Perform profile calculations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.02.07</b> Apply cutting fluids for cooling and chip removal  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.02.08</b> Cut profiles using accessories such as rotary tables and indexing heads  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____		
<b>SUB-TASK</b> 12.03  <u>Learning Objective</u> Drills holes  JP Sign-off ____	<b>12.03.01</b> Execute drilling techniques such as pecking, trepanning and deep-hole drilling  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.03.02</b> Calculate tool geometry and composition  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.03.03</b> Recognize tool wear  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>12.03.04</b> Apply cutting fluids for cooling and chip removal  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 12  
Learning Needs**

**Sub-Tasks  
Learning Objectives**  
to be completed  
Comments

<p><b>SUB-TASK 12.04</b></p> <p><u>Learning Objective</u> <b>Cuts countersinks, counterbores, chamfers and spot faces</b></p> <p>JP Sign-off _____</p>	<p><b>12.04.01</b> Access reference material to determine fastener size and types for selected operation</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.04.02</b> Access reference material to determine counterbore diameter and corresponding pilot diameter</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.04.03</b> Meet required surface finish</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.04.04</b> Select countersinks and spot faces</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.04.05</b> Apply cutting fluids for cooling and chip removal</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	
	<p><b>12.05.01</b> Identify types of threads such as UNF, UNC and metric</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.05.02</b> Meet required surface finish</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.05.03</b> Apply tapping procedures such as use of tapping head and manual centering</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.05.04</b> Apply cutting fluids for cooling and chip removal</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		
	<p><b>12.06.01</b> Perform hole finishing techniques such as drilling, reaming, boring and honing</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.06.02</b> Meet required surface finish of hole</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.06.03</b> Recognize tool wear</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>12.06.04</b> Apply fluids for cooling and chip removal</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		

**Machinist**  
**BLOCK F**  
**6% - 8 Questions on the IP exam**  
Learning Category  
**SAWS**

**13 - F**  
**5 questions on the IP exam**  
Learning Outcome  
**Sets up power saws**

Journey person  
 Sign-off  
 Task 13  
 Complete   
 Incomplete

**Task 13 Learning Needs**  
**Sub-Tasks Learning Objectives**  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 13.01</b>  <u>Learning Objective</u> <b>Selects saw types</b>  JP Sign-off ____	<b>13.01.01</b> Identify saw types such as vertical, horizontal and reciprocating  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.01.02</b> Determine capacity of saw such as speed, feed and size  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.01.03</b> Identify work holding devices  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.01.04</b> Evaluate shape and composition of workpiece material  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK 13.02</b>  <u>Learning Objective</u> <b>Selects saw blades</b>  JP Sign-off ____	<b>13.02.01</b> Evaluate types and capabilities of power saws  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.02.02</b> Match blade to types of workpiece material and shapes to be cut  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.02.03</b> Verify blade sizes, set tooth pitch and composition  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.02.04</b> Verify blade length and width  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.02.05</b> Evaluate blade effect on cutting rate, tool life, finish and accuracy  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>13.02.06</b> Determine of break-in period of new blades  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK 13.03</b>  <u>Learning Objective</u> <b>Installs blades</b>  JP Sign-off ____	<b>13.03.01</b> Perform installation techniques and procedures for various saws  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.03.02</b> Handle coiled saw blades  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.03.03</b> Measure and cut blade to size  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.03.04</b> Join and grind saw blades  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.03.05</b> Position blade in machine  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>13.03.06</b> Set and adjust blade tension  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.03.07</b> Set and position blade guides  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>13.03.08</b> Break in saw blade  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 13**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

<p><b>SUB-TASK</b> <b>13.04</b></p> <p><u>Learning Objective</u> <b>Selects speeds and feeds</b></p> <p>JP Sign-off _____</p>	<p><b>13.04.01</b> Identify type and capacity of saw</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>13.04.02</b> Determine saw blade parameters such as size, tooth pitch, set and composition</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>13.04.03</b> Determine rigidity of machine, workpiece and setup</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>13.04.04</b> Calculate speeds and feeds</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	
	<p><b>SUB-TASK</b> <b>13.05</b></p> <p><u>Learning Objective</u> <b>Makes saw adjustments</b></p> <p>JP Sign-off _____</p>	<p><b>13.05.01</b> Demonstrate an understanding of adjustments for all types of saws</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>13.05.02</b> Adjust saw settings such as angles, guides, stops, speeds and feeds</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>		
	<p><b>SUB-TASK</b> <b>13.06</b></p> <p><u>Learning Objective</u> <b>Sets up workpiece</b></p> <p>JP Sign-off _____</p>	<p><b>13.06.01</b> Verify workpiece characteristics such as shape, material and size</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>13.06.02</b> Determine clamping pressures</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>13.06.03</b> Position and secure workpiece in work holding device</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>	<p><b>13.06.04</b> Position work support device</p> <p>Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____</p>

**14 - F**  
**3 questions on the IP exam**  
Learning Outcome  
**Operates power saws**

Journeyperson  
 Sign-off  
 Task 14

Complete

Incomplete

**Task 14 Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> <b>14.01</b>  <u>Learning Objective</u> <b>Saws straight and angle cuts</b>  <b>JP Sign-off</b> ____	<b>14.01.01</b> Operate all types of saws such as horizontal, vertical and reciprocating  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>14.01.02</b> Perform sawing procedures  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>14.01.03</b> Cut test piece to verify workpiece  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>14.01.04</b> Apply cutting fluid for cooling and chip removal  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
	<b>14.02.01</b> Operate all types of saws such as horizontal, vertical and reciprocating  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>14.02.02</b> Perform sawing procedures  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>14.02.03</b> Lay out workpiece  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>14.02.04</b> Feed material and follow contour layout line  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
<b>SUB-TASK</b> <b>14.02</b>  <u>Learning Objective</u> <b>Cuts irregular shapes</b>  <b>JP Sign-off</b> ____				



**Machinist**

**BLOCK G**  
8% - 11 Questions on the IP exam

Learning Category  
**GRINDERS**

**15 - G**  
6 questions on the IP exam

Learning Outcome  
**Sets up grinders**

Journey person  
Sign-off  
Task 15

Complete

Incomplete

**Task 15 Learning Needs**

**Sub-Tasks Learning Objectives**  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 15.01</b>  <u>Learning Objective</u> <b>Selects grinder types</b>  JP Sign-off ____	<b>15.01.01</b> Identify types of grinding machine such as surface, cylindrical, centreless, and tool and cutter  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.01.02</b> Determine capacity of grinding machine  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.01.03</b> Identify work holding devices  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.01.04</b> Identify grinding machine accessories such as support rests and power heads  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK 15.02</b>  <u>Learning Objective</u> <b>Plans grinding sequence</b>  JP Sign-off ____	<b>15.02.01</b> Recognize types of grades of grinding wheels such as cubic boron nitride (CBN), aluminum oxide and silicon carbide  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.02.02</b> Assess grinding machine operations such as surface, cylindrical, tool and cutter and centreless grinding  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.02.03</b> List sequence of grinding machine operations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.02.04</b> Determine grinding capacity of grinding machines  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
<b>SUB-TASK 15.03</b>  <u>Learning Objective</u> <b>Selects work holding devices</b>  JP Sign-off ____	<b>15.03.01</b> Identify types of work holding devices such as centres, four-jaw chuck, three-jaw chuck, face plate, fixtures, magnetic chuck and magnetic sub-plates  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.03.02</b> Determine clamping pressure  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.03.03</b> Determine capacity or work holding device  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.03.04</b> Select work holding device to match workpiece requirements  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK 15.04</b>  <u>Learning Objective</u> <b>Sets up work holding devices</b>  JP Sign-off ____	<b>15.04.01</b> Mount all types of work holding devices such as centres, four-jaw chuck, three-jaw chuck, face plate, fixtures, magnetic chuck and magnetic sub-plates  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.04.02</b> Perform mounting techniques  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.04.03</b> Position, align and secure work holding devices  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	

Knowledge, Skills and Abilities - Competencies

**Task 15**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

<b>SUB-TASK</b> 15.05  <u>Learning Objective</u> <b>Selects grinding wheel</b>  JP Sign-off ____	<b>15.05.01</b> Recognize types, grades and sizes of grinding wheels  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.05.02</b> Interpret standard grading system  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.05.03</b> Determine abrasive type, grain size, grade, structure and bond  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK</b> 15.06  <u>Learning Objective</u> <b>Mounts grinding wheel</b>  JP Sign-off ____	<b>15.06.01</b> Mount all types, grades and sizes of grinding wheels  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.06.02</b> Perform proper techniques and procedures for storing, handling and mounting grinding wheels  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.06.03</b> Utilize blotter applications  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.06.04</b> Perform balancing techniques and procedures  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.06.05</b> Perform truing and dressing techniques and procedures such as contour dressing and diamond dressing  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>15.06.06</b> Visually inspect and ring test grinding wheels  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.06.07</b> Install grinding wheel on a balancing mandrel  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.06.08</b> Balance grinding wheel  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.06.09</b> Install grinding wheel on grinding machine  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.06.10</b> Selecting truing and dressing tools  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>15.06.11</b> Dress and true grinding wheel  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____				

<b>SUB-TASK</b> 15.07  <u>Learning Objective</u> <b>Selects grinding accessories</b>  JP Sign-off ____	<b>15.07.01</b> Identify types of accessories such as rests, tail stock, internal grinding head, wheel dressers, laminated blocks, magnetic spring clamps, chucks, drive dogs and mandrels  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.07.02</b> Identify contact material for steady rests and follower rests such as bronze pads and brass pads  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>15.07.03</b> Select accessory to match workpiece requirements  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
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**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

**Task 15 Learning Needs**

**Sub-Tasks Learning Objectives**  
to be completed  
Comments

<b>SUB-TASK 15.08</b>  <u>Learning Objective</u> <b>Sets up grinding accessories</b>  JP Sign-off ____	<b>15.08.01</b> Mount all types of accessories such as rests, tail stock, internal grinding head, wheel dressers, laminated blocks, magnetic spring clamps, chucks, drive dogs and mandrels	<b>15.08.02</b> Identify contact material for steady rests and follower rests such as bronze pads and brass pads	<b>15.08.03</b> Perform setup and alignment techniques	<b>15.08.04</b> Position, fasten and adjust accessories	<b>15.08.05</b> Perform taper calculations
	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
<b>SUB-TASK 15.09</b>  <u>Learning Objective</u> <b>Sets up workpiece</b>  JP Sign-off ____	<b>15.09.01</b> Identify workpiece characteristics such as shape, material and size	<b>15.09.02</b> Perform setup and alignment techniques such as shimming and dialling-in	<b>15.09.03</b> Clean and maintain magnetic work holding device	<b>15.09.04</b> Position and secure workpiece in work holding device	
	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
<b>SUB-TASK 15.10</b>  <u>Learning Objective</u> <b>Selects speeds and feeds</b>  JP Sign-off ____	<b>15.10.01</b> Evaluate the effect of speeds, feeds and depth of cut on finish and wheel life	<b>15.10.02</b> Determine application of grinding wheels	<b>15.10.03</b> Determine rigidity of machine tool, workpiece and setup	<b>15.10.04</b> Calculate speeds and feeds	
	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	

**16 - G**  
**5 questions on the IP exam**

Learning Outcome  
**Operates grinders**

Journeyperson  
 Sign-off  
 Task 16

Complete

Incomplete

**Task 16**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> <b>16.01</b>  <u>Learning Objective</u> <b>Grinds flat surfaces</b>  <b>JP Sign-off</b> ____	<b>16.01.01</b> Grind using all types of surface grinders such as vertical and horizontal  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.01.02</b> Perform surface grinding techniques required to produce surfaces such as parallel, flat and square  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.01.03</b> Select grinder type  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.01.04</b> Identify when wheels require dressing  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.01.05</b> Plunge grind and traverse grind  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
	<b>SUB-TASK</b> <b>16.02</b>  <u>Learning Objective</u> <b>Grinds profiles</b>  <b>JP Sign-off</b> ____	<b>16.02.01</b> Grind using all types of grinding machines  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.02.02</b> Grind types of profiles such as vees and radii  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.02.03</b> Perform cylindrical and surface grinding techniques to produce profiles such as angles, radii, recesses, shoulders and special forms  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	
<b>SUB-TASK</b> <b>16.03</b>  <u>Learning Objective</u> <b>Grinds cylindrical and tapered surfaces</b>  <b>JP Sign-off</b> ____	<b>16.03.01</b> Grind using all types of cylindrical grinders such as centreless, universal, external and internal  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.03.02</b> Perform setup and alignment techniques for drive plates, grinder carriers, drive dogs, trip dogs, tail stock, centres, chucks, work heads, wheel heads and the upper table  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.03.03</b> Position and secure workpiece between centres  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.03.04</b> Perform internal, external, plunge and traverse grinding  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK</b> <b>16.04</b>  <u>Learning Objective</u> <b>Grinds tools and cutters</b>  <b>JP Sign-off</b> ____	<b>16.04.01</b> Grind using all types of tool and cutter grinders such as drill grinders and end mill grinders  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.04.02</b> Select appropriate accessories  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.04.03</b> Set up various cutter types such as form relief cutters, reamers and end mills  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>16.04.04</b> Interpret relief angles and clearances  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
	<b>16.04.06</b> Sharpen cutters  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____				

**Machinist**

**BLOCK H**

**11% - 15 Questions on the IP exam**

Learning Category  
**COMPUTER NUMERICAL CONTROL (CNC) MACHINES**

**17 - H**

**5 questions on the IP exam**

Learning Outcome  
**Performs basic CNC programming**

Journey person  
 Sign-off  
 Task 17

Complete

Incomplete

**Task 17 Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

**Rating:**

6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others

5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others

4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision

**3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**

2 - Complete a task with some assistance and supervision

1 - Complete task with assistance and constant supervision

**Type of Proof:** O - Observation I - Interview D - Documentation

**Use:** 1 - Daily 2 - Often 3 - Seldom 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 17.01</b>  <u>Learning Objective</u> <b>Reviews process documentation</b>  JP Sign-off ____	<b>17.01.01</b> Determine order of CNC machining operations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>17.01.02</b> Read and interpret workpiece documentation such as drawings and setup sheets  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>17.01.03</b> Read and interpret reference material such as charts, tables, CAM files and Machinery's Handbook  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK 17.02</b>  <u>Learning Objective</u> <b>Calculates coordinates for tool path</b>  JP Sign-off ____	<b>17.02.01</b> Demonstrate an understanding of Cartesian Coordinate System  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>17.02.02</b> Calculate using trigonometry  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>17.02.03</b> Perform calculations  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____
	<b>SUB-TASK 17.03</b>  <u>Learning Objective</u> <b>Inputs program data into control memory</b>  JP Sign-off ____	<b>17.03.01</b> Demonstrate an understanding of CNC machine control  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>17.03.02</b> Select and load programs  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____	<b>17.03.03</b> Store and retrieve programs  Rating ____ Complete Proof ____ <input type="checkbox"/> Use ____

17 - H  
(cont'd)

Learning Outcome  
Performs basic CNC  
programming

**Task 17**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> <b>17.04</b>  <u>Learning Objective</u> <b>Interprets program codes</b>  JP Sign-off _____	<b>17.04.01</b> Use programming codes such as G, M and S codes  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>17.04.02</b> Relate program code to machine movement  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	
	<b>SUB-TASK</b> <b>17.05</b>  <u>Learning Objective</u> <b>Edits program</b>  JP Sign-off _____	<b>17.05.01</b> Optimize programming codes such as G, M and S codes  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>17.05.02</b> Review program to verify accuracy  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____

**18 - H**  
**6 questions on the IP exam**  
Learning Outcome  
**Sets up CNC machines**

Journeyperson  
 Sign-off  
 Task 18

Complete

Incomplete

**Task 18**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
 to be completed  
 Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> <b>18.01</b>  <u>Learning Objective</u> <b>Selects tooling and tool holders</b>  <b>JP Sign-off</b> ____	<b>18.01.01</b> Verify types of tooling such as index- able insert tooling and HSS tooling  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.01.02</b> Identify types of tool holders  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.01.03</b> Evaluate cutting tool characteristics such as shape, grade, geometry and capacity  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.01.04</b> Identify tool holder characteristics  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.01.05</b> Identify cutting tool and tool holder identification system  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
	<b>18.01.06</b> Verify size and shape of cutting tool and tool holder  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____				
<b>SUB-TASK</b> <b>18.02</b>  <u>Learning Objective</u> <b>Sets up tooling and tool holders</b>  <b>JP Sign-off</b> ____	<b>18.02.01</b> Install all types of tooling such as index- able insert tooling and HSS tooling  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.02.02</b> Install all types of tool holders  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.02.03</b> Position and secure tooling and tool holders with techniques such as shrink fit and clamping  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.02.04</b> Orient cutting tool in tool holder  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.02.05</b> Touch off tooling and establish offsets  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
	<b>18.03.01</b> Demonstrate an understanding of CNC machine control  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.03.02</b> Identify machine codes to establish work datum  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.03.03</b> Read and interpret workpiece documentation such as drawings and setup sheets  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.03.04</b> Use probes and edge finders  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>18.03.05</b> Manually adjust machine axes  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
<b>SUB-TASK</b> <b>18.03</b>  <u>Learning Objective</u> <b>Establishes work datum</b>  <b>JP Sign-off</b> ____					

18 - H  
(cont'd)

Learning Outcome  
Sets up CNC machines

**Task 18**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK</b> <b>18.04</b>  <u>Learning Objective</u> <b>Sets up workpiece</b>  <b>JP Sign-off</b> _____	<b>18.04.01</b> Mount workpiece taking into consideration the characteristics such as shape, material and size  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>18.04.02</b> Perform setup and alignment techniques such as dialling-in and shimming  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>18.04.03</b> Position and secure workpiece in work holding device  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
	<b>SUB-TASK</b> <b>18.05</b>  <u>Learning Objective</u> <b>Verifies program</b>  <b>JP Sign-off</b> _____	<b>18.05.01</b> Optimize programming codes such as G, M and S codes  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>18.05.02</b> Perform dry run and single block cycle to check tool path  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____



19 - H  
4 questions on the IP exam  
Learning Outcome  
Operates CNC machines

Journeyperson Sign-off Task 19  
Complete   
Incomplete

Task 19 Learning Needs  
Sub-Tasks  
Learning Objectives  
to be completed  
Comments

**Rating:**

- 6 - Expert, perform a task beyond expected level and quality of performance, lead and/or teach others
- 5 - Highly skilled, perform a task to the highest level and quality of performance, supervise others
- 4 - Meet task timelines and perform tasks to the highest level and quality required by industry, without supervision
- 3 - Complete a task to the level and quality of performance required by industry without assistance or supervision**
- 2 - Complete a task with some assistance and supervision
- 1 - Complete task with assistance and constant supervision

**Type of Proof:**

- O - Observation
- I - Interview
- D - Documentation

**Use:**

- 1 - Daily
- 2 - Often
- 3 - Seldom
- 4 - Never

Knowledge, Skills and Abilities - Competencies

<b>SUB-TASK 19.01</b>  <u>Learning Objective</u> <b>Adjusts offsets</b>  JP Sign-off ____	<b>19.01.01</b> Demonstrate an understanding of CNC machine control  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>19.01.02</b> Verify types of offsets and compensations such as length, diameter and tool nose radius  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>19.01.03</b> Adjust machine offset parameters  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____		
	<b>SUB-TASK 19.02</b>  <u>Learning Objective</u> <b>Adjusts offsets</b>  JP Sign-off ____				
<b>SUB-TASK 19.03</b>  <u>Learning Objective</u> <b>Monitors machining processes</b>  JP Sign-off ____	<b>19.03.01</b> Determine tool life expectancy  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>19.03.02</b> Screen load monitoring system  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>19.03.03</b> Screen machine alarms and alarm codes  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>19.03.04</b> Recognize signs of tool wear such as poor finish, vibration and excessive noise  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>19.03.05</b> Correct observed problems  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____
	<b>19.03.06</b> Use machine overrides such as rapid override and speed and feed override  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>19.03.07</b> Recognize chip control problems  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____	<b>19.03.08</b> Ensure cutting fluid delivery  Rating ____ Complete <input type="checkbox"/> Proof ____ <input type="checkbox"/> Use ____		

19 - H  
(cont'd)

Learning Outcome  
Operates CNC machines

Knowledge, Skills and Abilities - Competencies

**Task 19**  
**Learning Needs**

**Sub-Tasks**  
Learning Objectives  
to be completed  
Comments

<b>SUB-TASK</b> 19.04  <u>Learning Objective</u> <b>Interrupts program cycle</b>  JP Sign-off _____	<b>19.04.01</b> Perform as needed, manual cycle stop procedures  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>19.04.02</b> Move machine axes to take corrective action  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
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<b>SUB-TASK</b> 19.05  <u>Learning Objective</u> <b>Restarts program cycle</b>  JP Sign-off _____	<b>19.05.01</b> Demonstrate an understanding of CNC machine controls  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>19.05.02</b> Locate restart point in program  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____	<b>19.05.03</b> Position machine to avoid collision on restart  Rating ____ <b>Complete</b> Proof ____ <input type="checkbox"/> Use ____
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# APPENDIX A

## MACHINIST

### NATIONAL OCCUPATIONAL ANALYSIS

#### GLOSSARY OF TERMS

Block A Occupational Skills	Repetitive general skills for many tasks performed by a machinist that are common to several machine tool applications
Block B Bench Work	All the activities performed using hand tools at a bench such as sawing, reaming, tapping, assembly and disassembly
Block C Drill Presses	All the activities performed on a drill press
Block D Lathes	All the activities performed on a lathe
Block E Mills	All the activities performed on a mill
Block F Saws	All the activities performed on a saw
Block G Grinders	All the activities performed on a grinder
Block H Computer Numerical Control (CNC) Machines	All the activities performed with a CNC machine
Boring	A machining process that produces a round straight hole using a single point tool
Chamfer	Usually a 45 degree angle machined on the start of a bore or a shaft to allow for ease of assembly
Computer numerical control (CNC)	The control of a machine tool using coded instructions from a programmer or an operator

Counterbore	Enlarging the end of a previously created hole
Countersink	Creating a tapered hole on the end of an existing hole to accommodate a tapered head screw
Drill press	A machine used to produce holes in workpieces; reaming, tapping, spot facing and countersinking can also be performed on drill presses
Grinder	A machine that removes material from workpieces using abrasive wheels
Heat treatment	The heating and cooling of metals to modify their mechanical properties
Knurling	Using a tool to produce a pattern on the diameter of a workpiece in a lathe
Lathe	A machine that holds and rotates the workpiece; a cutting tool is moved on slideways to cut cylindrical, tapered or threaded features on a workpiece
<i>Machinery's Handbook</i>	A reference book used by the mechanical engineering disciplines such as engineers, toolmakers and machinists
Mill	A machine that holds the workpiece while a rotating cutter with single or multiple cutting edges cut surfaces and contours
Saw	A machine commonly used to cut off workpieces from bar stock using a multi-tooth blade
Spot facing	A machining operation that creates a flat surface at 90° to a hole
Tapping	Cutting threads within a hole using a cutting tool called a tap
Traverse grinding	Grinding using an automatic feed
Trepanning	Cutting a groove in the form of a circle or boring or cutting a hole by removing the centre or core in one piece

# Machinist National Occupational Analysis

## ACRONYMS

<b>ANSI</b>	American National Standards Institute	<b>NPS</b>	National Pipe Straight
<b>ASME</b>	American Society of Mechanical Engineering	<b>NPT</b>	National Pipe Taper
<b>CBN</b>	cubic boron nitride	<b>PPE</b>	personal protective equipment
<b>CMM</b>	coordinate measuring machine	<b>S Codes</b>	spindle speed control
<b>CNC</b>	computer numerical control	<b>UNC</b>	Unified National Course (a thread system for course threads)
<b>EDM</b>	electrical discharge machine	<b>UNF</b>	Unified National Fine (a thread system for fine threads)
<b>G Codes</b>	preparatory command	<b>WHMIS</b>	Workplace Hazardous Materials Information System
<b>HSS</b>	high speed steel		
<b>M Codes</b>	miscellaneous function command		
<b>NDT</b>	non-destructive testing		

## APPENDIX B

ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
<b>Technical Reading</b>	<ul style="list-style-type: none"> <li>➤ Find and use information from one source - i.e., a book, Internet, and work order</li> <li>➤ Find and use information from many parts of a single source - i.e., a code book</li> <li>➤ Recognize what is important from several sources of information</li> <li>➤ Interpret information using more than one source</li> <li>➤ Apply information to the task</li> </ul>
<b>Document Use</b>	<ul style="list-style-type: none"> <li>➤ Use large or difficult documents which are organized into units, headings chapters or sub-headings -i.e., a code book</li> <li>➤ Find information in large or very specialized documents which may have many smaller documents - i.e., operations manuals, safety manuals</li> <li>➤ Find information from many sources - i.e., code books, blueprints, work manuals</li> <li>➤ Enter information into pre-set documents and forms - i.e., accident report forms, order forms</li> <li>➤ Combine information from several sources and use it – i.e., alter a work order using information from code books, manuals and blueprints</li> <li>➤ Create new documents using information from a variety of sources – i.e., create work orders, material lists, time log sheets</li> </ul>

ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
<b>Writing</b>	<ul style="list-style-type: none"> <li>➤ Write information into a pre-set form – i.e., contract, lease, building permit</li> <li>➤ Write short messages, explanations, requests or directions – i.e., write a work order, memo, written message for a foreman, supervisor or client</li> <li>➤ Write longer messages, explanations, requests or directions – i.e., write an accident report, a detailed message to a foreman, supervisor or client</li>   <li>➤ Write a longer article which may need to be organized into headings with a table of contents, i.e., work report, section of a work manual</li> <li>➤ Write detailed, non-routine articles – i.e., make recommendations, use technical language to give directions to or ask for information from other tradespeople</li> </ul>
<b>Math</b>	<ul style="list-style-type: none"> <li>➤ Perform math calculations using formulas, fractions, decimals and percent</li> <li>➤ Combine one or more math operations to solve a problem</li> <li>➤ Estimate numbers</li> <li>➤ Convert between imperial and metric measurement systems</li> <li>➤ Solve equations</li> <li>➤ Use trigonometry to solve problems (not a requirement in every trade)</li> </ul>

ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
<b>Computer Use</b>	<ul style="list-style-type: none"> <li>➤ Perform basic computer operations needed to produce a document – i.e., a letter</li> <li>➤ Find information on the Internet</li> <li>➤ Find information in workplace databases</li> <li>➤ Send and receive e-mail</li> <li>➤ Enter data into a set format – i.e., form, spreadsheet, chart</li> <li>➤ Manage electronic information – i.e., save files</li> <li>➤ Choose and use the best software program for the task</li> </ul>
<b>Oral Communication</b>	<ul style="list-style-type: none"> <li>➤ Take directions from a supervisor or co-workers on work-related projects</li> <li>➤ Give directions to co-workers on work-related projects</li> <li>➤ Exchange information using trade terminology</li> <li>➤ Provide details on facts</li> <li>➤ Provide opinions on work-related projects</li> <li>➤ Organize, present and interpret ideas in a logical manner</li> <li>➤ Communicate one-on-one or in a group about complex work-related matters</li> </ul>



ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
<b>Thinking Skills</b>	<ul style="list-style-type: none"> <li>➤ Identify problems</li> <li>➤ Apply learning from previous experiences to identify possible solutions to a problem</li> <li>➤ Find, evaluate and choose appropriate information to solve a problem</li> <li>➤ Evaluate the best possible solution to a problem</li> <li>➤ Make decisions</li> <li>➤ Plan and organize job tasks to set time-lines</li> <li>➤ Ensure quality control standards are met</li> </ul>
<b>Working with Others</b>	<ul style="list-style-type: none"> <li>➤ Complete tasks to industry standard under supervision</li> <li>➤ Complete tasks to industry standard without supervision</li> <li>➤ Complete assigned tasks to meet time-lines that meet project deadlines</li> <li>➤ Accept feedback</li> <li>➤ Give feedback</li> <li>➤ Evaluate and apply recommendations from co-workers</li> <li>➤ Resolve conflict</li> <li>➤ Mentor an apprentice</li> </ul>

ESSENTIAL SKILL	REQUIRED ESSENTIAL SKILLS TASKS FOR TRADES
<b>Continuous Learning</b>	<ul style="list-style-type: none"> <li>➤ Identify work/career strengths and areas for improvement</li> <li>➤ Develop a work/career learning plan</li> <li>➤ Set goals</li> <li>➤ Participate in learning opportunities to meet workplace goals</li> <li>➤ Apply new learning in the workplace environment</li> <li>➤ Revisit, reflect and revise the learning plan regularly</li> <li>➤ Engage in learning opportunities to keep skills current and meet career goals</li> </ul>

