



# **Year 11 Transition Carpentry & Joinery Workbook 2**

## Measuring Tools

Measuring tools are used to either transfer measurements from one component to another, or for checking known measurements.

Accuracy is all-important when either transferring or checking measurements.

At some stage in your training, you will have to take sizes from, or enter sizes onto a drawing.

In Section 2: Technical Drawing Skills you will have completed exercises and carried out work in the use of scale rules, so you will be familiar with the methods of enlarging and reducing measurements according to drawings.

You will also be familiar with the more common scales that are used, i.e. 1:2, 1:5, 1:10, 1:100 to transfer measurements from drawings to components.

There are certain tools that are essential to accurately transfer measurements.

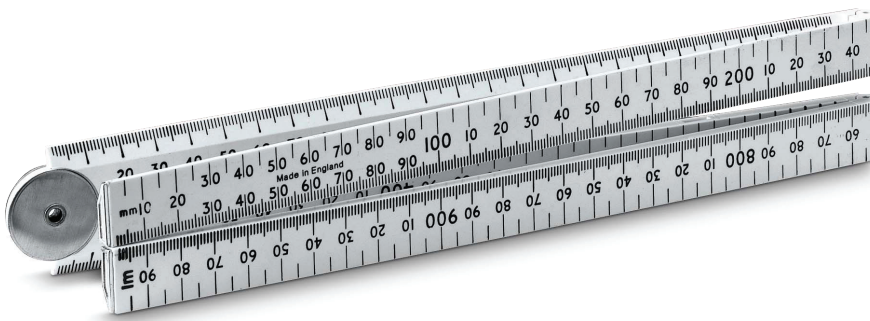
Here are some of the more common tools used to measure, gauge and mark off.

### **Four-fold metre rule**

This rule is one of the most important tools you can possess. Not only is it capable of accurate measurement, but it is also very adaptable.

It is available in both wood and plastic and, in some case, it is calibrated in both imperial and metric units.

With care, these rules will last for many years, but excessive bending and twisting can lead to breakage.



***Four-fold Metre Rule***

### ***Flexible steel measuring tapes***

These tapes are made of thin steel with the calibrations in metric or a combination of imperial and metric.

They retract onto a small, enclosed spring-loaded drum and are pulled out and either pushed back or have an automatic return which can be stopped at any distance within the limit of the tapes length.

The length of these tapes can vary in overall length ranging from 2m to 8m.



***Range of retractable steel measuring tapes***

## Gauges

There are three main types of marking gauges:

1. A traditional marking gauge.
2. A mortice gauge.
3. A cutting gauge.

### NOTE:

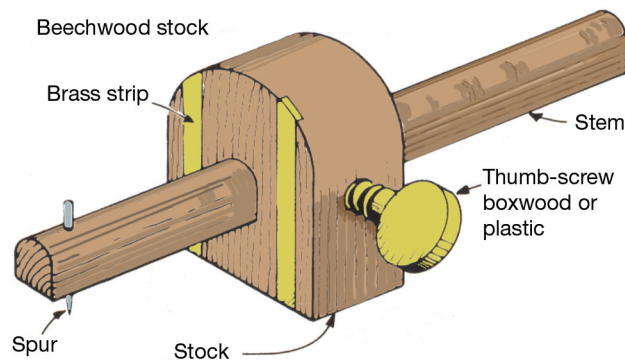
**It is possible to purchase a gauge that is a combination of a marking gauge and a mortice gauge.**

There are other gauges which are usually home-made to suit a particular task i.e:

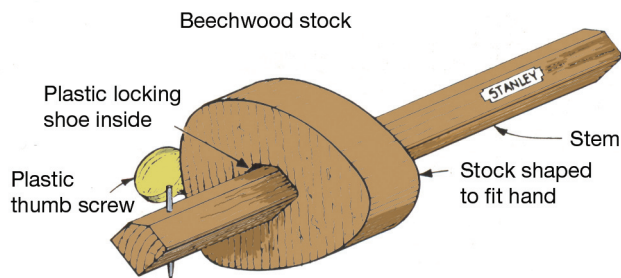
- A pencil or thumb gauge.
- A panel gauge.

### *Traditional marking gauge*

This is used to score a single line parallel to the edge of a piece of timber. This tool has brass inserts in the stock to reduce wear. Some models have a shaped stock to fit more comfortably in the palm of the hand.



***Shaped stock marking gauge***



***Traditional marking gauge***

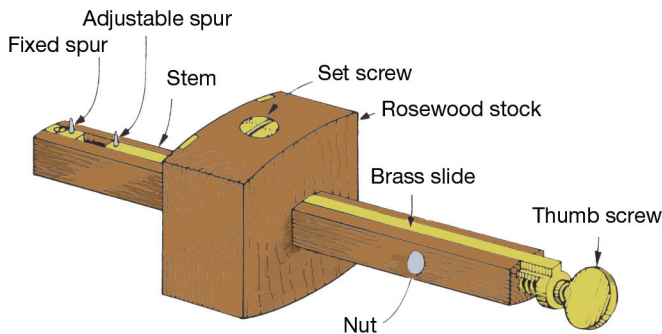
## ***Mortice gauge***

This gauge is similar to the marking gauge except that it has two adjustable marking spurs.

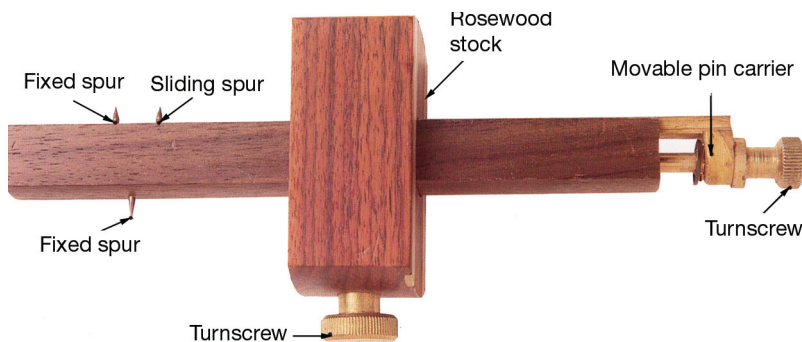
One of the spurs is fixed to the stem and the other is fixed to a brass slide housed in the stem.

The slide can be adjusted by means of a thumb screw, and the position of the stock can also be adjusted and secured in place by means of a set screw.

The main use of this gauge is to mark the position of mortices and tenons, hence its name.



## ***Mortice gauge***



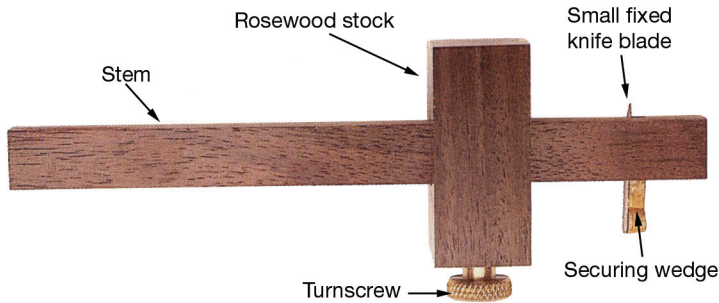
## ***Combination marking gauge and mortice gauge***

## **Cutting gauge**

This gauge is fitted with a small knife blade. It is used to cut across the grain or to cut thin wood or veneers.

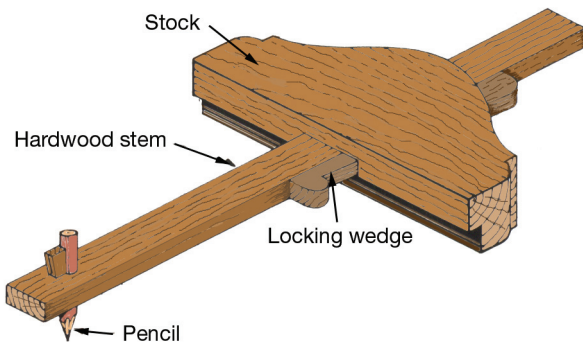
It is also used to cut into solid surfaces to form shallow channels for inlay work.

It is very similar to a marking knife and used to gauge dovetails.



## **Panel gauge**

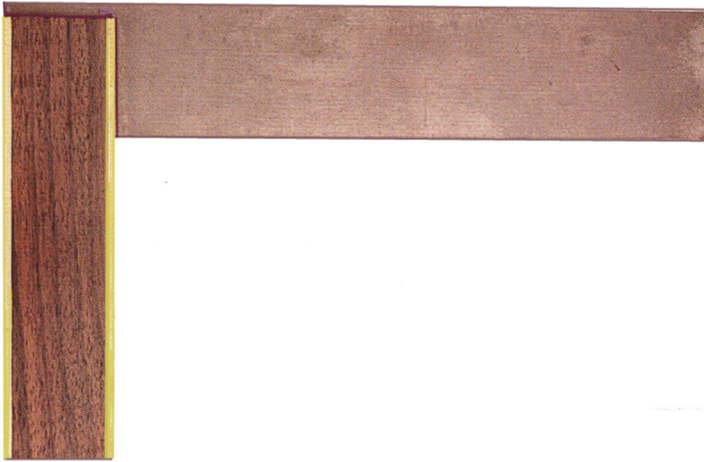
This is a custom made gauge used for marking wide boards to width. The length of stem can be increased so that it can be used to mark off sheet materials. The stock is always placed against a straight edge and any marking off will be parallel to the straight edge.



## Try Squares

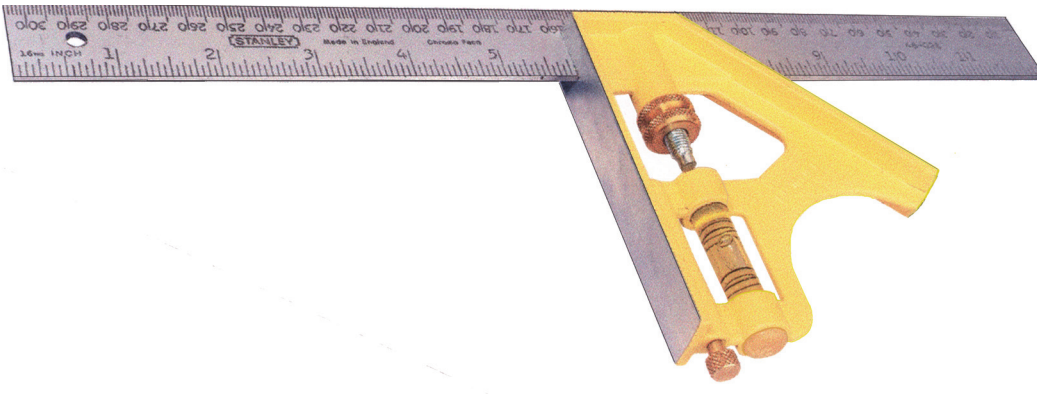
As the name suggests, the try square tests pieces of timber for squareness, or it can be used to mark lines at right angles from either a face side or a edge.

The tool consists of a hardwood stock which is faced with a brass plate, and a steel blade which is fixed at the right angles to the stock at one corner.



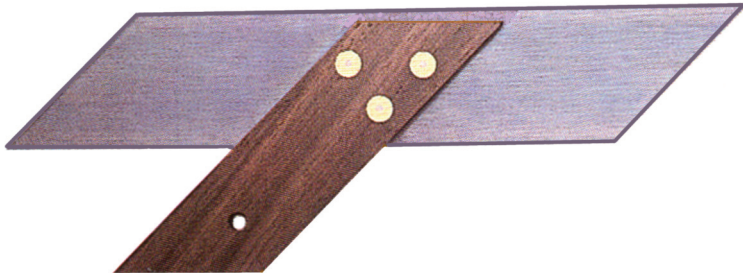
## Combination square

This is very versatile square as it can be used to mark off lines at  $45^\circ$  for mitres as well as marking lines which are at the right angles. Some versions of this square also have a spirit level built into the stock. The stock can also be adjusted which allows this tool to be used as a marking gauge. A pencil is held against the end of the blade whilst the stock is slid along the edge of the timber.



### ***Mitre or 45° square***

This square consists of blade fixed at 45° into hardwood stock. This square is used mainly to mark off mitres or lines at 45°.



### ***Sliding bevel***

This marking off tool can adjusted to any angle. The blade slides within the stock and can be locked at any angle. This tool is very useful when acute angles have to marked and cut.

It is also used to mark of dovetail joints, however on thin boards this tool can be difficult to handle. This is overcome by using a dovetail template.

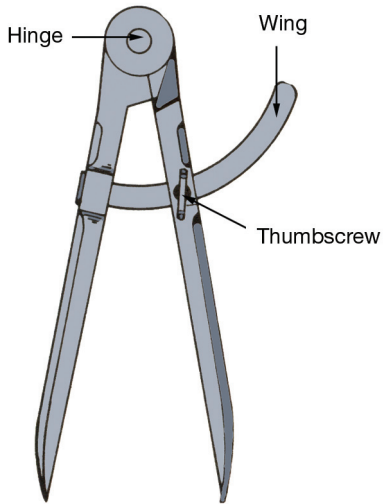




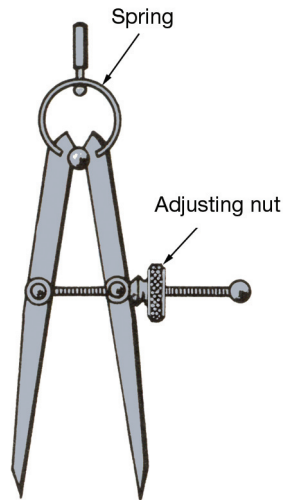
## Scribing Tools

Compasses are used to mark out circles and arcs and for stepping off distances along a line.

Spring dividers are used for marking out smaller circles. However both of these tools are limited to the size of the wing or adjustment arm. Sizes range up to 250mm for compasses and 150mm for dividers. For larger diameters a set of trammel are used.



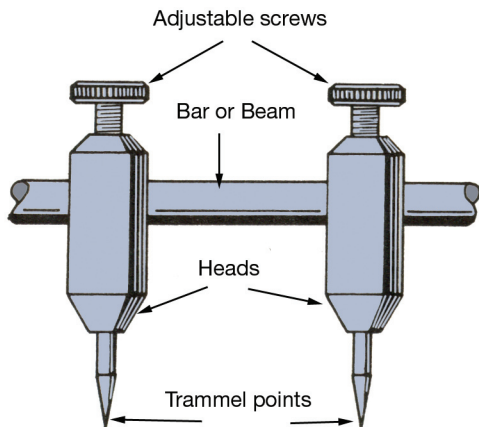
*Wing compass*



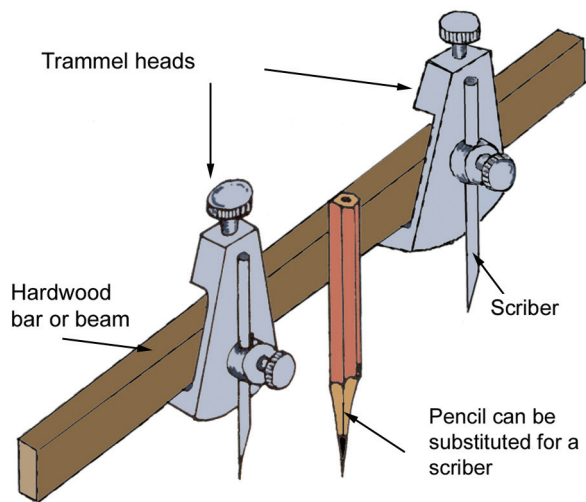
*Spring dividers*

## Trammels

Theses consist of a set of trammels fixed to a trammel bar or beam. The trammels can be adjusted to any size depending upon the length of the beam.

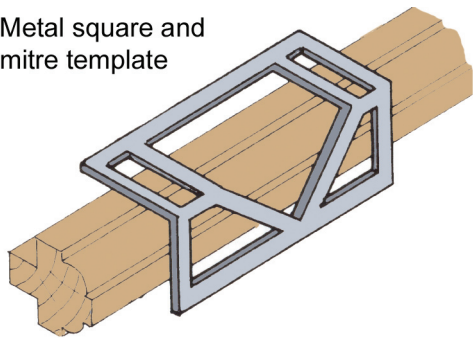


Trammel heads used for marking off large curver work.



### **Marking around moulded sections**

Metal square and mitre template



Metal mitre square used to mark off stopped mitres.

A chisel is used to cut a 45° mitre to fixed moulding.

