National Certificate in Building, Construction and Allied Trades Skills (BCATS)

Teacher Information & Resources

Identify, select, maintain and use hand tools for BCATS projects

Unit Standard – 12927

Level 2, Credit 6

>>B CONSTRUCTIVE

Teaching and assessment tips

Intent –The intent of the unit standard is that the learner is able to:

- identify, describe and select hand tools for construction projects;
- use hand tools for construction projects; and
- maintain hand tools for construction projects.

The skills and knowledge required for this unit standard are best assessed over time, within the project approach to learning.

An Assessment Record sheet is included in the resources as a model of how evidence for the unit standard can be collected over a range of projects. It is provided in Microsoft Word format so that you can adapt it to suit your programme and to give the students more room to write. In planning projects, consideration should be given to encouraging the use of as many different tools from the range as practicable.

If the student's chosen projects do not involve use of a wide range of hand tools, then you could seek supplementary evidence using a tool list approach. For example, you could ask the students to complete a tool list (available on the BConstructive site) for 6 tools from the range that may not have been covered in their project work.

Hand tools to use could be: steel rule, folding rule, carpenter's pencil, measuring tape, try square, combination square, sliding bevel, spirit level, string line, plumb bob, cross cut saw, coping saw, hack saw, chisels, planes, oilstone, rasps and files, sanding block, claw hammer, nail punch, pincers, hand drill, twist bits, screwdriver, adjustable spanner, pliers, cramps. Specialist tools for working with metals, glass, concrete, plastics, upholstery (fabric or leather) and manufactured boards would also apply.

The topic of hand tools could be introduced to the learners in a generic way using a range of resources, including the BConstructive resource for hand tools on the website. The activity sheets in this resource are useful exercises to help prepare students for assessment.

Opportunities to learn about hand tools will arise throughout the year's project work. Your specific learning context and planned projects, however, will largely determine how you approach the topic.

Assessment

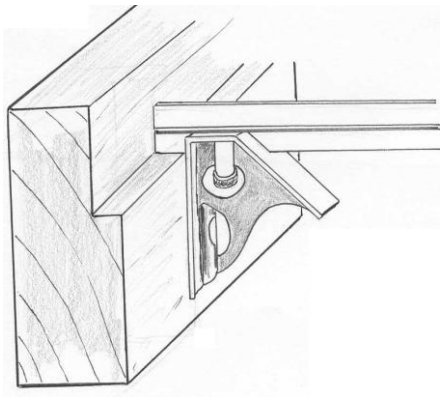
Assessment of this unit standard consists of:

- Completion of the worksheet and
- Completing **3** construction projects and recording how students selected, used and maintained hand tools. The optional tool list can be used to provide supplementary evidence.

Worksheet US 12927

Student Name:

1. Name the tool shown below and briefly describe its main uses.



Name:

Use 1:

Use 2:

Use 3:

2. Identify the most suitable tool for the tasks described below.

Tool	Task
a _____	Testing if a beam is horizontal
b _____	For removing a small nail from a piece of timber
c _____	Marking out an angle of 65 degrees
d _____	Measuring between two objects spaced 5 metres apart
e _____	To assist with the correct lining up of fence posts
f _____	To test that the cut end of a board is square to the face
g _____	Checking out for a hinge
h _____	To mark a line across the face of a wide board prior to cutting

3. List the steps required to check the accuracy of a spirit level.

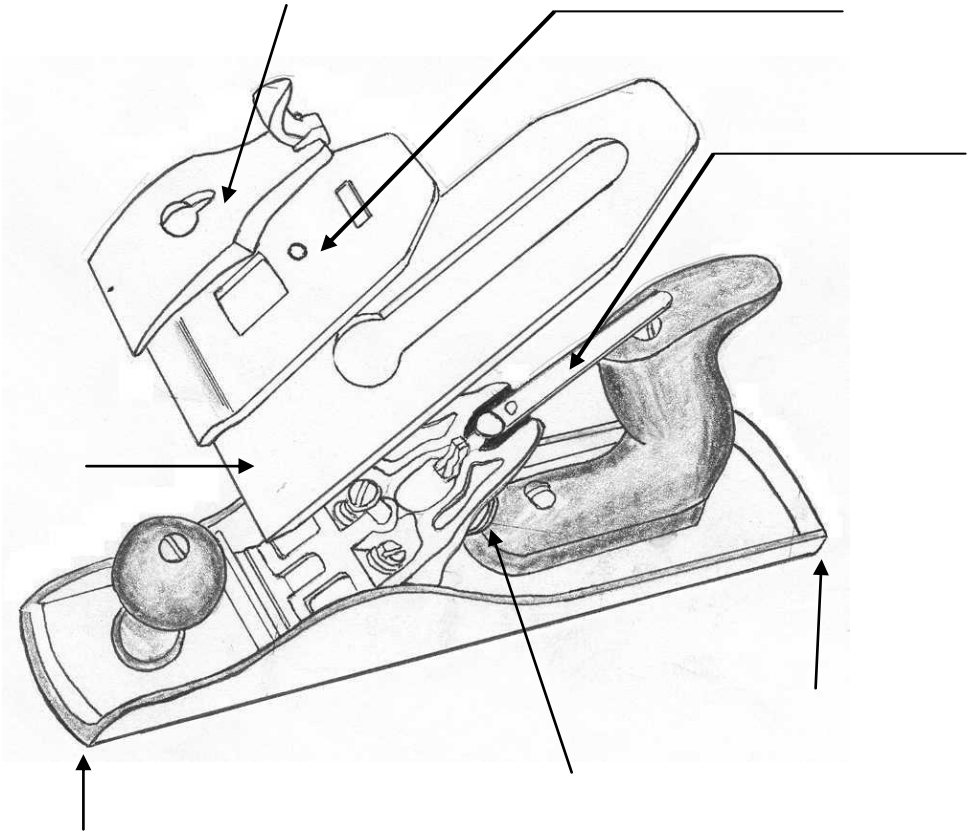
4. From the list below, identify the hand saw most suited to cutting the following materials:

Hacksaw Panel saw

Coping saw Crosscut saw

Task	Most suitable hand saw
a. Cutting a sheet of 18mm construction ply to size	
b. Cutting a 50mm galvanised steel pipe	
c. Cutting a decorative curved edge in thin timber	
d. Cutting a sheet of 5mm marine ply	
e Cutting a piece of timber boxing to length	
f. Cutting a PVC pipe to length	

5. Name each of the following parts.



6. When removing nails from timber, it is recommended that a piece of timber is placed between the hammer and the work. Provide2 reasons for doing this.

Reason 1

Reason 2

7. Why is the tip of a nail punch cupped?

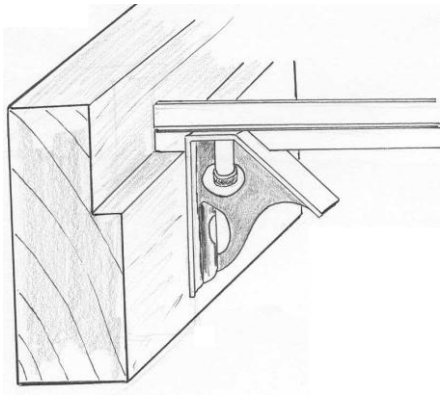
8. List 4 safety precautions when using a hammer.

9. What are the 3 steps for sharpening a plane blade or chisel?

10. What steps should be taken to obtain the best results from an oilstone?

Worksheet Model Answers

1. Name the tool shown below and briefly describe its main uses.



Name: *Combination square*
Use 1: *Marking angles at 45° or 90°*
Use 2: *Use as a depth gauge*
Use 3: *Measuring the depth of rebates.*

2. Identify the most suitable tool for the tasks described below.

	Tool	Task
a	*Spirit level*	Testing if a beam is horizontal
b	*Pincers*	For removing a small nail from a piece of timber
c	*Sliding bevel*	Marking out an angle of 65 degrees
d	*Measuring tape*	Measuring between two objects spaced 5 metres apart
e	*String line*	To assist with the correct lining up of fence posts
f	*Try square*	To test that the cut end of a board is square to the face
g	*Chisel*	Checking out for a hinge
h	*Combination square*	To mark a line across the face of a wide board prior to cutting

3. List the steps required to check the accuracy of a spirit level.

Place level on fixed points.

Read vial.

Turn level end for end.

If reading in vial is same the level is accurate.

If not, the level needs to be adjusted.

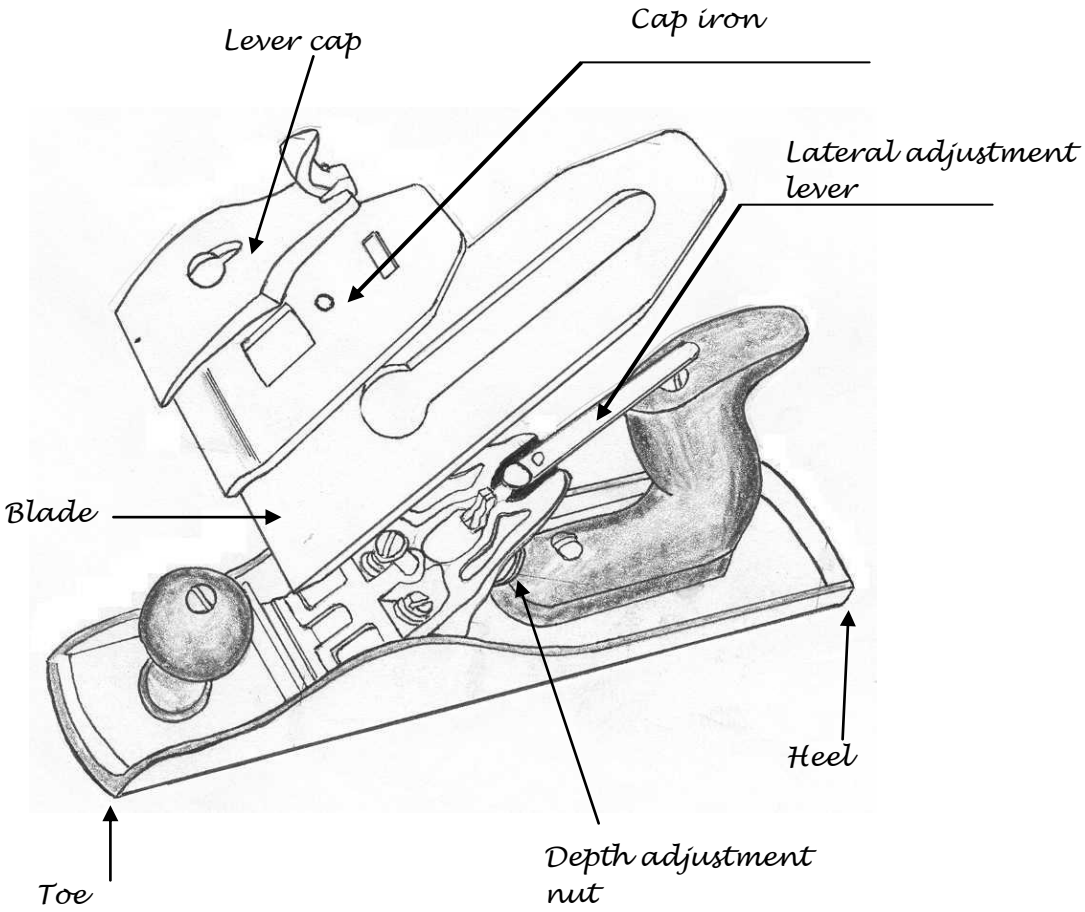
4. From the list below, identify the hand saw most suited to cutting the following materials:

Hacksaw Panel saw

Coping saw Crosscut saw

Task	Most suitable hand saw
a. Cutting a sheet of 18mm construction ply to size	*Cross cut saw*
b. Cutting a 50mm Galvanised steel pipe	*Hack saw*
c. Cutting a decorative curved edge in thin timber	*Coping saw*
d. Cutting a sheet of 5mm marine ply	*Panel saw*
e Cutting a piece of timber boxing to length	*Cross cut saw*
f. Cutting a PVC pipe to length	*Hack saw*

5. Name each of the following parts.



6. When removing nails from timber, it is recommended that a piece of timber is placed between the hammer and the work. Provide 2 reasons for doing this.

Reason 1: *Provides more leverage when withdrawing nails.*

Reason 2: *Prevents damage to the surface of the work.*

7. Why is the tip of a nail punch cupped?

To reduce the possibility of the punch slipping off the nail head.

8. List 4 safety precautions when using a hammer.

Always wear eye protection when hammering and pulling out nails

Ensure that the face of the hammer is not chipped or damaged and is free from dirt, paint or grease.

Check the handle for splits and ensure that the head is firmly attached to the handle.

Do not use hammers with loose heads or chipped faces.

Never strike with the side of the hammer.

Never strike the face of one hammer with another.

9. What are the 3 steps for sharpening a plane blade or chisel?

Grinding.

Honing.

Stropping.

10. What steps should be taken to obtain the best results from an oilstone?

Keep in a wooden box when not in use.

Use a light oil to prevent the surface of the stone becoming clogged.

Clean the oilstone regularly with kerosene.

Examples of oral assessment questions

1. Describe the steps that should be taken to check a combination square for accuracy.

Place the stock against a dressed piece of timber and mark a pencil line across the face of the timber.

Rotate the stock of the square 180° and check that the blade corresponds with the original line.

2. Why is the tip of a nail punch cupped?

To reduce the possibility of the punch slipping off the nail head.

3. Describe the effect of a sagging tape on the measurement.

The sagging will cause oversized or inaccurate measurements.

4. What would cause the saw to repeatedly jam when in use?

Lack of set in the saw teeth.

5. What would you do to fix this problem?

Re-sharpen and reset the saw or, in the case of disposable saws, buy a new saw.

6. What are 3 safety precautions that should be taken when using a hammer?

Check that the head of the hammer is secure.

Ensure that the handle is not damaged.

Do not strike the hammer against a hardened metal object.

Do not use the side of the hammer head.

7. What is the correct grinding angle for a chisel or plane?

20 to 25 degrees.

8. What is the correct honing angle for a chisel or plane?

25 to 30 degrees.

9. At what angle is the plane blade inclined to the sole of most hand planes?

45 degrees.

10. Why is it necessary to keep the cutting edge of a tool cool during the grinding process?

To prevent burning and the loss of temper in the steel.

Assessment Schedule

US 12927 Identify, select, maintain and use hand tools for BCATS projects (Level 2, Credit 6)

Outcome 1	**Identify, describe and select hand tools for BCATS projects.**	**Assessment evidence and judgement** ○ **Worksheet questions completed and correct** ○ **Learner completes Assessment Record Sheet for 3 different projects** ○ **Tool list (if used) completed (see Teacher Information & Resources)**
ER 1.1	The capabilities and limitations of construction hand tools are identified in terms of the manufacturers' instructions for use.	• Assessment Record Sheet completed • Supplementary evidence from completed tool list, if used
ER 1.2	Use of tools is described in terms of work operations to be completed.	• Worksheet Q1, Q2, Q6, Q8 answers correct • Assessment Record Sheet completed • Supplementary evidence from completed tool list, if used
ER 1.3	Safe use of each tool is described.	• Worksheet Q7, Q9 answers correct • Assessment Record Sheet completed • Supplementary evidence from completed tool list, if used
ER 1.4	Tools are selected to meet identified job requirements.	• Worksheet Q4, Q5 answers correct • Assessment Record Sheet completed • Supplementary evidence from completed tool list, if used
Outcome 2	**Use hand tools for the construction of BCATS projects** **Range:** Tools used for three BCATS projects	**Assessment evidence and judgement** ○ **Assessment Record Sheet completed for 3 different projects, including observation by assessor**
ER 2.1	Tools are used to complete work in accordance with job requirements.	• Tools are used correctly and safely to complete the work, as observed and noted on Assessment Record Sheet
ER 2.2	Use of tools is in accordance with manufacturers' instructions, materials and construction process requirements.	
ER 2.3	The use of tools complies with the specific industry and workplace safety requirements.	
Outcome 3	**Maintain hand tools** **Range:** Tools used for three BCATS projects	**Assessment evidence and judgement** ○ **Assessment Record Sheet completed for 3 different projects, including observation by assessor**
ER 3.1	Cutting edges are ground and/or sharpened in accordance with manufacturers' instructions and work place practice.	• Worksheet Q10 answers correct • Cutting edges of tools are ground/sharpened, as observed and noted on Assessment Record Sheet
ER 3.2	Tools are kept free of rust and dirt, and are stored and maintained in accordance with manufacturers' instructions and workplace practice.	• Worksheet Q3, Q11 answers correct • Tools are stored and maintained correctly, as observed and noted on Assessment Record Sheet
ER 3.3	Damaged, blunt or faulty tools are reported to supervisor in accordance with work-place practice.	• Damaged, blunt or faulty tools are reported, as observed and noted on Assessment Record Sheet