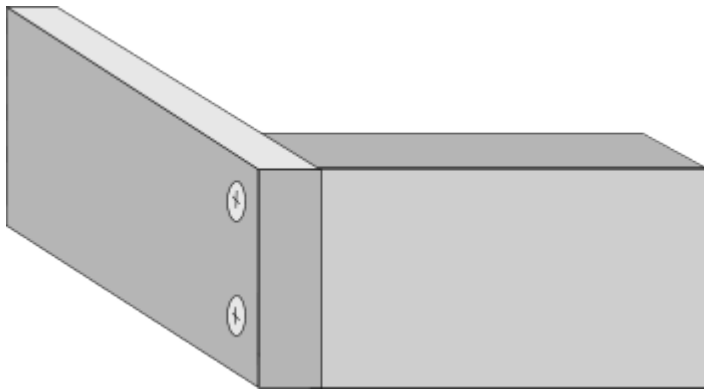
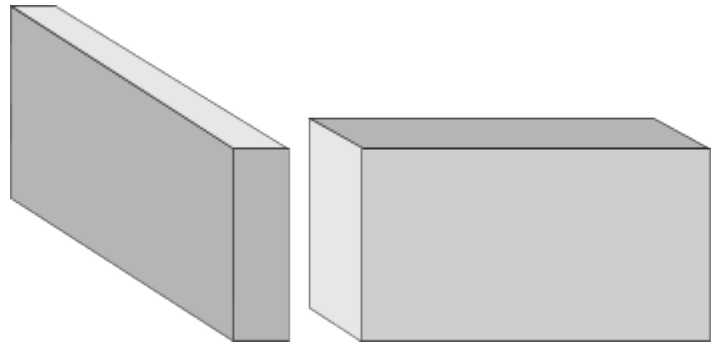


## Common Woodworking Joints

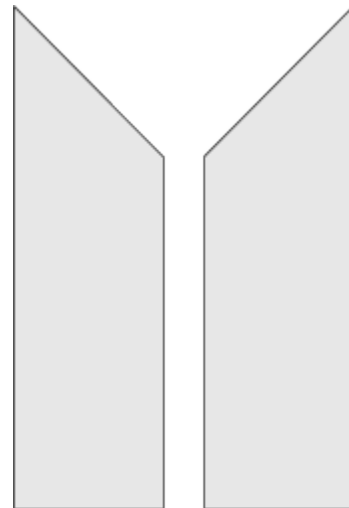
Very little can be accomplished in woodworking without using joints - either to bring pieces together or to make a rigid structure. This page looks at some common joints, their advantages and application.

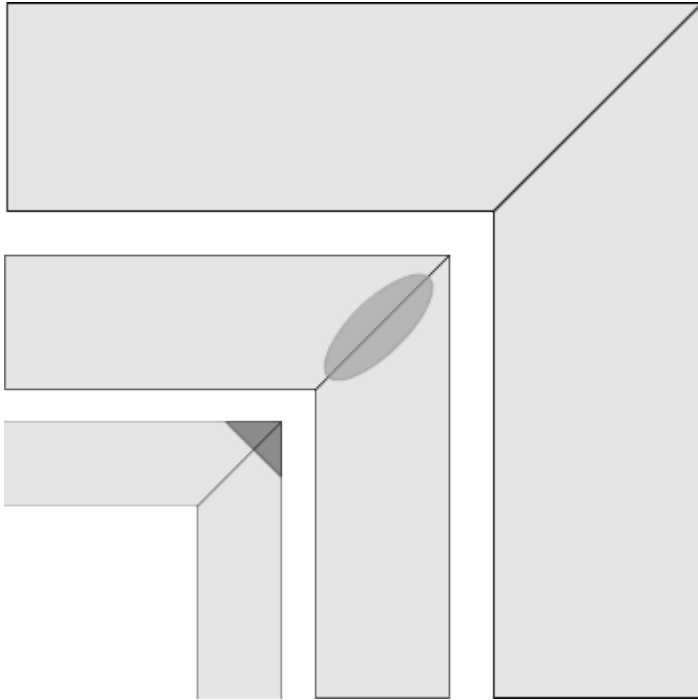
The simplest of joints is a butt joint - so called because one piece of stock is butted up against another, then fixed in place, most commonly with nails or screws. The addition of glue will add some strength, but the joint relies primarily upon its mechanical fixings.



These joints can be used in making simple boxes or frames, providing that there will not be too much stress on the joint, or that the materials used will take nails or screws reliably. Butt joints are probably strongest when fixed using glued dowels.

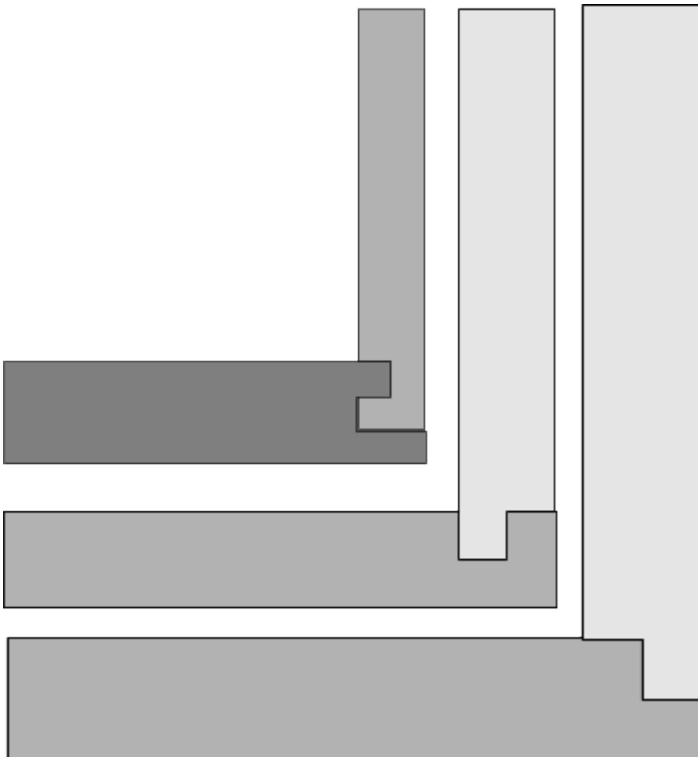
The simplest joint that requires any form of cutting is a miter joint - in effect this is an angled butt joint, usually relying on glue alone to construct it. It requires accurate 45° cutting, however, if the perfect 90° corner is to result.





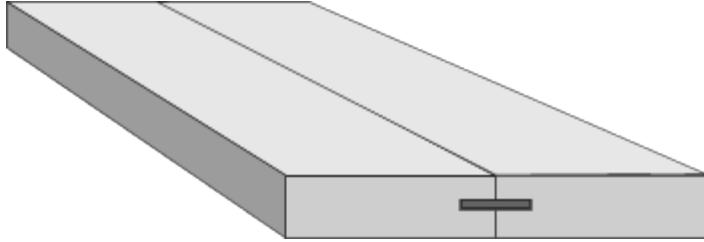
To reinforce the plain joint, biscuits or splines are often used (the spline being trimmed after the glue has cured).

A rebate (or rabbet) cut in a piece of stock is also a joint. The purpose is to make assembly easier and to increase glue surface area. It is also possible to screw or pin through the rebate from underneath, or through the side.

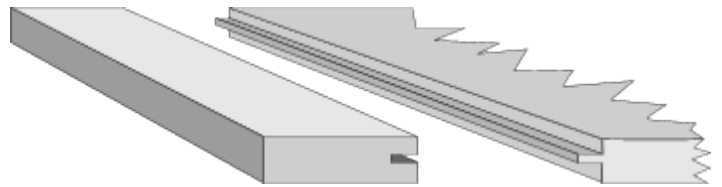


Rebates can be simple or complex, but are effective joints and much stronger and easier to assemble than butt joints.

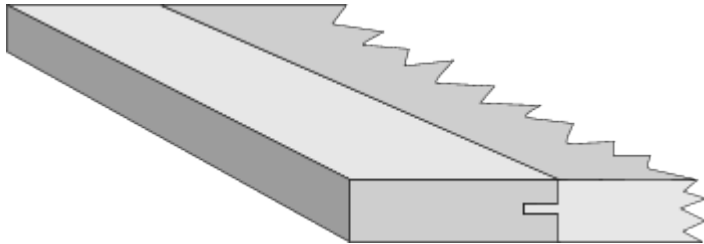
The natural development of a rebate is a groove, as shown here in a spline joint, which uses a separate strip of wood (the loose spline) to join two pieces of stock via a groove in each.



The advantage of this method over simply butting and gluing, or using flat plate dowel technology (biscuits) is that the glue surface area is at least doubled and the spline helps to prevent bowing or cupping.

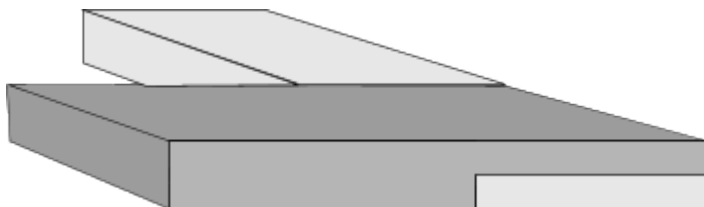
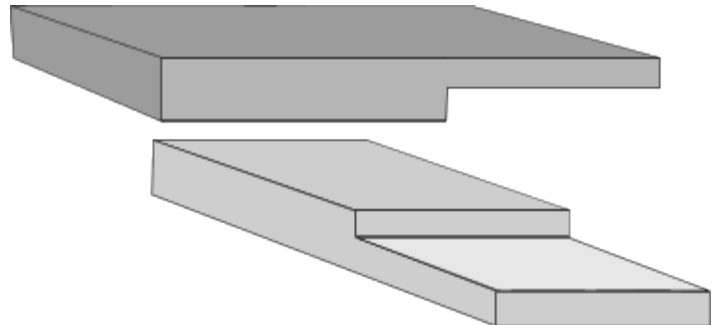


A more common development is in the tongue and groove joint, which uses a milled tongue in place of a separate loose spline to achieve the same result.



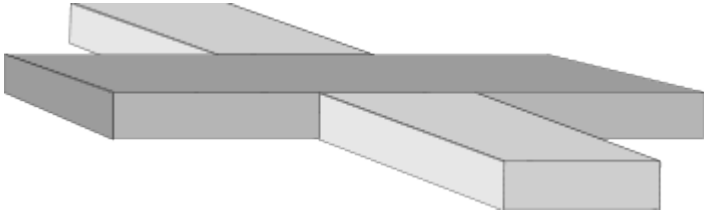
Quite a strong joint, the glue surface area is good and ease of assembly is a main feature.

Another simple joint is the half-lap joint. This requires the removal of stock to exactly half of the overall thickness of the piece, in order that a similar piece can mate with it. This technique is also used in the cross-halving joint (see later).

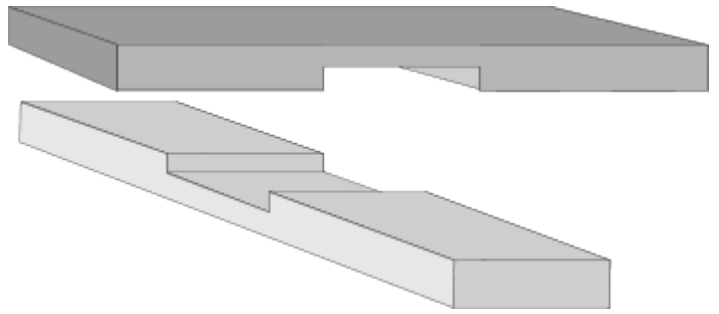


The main uses for this joint are to allow two pieces of stock to meet - usually at a right angle - so that the joint is contained within the overall thickness of the material. Used for face frames, other simple frames and frequently in garden projects. Glue alone can be used as a fixing method, or combined with screws or nails.

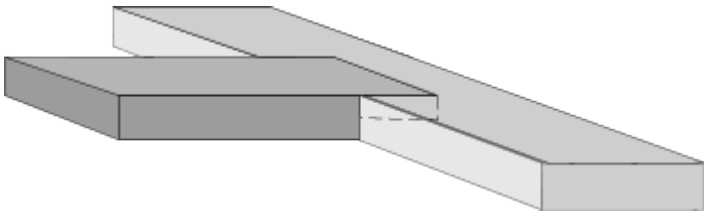
The cross-halving joint is another form of half-lap, but used where one piece of stock crosses another, in order to retain the same dimension. These joints are often used in braces, especially where stretchers cross over. If accurately constructed, this is an extremely strong joint.



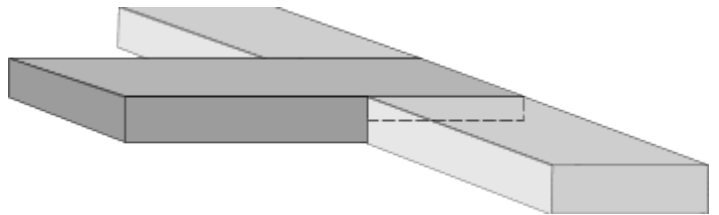
Cross-halving joints can also be used in trellis construction, making box compartment dividers and as the bracing ribs of a torsion box.



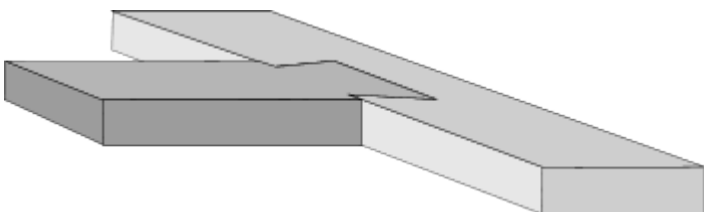
The halving joint has good glue surface area and will resist side forces if accurately made with tight tolerances.



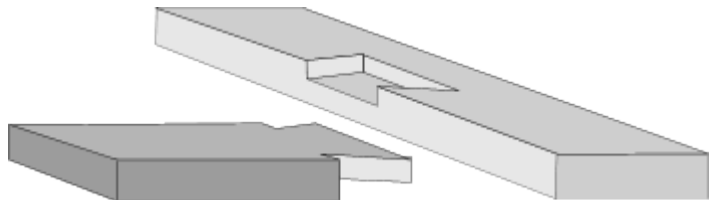
Another type of halving joint can be used to make a "T"-shaped right-angled joint between two pieces.



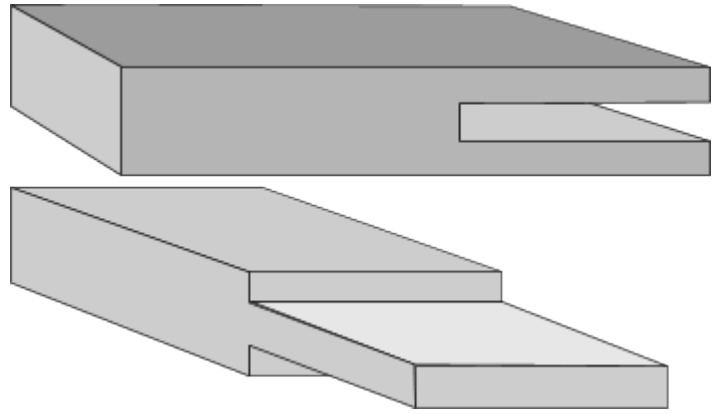
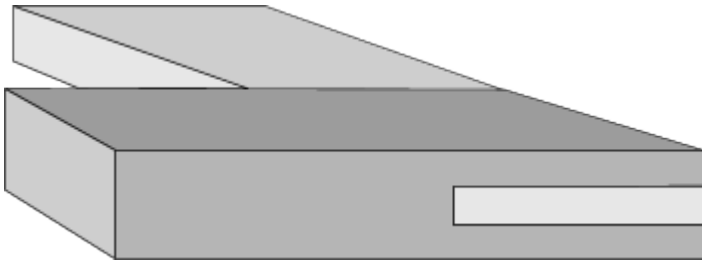
A natural enhancement to this joint is the inclusion of the dovetail.



The dovetail will prevent the joint separating laterally through side forces.

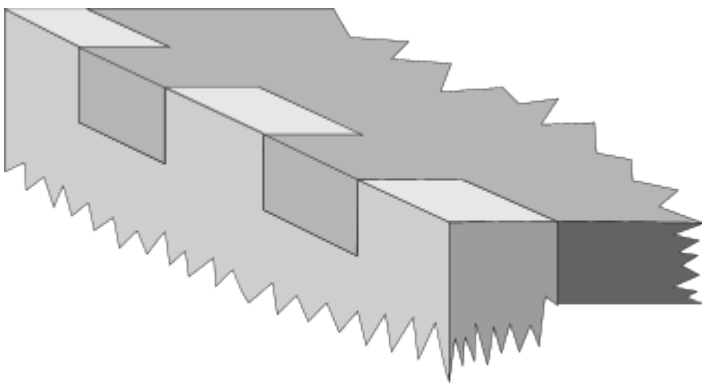
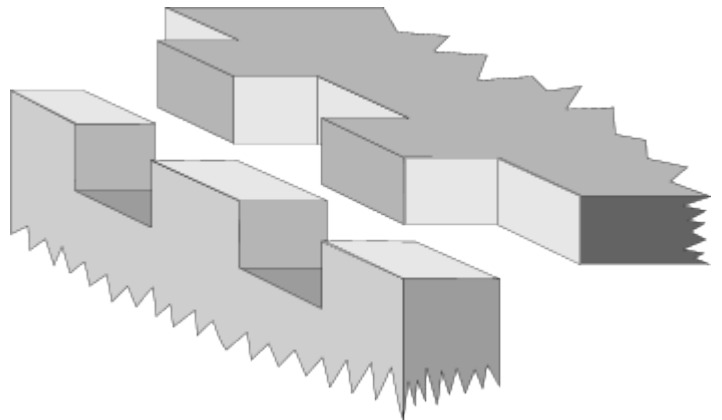


A development of the halving-type joints is a corner bridle joint. This uses an open mortise with a through open tenon.



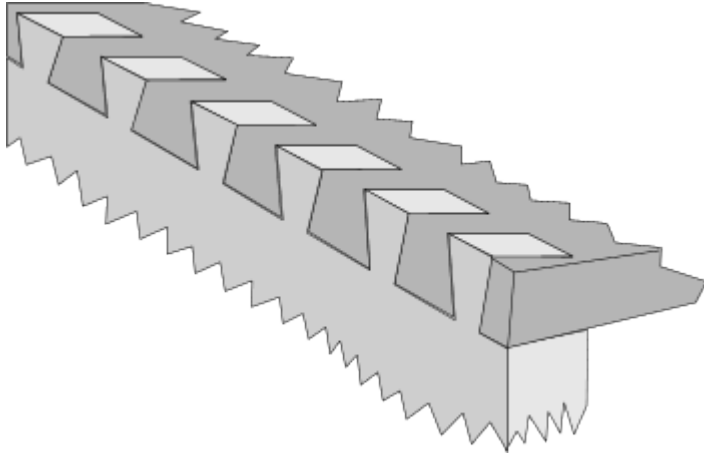
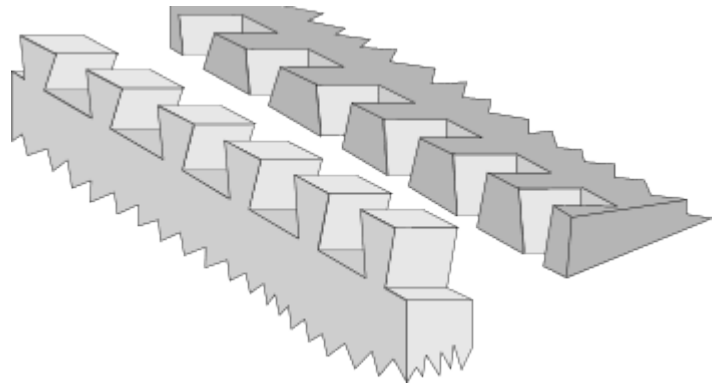
There is plenty of glue surface area and the joint will be strong, but screws or dowels as reinforcement will help the joint to resist side forces. Another useful joint in frame construction. The visible end grain can be also be utilised as a decorative feature.

A straightforward joint (which in a way is a development of the bridle joint) is the box joint, also known as the finger joint - because of the similarity to interlaced fingers. This is a very strong joint due to the vast amount of glue surface area.



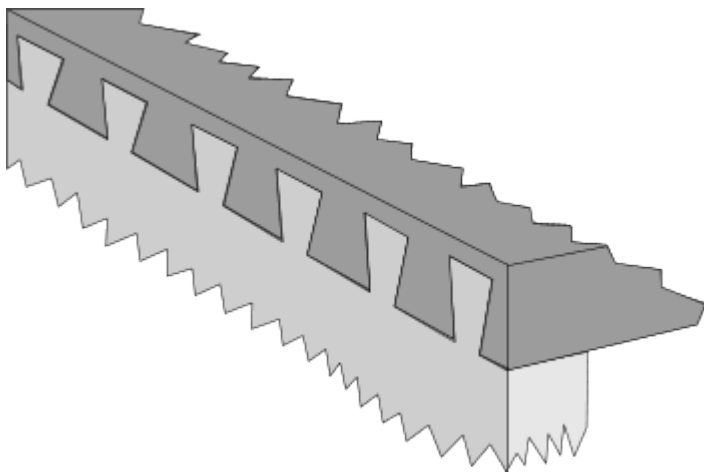
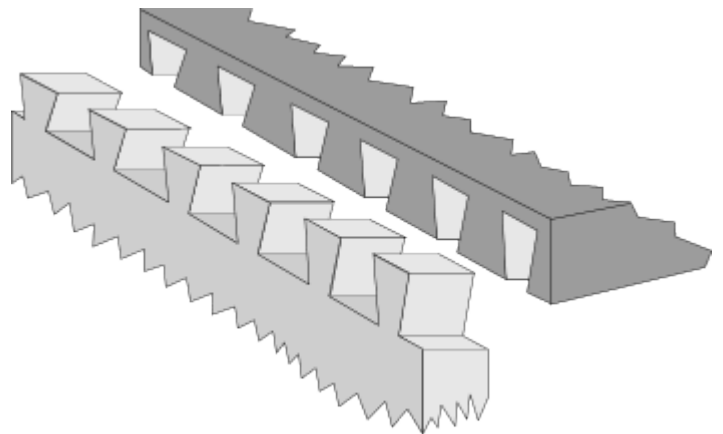
The end grain of the fingers can be a problem, as it will inevitably stain or finish darker than the remainder of the piece, but this is often used as a feature or decorative element.

Through dovetail joints are also extremely strong - again due to the vast amount of glue surface area they contain.



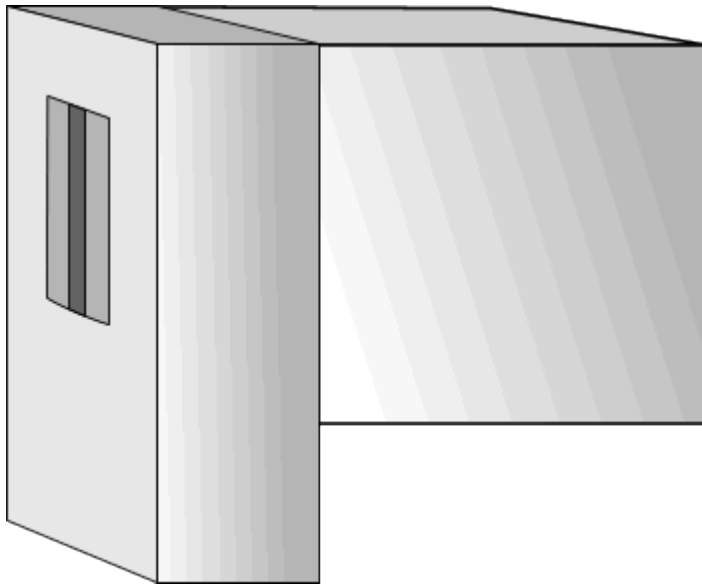
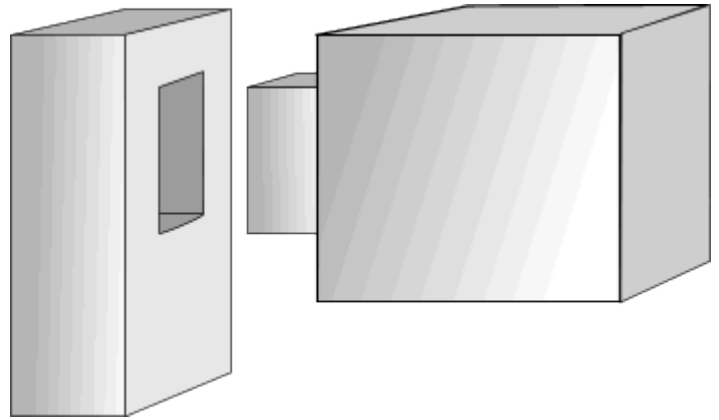
Half-blind dovetail joints are also very strong and resist pulling forces well.

Although more time-consuming to make, they have a major advantage over box joints as the shape of the tails and pins mean that the joint cannot be pulled apart. For this reason, they are much used for drawer fronts, where they resist the pulling forces well.



The advantage with this joint is that it allows a plain drawer front, whilst retaining all the strength qualities of the through version.

The mortice and tenon joint is a very popular, strong and frequently-used joint for assembling a variety of projects where strength and reliability are required. The mortice can either be a through mortice - passing all the way through the stock - or a blind mortice that only partly pierces the stock.



Mortice and tenon joints have several advantages, including a lot of glue surface area, shoulders to resist side forces acting on the finished project, neatness and virtual invisibility if required, plus the option to be used as a decorative feature if constructed as a through mortice, using a contrasting wood wedge, as shown here.

In addition to gluing, dowel pins can also be used to secure the joint - this can be an advantage if the joint may need dismantling later.

