

# Hand & power tools

Supporting:

***MSFFM2001: Use furniture making  
hand and power tools***



## Workbook

**KITCHEN AND CABINET  
BATHROOM MAKING**

Name:



# Hand and power tools

## Workbook

Containing learning activities and assignments supporting the unit of competency:

***MSFFM2001: Use furniture making hand and power tools***

The assignment templates are also available in an electronic 'Word' version, downloadable from the INTAR website at:

[www.intar.com.au](http://www.intar.com.au)



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Parts of this resource are based on materials developed by Workspace Training for the original Kitchen and bathroom cabinetmaking Project, produced in 2011-2014 for the Workplace English Language and Literacy (WELL) Program.

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## About INTAR

Industry Network Training and Assessment Resources (INTAR) is a partnership owned by Workspace Training and Vaughan Consulting Software Solutions – the development team that produced the original Flooring Technology project for the Commonwealth Government WELL Program.

INTAR was formed to enable the development work to continue, following the abolition of the WELL Program in 2014. All new materials are now paid for by subscribers and members who contribute to the INTAR funding pool. Access to the subscription site is via a password protected area.

Members of INTAR include TAFE teachers, RTO trainers, manufacturers and other suppliers of industry products and services.

In addition to learner guides, workbooks and on-line materials, INTAR also provides members with the following resources and services:

- nationally validated assessment tools for all competencies covered in the learning materials
- participation in the validation groups that meet to validate assessment tools and strategies
- forums for direct consultation with manufacturers, employers and other industry personnel
- evidence of the continuous improvement, validation and consultation processes, suitable for use in demonstrating compliance with the *Standards for RTOs 2015*

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# Introduction

*Hand and power tools* is a 'learning unit' from the Kitchen and bathroom cabinetmaking training resource. It supports the following unit of competency from the *Certificate III in Cabinetmaking (Kitchen and bathroom)* (MSF31113):

- *MSFFL2001: Use furniture making hand and power tools*

To be assessed as competent, your assessor will use a range of methods to check your understanding of the concepts presented in the Learner guide for this unit and your ability to apply these principles at work.

These may include:

- written assignments
- practical demonstrations
- on-the-job discussions about how you go about particular activities
- learning activities undertaken while you're progressing through the unit
- log book or work diary.

## **Literacy, numeracy and computer skills**

Literacy is the ability to read and write. To complete this qualification, you will need sufficient literacy skills to produce a range of workplace documents. You will also need the skills to be able to read and understand documents such as order forms, installation instructions, project briefs and safe operating procedures.

Numeracy is the ability to work with numbers. Cabinetmakers need to do lots of measure-ups and calculations, so there will be many opportunities for you to learn and practise your numeracy skills.

When it comes to completing the written assignments for this qualification, a certain level of literacy ability is required to read the questions and write down your answers. There will also be times when you are asked to generate documents on a computer.

Obviously, it's important that you clearly understand what the assignment is asking you to do, and that your work is a good reflection of what you really know. So if you're having trouble reading the questions, writing down your answers, or using certain computer programs, make sure you speak to your trainer before you hand the assignment in.

There are various ways your trainer can help you. For example, they may be able to ask the assignment questions verbally and help you to write down your answers. They may also be able to show you sample answers to similar questions, which will

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let you look at the way they're written and give you hints on how to write your own. You may also be allowed to do the assignment with the assistance of another person.

## Applying for RPL

RPL stands for **Recognition of Prior Learning**. It is a form of assessment that acknowledges the skills and knowledge you have gained through:

- on-the-job experience
- formal training in other courses
- life experience, through your hobbies or other outside activities.

If you believe that you are already competent in some or all of the skills covered in this unit, ask your assessor about how to apply for RPL.

## Using this workbook

All of the lessons in the Learner guide for this unit have learning activities at the end. Their purpose is to provide discussion points and questions to help reinforce your understanding of the concepts being presented.

There are also a range of assignments, which appear at the end of each section. These are designed to test your knowledge of the subject matter and ability to submit written responses in an acceptable format.

This workbook reproduces all of the learning activities and assignments in a format that lets you handwrite your answers to the questions.

Note that your trainer may ask you to produce a computer-generated document for all of the formal assignments, either printed out in hard copy or submitted electronically. To do this, go to the website version of the unit and look for the *Assignment* link in each section. This will allow you to type your answers into the 'Word' document and then either print it out or email it direct to your trainer as an attachment.

You may also be asked to share your learning activity answers electronically, especially if you are undertaking this unit by distance learning and are linked up with fellow students in other locations. This might be done through group emails or via a social networking site such as Facebook. In these cases, you should use the website resource rather than this workbook.



# Part 1

## Learning activities





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## Section 1: Types of tools

### Measuring and setting out

Are there other tools that you use for measuring or setting out that aren't shown in this lesson? Use the table below to write down their names, and briefly describe what they're used for.

Tool	Purpose

### Hammering and nailing

Name each type of hammer, mallet or gun you use at work, and briefly describe what tasks you use it for.

Type of hammer	Purpose

## Drilling and screwing

The most common screw heads you're likely to come across are Phillips and slot head. But there are other types of screw heads. Can you name any of these more specialised screw heads?

Write down the names and provide a brief description of where each type of screw is used.

Screw name	Purpose

## Planing and sanding

Write down a typical coarse, medium and fine grit size that might be used for sanding a timber benchtop.

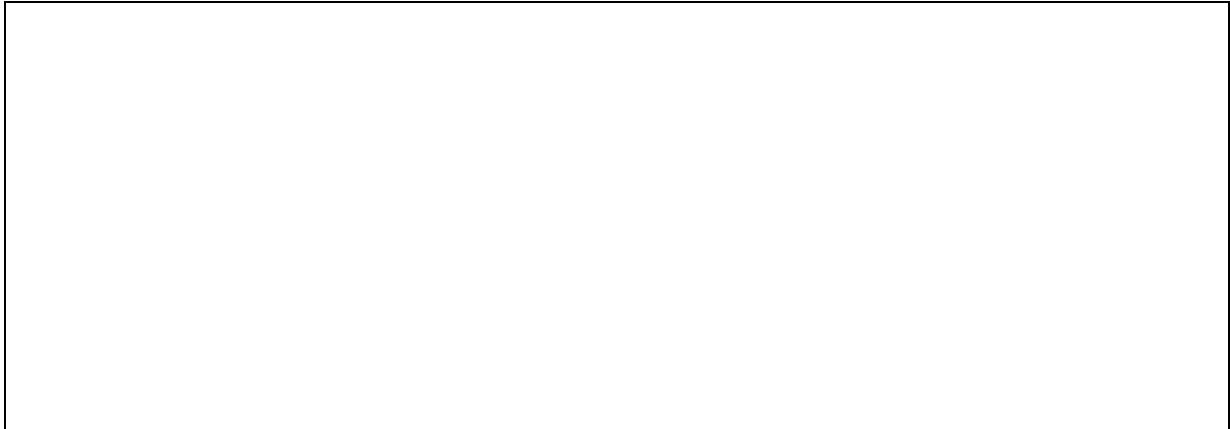
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## Cutting, chiselling and routing

What's the difference between a groove and a rebate? Use the space below to do a simple line drawing of each one. Put a label under each drawing.

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Do you know what a biscuit looks like that is used to join two pieces of timber or two board products? Using the space below draw one and label it.



### Storage and maintenance

List each tool that you are personally responsible for and briefly state what sort of maintenance procedures you carry out.

Tool	Maintenance procedures

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## Sharpening cutting edges

Watch the two video clips linked below and answer the questions relating to each one.

### Honing a chisel on an oilstone

<http://www.youtube.com/watch?v=1F5aSs2ureQ>

1. What sharpening angle does the demonstrator use for his honing?

2. How does he remove the wire edge?

### Sharpening a twist drill

<http://woodgears.ca/drill/sharpen.html>

1. What is wrong with 'sweeping the edge too far back' when you turn the drill bit while grinding it on the grinding wheel? That is, what will it do to the cutting edge?

## Section 2: Power sources

### Electricity

Write up a list of the hand-held electric tools you regularly use, naming their brand and power source (mains power or battery).

Also state the size of the tool if you know it. Note that the size is generally expressed in terms of the attachment that does the actual work – such as blade diameter, cutter length or drill bit diameter.

Tool	Size	Power source

### Compressed air

Is there an air compressor in the building where you are right now? You might have it on-site with you, or in the college workshop, or at the warehouse where you're working. If you don't have a compressor nearby, look up a typical example on the web. Choose a size that you would be likely to use at work.

Answer the following questions. You should be able to find the answers on the machine itself or in the specifications listed on the manufacturer's website.

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1. What brand is the compressor?

2. What is the cubic capacity of the receiver?

3. Is the pump diesel, petrol or electric?

4. What is the free air delivery rating (in litres per minute)?

5. What type of air filter does it use?

If you're looking at the compressor right now and it's in operation, also answer the following questions:

6. What operating pressure is it set at?

7. How many hoses branch off it?

8. What types of equipment is it running?



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## Other power sources

The following link will take you to a video clip produced by Ramset Australia which describes the difference between high velocity and low velocity powder actuated fasteners. Watch the clip and then answer the questions below.

<http://www.youtube.com/watch?v=MD-yAjSPgwU>

1. What is a 'power load'?

2. Why is it important to select the correct power load for the material you're fastening into?

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## Section 3: Safe operating procedures

### General safety

Point 5 in this lesson refers to the problem of ‘kickback’ in power tools. What exactly is kickback?

### Drill operation

Name the type of bit you would use to drill the following holes.

Hole type	Drill bit type
6 mm hole in a piece of timber	
32 mm hole in a sheet of plywood	
12 mm hole in a concrete slab	

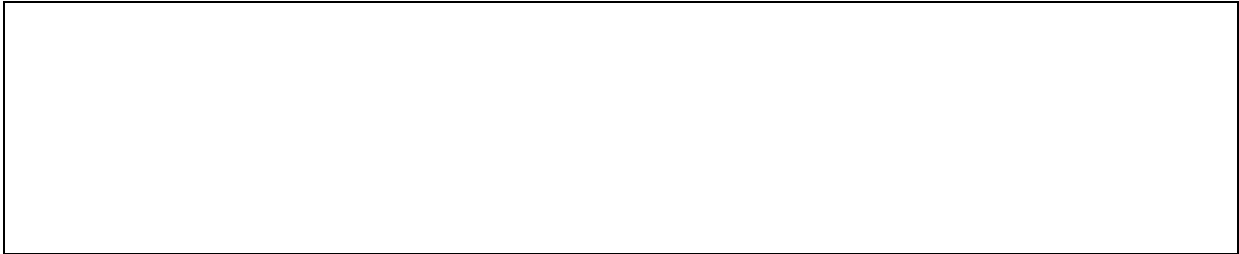
### Jigsaw operation

Do some research on the different blades available for your own jigsaw, or the one you’re using in your training session. What materials are they designed to cut? Write down the main distinguishing features of the different blades.

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## Planer operation

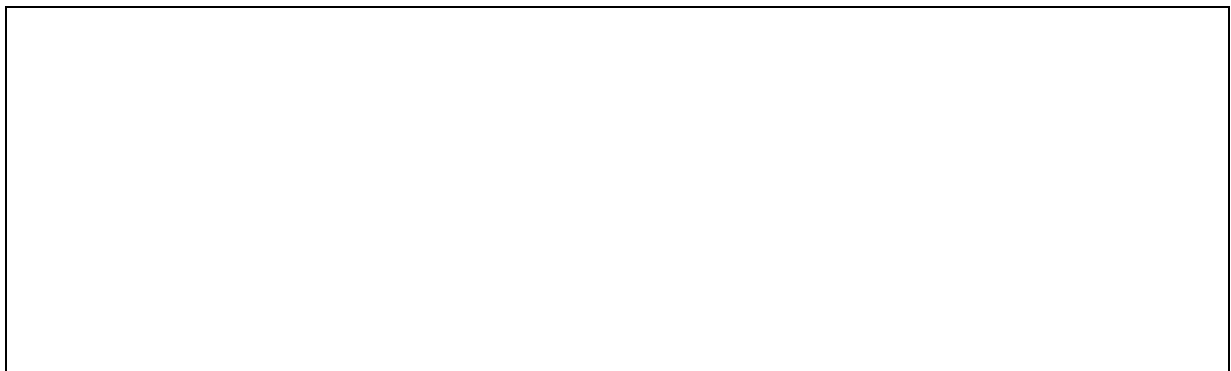
Point 5 in this lesson says you should plane in the direction of the grain. What would happen if you planed solid timber against the grain? That is, what would the finished surface look like?




## Circular saw operation

Point 1 in this lesson talks about the importance of securing the material you're about to cut. How would you go about securing the following two pieces of work? Use a drawing for each one to illustrate your answer if you wish.

1. A long length of solid timber skirting board (say 4.8 m long), to be cut in the middle.



2. A 2400 x 1200 sheet of plywood, to be cut back to 1800 x 1200.



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## Nail gun operation

1. What do you think would be the extra safety problems associated with bump fire mode?

2. How would this affect the way you use the gun, or position yourself before you start firing?

# Part 2

## Assignments





## Assignment 1

Name		Date	
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Choose three hand tools you use at work that don't require a power source other than your own muscles.

For each tool answer the following questions in the tables provided below.

1. What type of tool is it?
2. Who is the manufacturer and what is the brand name of the tool?
3. What is its main purpose?
4. What secondary functions does the tool have (if any)? That is, does the tool have any other features, attachments or uses?
5. What personal protective equipment should you wear when you are using the tool (if any)? For example, do you need to wear safety glasses, gloves, dust mask, etc. If you only need to wear PPE for certain types of jobs, state the item of PPE and briefly describe when it would be required.
6. Does the tool have any fragile or delicate parts that need to be protected? If so, how do you protect them, and how do you carry the tool to the jobsite?
7. Does the tool have any parts that are designed to wear out and be replaced on a regular basis? For example, you may need to carry spare blades, cutters, tips, etc. What are these replacement parts, and how do you carry them with you to the jobsite?
8. Do you need to carry any other equipment or maintenance item to the site to keep the tool operational? For example, do you need to have a sharpening stone, oil, grease or other item in your toolbox to keep it working properly?
9. What checks do you need to carry out before you use the tool? These may include safety checks, adjustments, inspections on the sharpness of blades, tightening of screws, etc.
10. What are the main things that can go wrong with the tool? For each problem you state, briefly describe how you would fix it, or whether the problem would mean that the tool must be put in for repair or thrown out.

<b>Tool 1</b>	
1. Type of tool	
2. Manufacturer	
3. Brand name	
4. Main purpose	
5. Secondary functions	
6. PPE required	
7. Replacement parts / storage and carrying	
8. Support equipment required	
9. Pre-operational checks	
10. Problems and solutions	



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<b>Tool 2</b>	
1. Type of tool	
2. Manufacturer	
3. Brand name	
4. Main purpose	
5. Secondary functions	
6. PPE required	
7. Replacement parts / storage and carrying	
8. Support equipment required	
9. Pre-operational checks	
10. Problems and solutions	

<b>Tool 3</b>	
1. Type of tool	
2. Manufacturer	
3. Brand name	
4. Main purpose	
5. Secondary functions	
6. PPE required	
7. Replacement parts / storage and carrying	
8. Support equipment required	
9. Pre-operational checks	
10. Problems and solutions	

## Assignment 2

Name		Date	
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Choose two power tools from your workplace that both have the same function but are powered by different energy sources. For example, you may have two drills – one running on mains electricity and the other on battery. You might even have a drill that's driven by compressed air.

Answer the following questions in the table provided below:

1. What type of tool are they? State the category of tool your two selections belong to, such as: circular saw, drill, planer, etc.
2. What are the two power sources for these tools? These may include: mains electricity, compressed air, rechargeable battery or gas.
3. Who is the manufacturer (or manufacturers, if they are made by different companies)? That is, what are their brand names?
4. What size is each tool? Describe the size in terms of their drill bit diameter, blade diameter, cutter length, nail length, etc.
5. What are the power ratings? State the power ratings in terms of wattage, operating pressure, etc.
6. What are the main advantages of each tool? List the advantages, particularly in comparison to the other tool you have selected.
7. What are the main disadvantages of each tool? List the main disadvantages, again with particular reference to the other tool.

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1. Type of tool		
	Power tool 1	Power tool 2
2. Power source		
3. Manufacturer		
4. Size		
5. Power rating		
6. Main advantages		
7. Main disadvantages		

## Assignment 3

Name		Date	
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Choose three hand-held power tools you use at work. Do not include either of the tools you selected for Assignment 2. In preference, select tools you will be using for your practical demonstration assessment activities in this unit.

For each tool, use the tables on the following pages to answer the questions below:

1. What type of tool is it?
2. Who is the manufacturer and what is the brand name of the tool?
3. What is its main purpose?
4. What personal protective equipment should you wear when you're using the tool? For example, do you need to wear ear muffs, safety glasses, dust mask, etc. If you only need to wear PPE for certain types of jobs, state the item of PPE and briefly describe when it would be required.
5. Specify the attachment or item of hardware on the tool that does the actual work – that is, the drilling, cutting, welding, fastening, heating etc. Preferably, describe the attachments you'll be using for your practical assessment activity, if they are different from the one that's normally fitted to the tool.
6. What checks do you need to carry out before you use the tool? These may include adjustments, calibrations, safety checks, inspections of wear and tear, etc.
7. What routine maintenance procedures are required to keep the tool in good condition? Describe the maintenance procedures, including when they should be carried out, e.g. after each use, weekly, monthly, etc.
8. What are the main problems that would cause you to tag-out the tool and have it discarded or put in for repair? Describe the sorts of things that would make you think the tool was not safe to use. These could relate to unusual sounds, smells, loose parts, damaged parts, etc.

<b>Tool 1</b>	
1. Type of tool	
2. Manufacturer	
3. Main purpose	
4. PPE required	
5. Attachment	
6. Pre-operational checks	
7. Routine maintenance	
8. Problems requiring tag-out	

<b>Tool 2</b>	
1. Type of tool	
2. Manufacturer	
3. Main purpose	
4. PPE required	
5. Attachment	
6. Pre-operational checks	
7. Routine maintenance	
8. Problems requiring tag-out	

<b>Tool 3</b>	
1. Type of tool	
2. Manufacturer	
3. Main purpose	
4. PPE required	
5. Attachment	
6. Pre-operational checks	
7. Routine maintenance	
8. Problems requiring tag-out	



## Practical demonstration

The checklist below sets out the sorts of things your trainer will be looking for when you undertake the practical demonstrations for this unit. Make sure you talk to your trainer or supervisor about any of the details that you don't understand, or aren't ready to demonstrate, before the assessment event is organised. This will give you time to get the hang of the tasks you will need to perform, so that you'll feel more confident when the time comes to be assessed.

When you are able to tick all of the YES boxes below you will be ready to carry out the practical demonstration component of this unit.

General performance evidence	YES
1. Follow all relevant WHS laws and regulations, and company policies and procedures	<input type="checkbox"/>
2. Identify tools and their functions, and select the correct tools for the job	<input type="checkbox"/>
3. Recognise different sources of power supply	<input type="checkbox"/>
4. Check that tools are operating properly and safely	<input type="checkbox"/>
5. Correct faults within level of authority, or take tools to authorised person for repair	<input type="checkbox"/>
6. Select appropriate equipment for holding down or supporting materials	<input type="checkbox"/>
7. Secure material firmly before starting work with hand or power tools	<input type="checkbox"/>
8. Wear appropriate PPE for the job being undertaken	<input type="checkbox"/>
9. Operate tools safely and efficiently, and keep them secure when not in use	<input type="checkbox"/>
10. Store or recycle unused materials	<input type="checkbox"/>
11. Clean, maintain and store tools and equipment appropriately	<input type="checkbox"/>
12. Clean up work area and dispose of rubbish properly	<input type="checkbox"/>
13. Accurately complete all required documentation	<input type="checkbox"/>