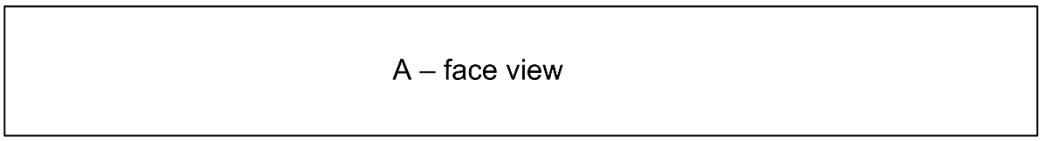
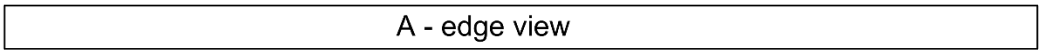
Everett, So exactly what can cross cutting one board one time tell you?





Let's Start with the A,B,C's just like we did in grade school. Most of us already knew how to recite them when we started kindergarten. We all however did not know how to recognize them or form them legibly. Handwriting 101 class it is. We started with printing then over time learned cursive. It's time for A,B, C's.

Let's start with a short length of board that is **KNOWN** flat, and square on the corners meaning 90° We will label it "A" for 'a' board of unknown length.

We will measure it's Dimensional Length. We will record that as "D" for its length dimension. We will say for this example ours is 18" long – exactly, yours will be whatever yours is.

We plan on cross-cutting this board with a Blade on your Table Saw – Shopsmith, whatever. The blade has teeth that are alternately offset to the side which provided some clearance from the side of the blade body. It will remove wood in the path of the blade, to the width of that offset from one side to the other.

The technical term is Kerf which determines how much material is removed by the blade during the cutting such as" 1/8", 3/32", or even 1/16" (ultra thin kerf). For our purpose we will presume a 1/8" Kerf from the Blade. We will label that as "B" for Blade Kerf.

Lastly, will actually cut off a piece of the board. For our purposes, will Cut "A" at 12" which will leave a Cut-Off from "A" forming a new piece "C" for cut-off, which logic tells us should be approximately 6"

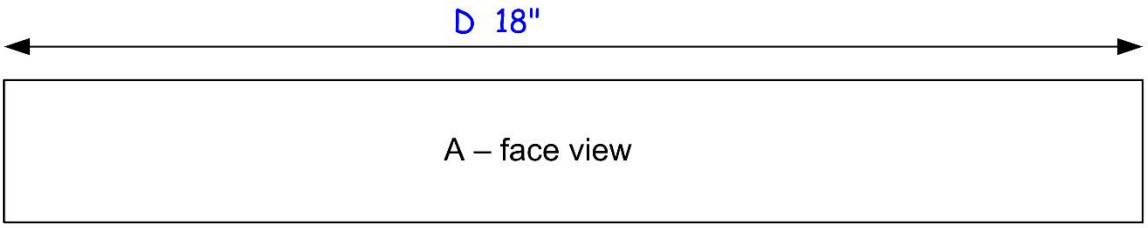
Originally we measured "A" and found that it's D (dimensional length) was 18" - 12" of A we kept, now labeled A*) leaving us almost a 6" C cut-off, less the Blade Kerf we cut-out B in the cutting process that is now sawdust.

Simple enough if the Saw is properly aligned and we pass the board "A" through it at a true 90° angle as we slide it through the cut.

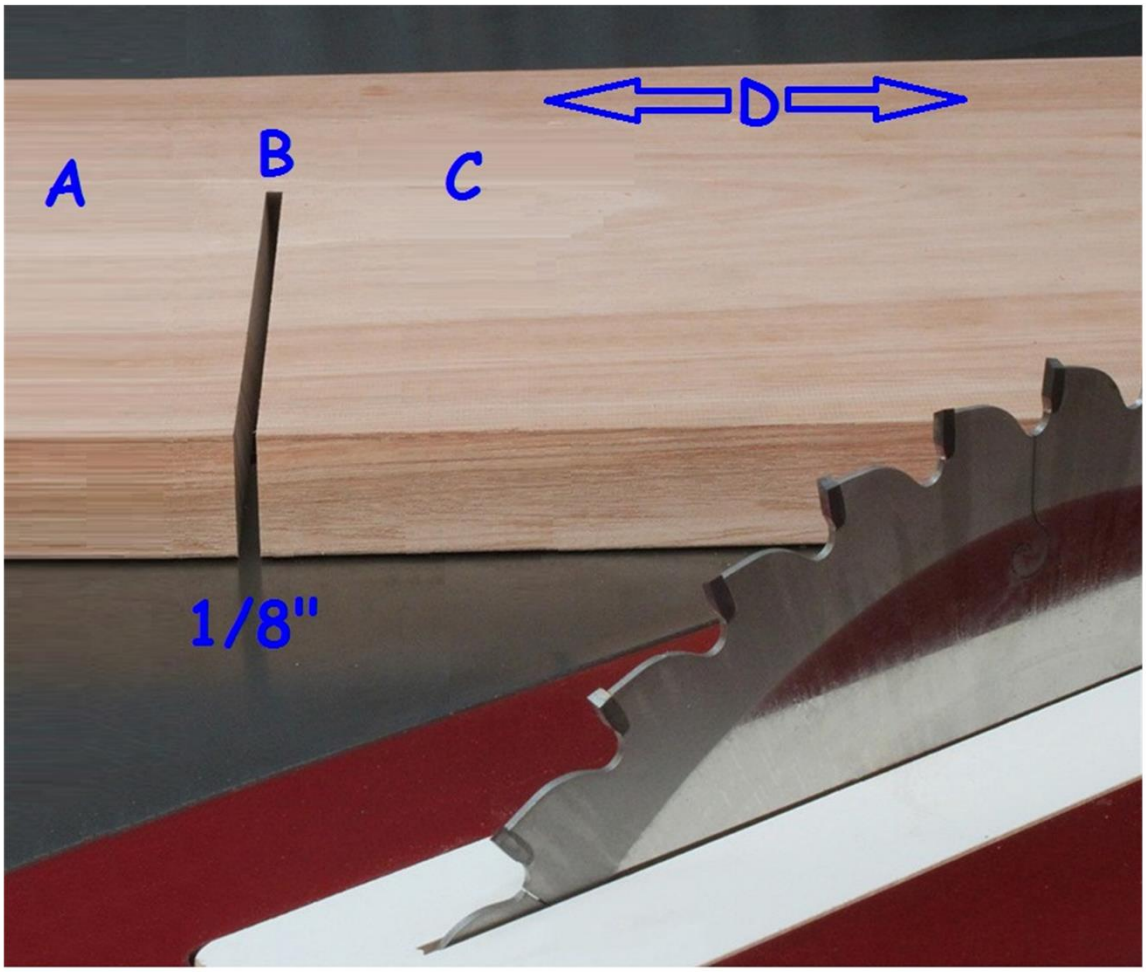
Reassembling the pieces on the table saw afterward and measuring we should find that A*+B+C=D which is still exactly 18"

That's the plan anyway. It should be, since we accounted for all the variables.

But what if it is not 18"? That's what this one cut is going to help you determine.



A - edge view



As illustrated above, the blade cut a 1/8" kerf out of board A, theoretically leaving; A* = 12" B = 1/8" and C = 5 7/8" accounting for all 18" of the original material in A

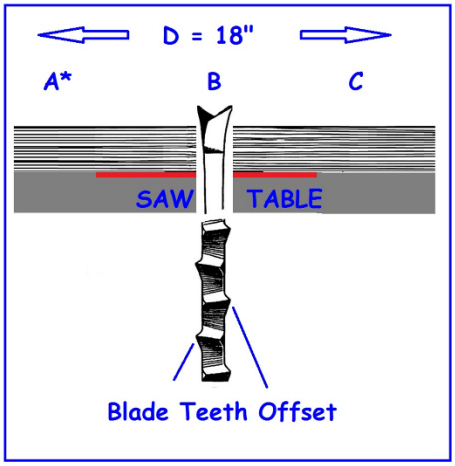
As illustrated, with board partially cross-cut, you should measure the kerf. If it is wider than 1/8" and you know the blade kerf is 1/8" then the blade and the Table Miter Track were not parallel to each other.

Check the Blade and Miter Gauge track to insure table is parallel to the blade, not skewed which makes the blade effectively wider in the cut, increasing the kerf.

If you cut all the way through and slide A* and C together they will fit since they are two pieces of the same cut. You are not out of the woods yet (no pun intended).

A – face view

A - edge view



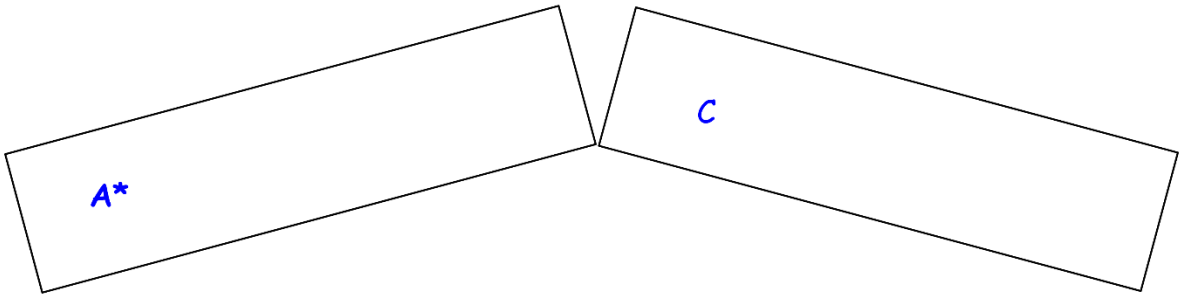
So far so good, and you are still with me.

After the cut is made, and we have verified the kerf is 1/8" for my blade, allowing for your blade's kerf, lets take the A* and C pieces and examine how they fit together in several combinations.

A*	C

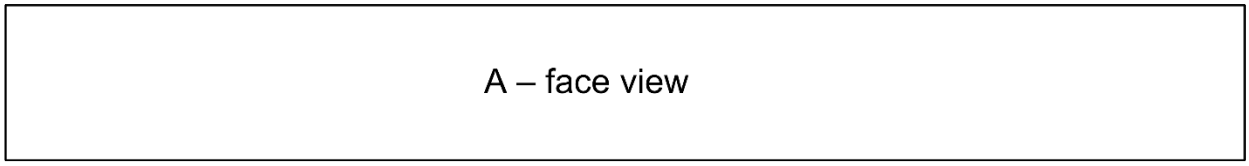
They will fit together, but was the cut exactly 90°? Leave A* face up and turn C over leaving the cut edges together.

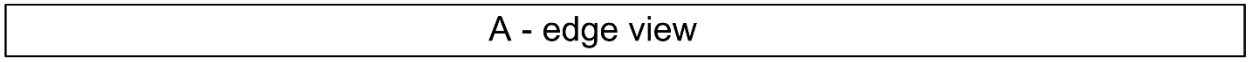
Are they still like illustrated above, or are they at all like the ones below? Yes it is extremely exaggerated to illustrate the issue.



Use a square, press them up against your rip fence, or even turn them on edge on the table of the saw, to confirm they are perfectly aligned flipped either way.

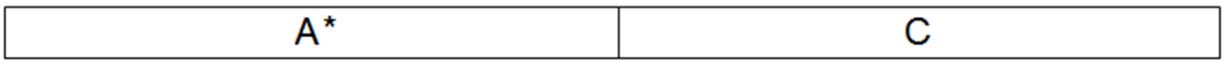
If they are not, your miter gauge is not at 90°. Align it.





Ok, one more check and we are nearly done. We now need to insure that the saw blade was not tilted (on Shopsmith's we insure the Table itself is not tilted) and that the cut is not beveled but remains at a perfect 90°.

As in the first test, you can use a square, or simply lay them out on your table saw, or another known flat surface and look at the joint between them from the edge view when they are together, and when C is flipped over. This too must be at a perfect 90°.



If yours is not at a perfect 90°, then they will resemble the two below. The top one could appear to be visually correct as it will still measure correctly as the angles complement each other.

When you flip C over, visually you can see the gap as illustrated in the bottom one. Adjust the saw blade and table to 90°

You can measure that the distance is more than when face up. It will grow larger as the angle increases. Point is it should not change at all, meaning the angle truly is at 90°.

Again, the angles are exaggerated at near 45° for illustration.

So now I suspect you can see how this relates to any table saw, actually any saw of any kind.

I have observed my table saw when the table is not clean and waxed, and when the blade is dull, gummed from sap, and generally dirty. I wax my blades after cleaning them, and it is amazing how well a dull but clean waxed blade can work, and a joy when alignment is verified, blade is sharp, clean and waxed.

Now go make some sawdust safely….

Everett L. Davis 2017