

Scroll saw information



**complete
your
training**



**wear
safety
glasses**

Operate only with instructor's permission and after you have received instruction.

Remove any jewelry, eliminate loose clothing, and confine long hair.

Make sure all guards are in place and operating correctly.

Always use personal protective equipment (PPE).

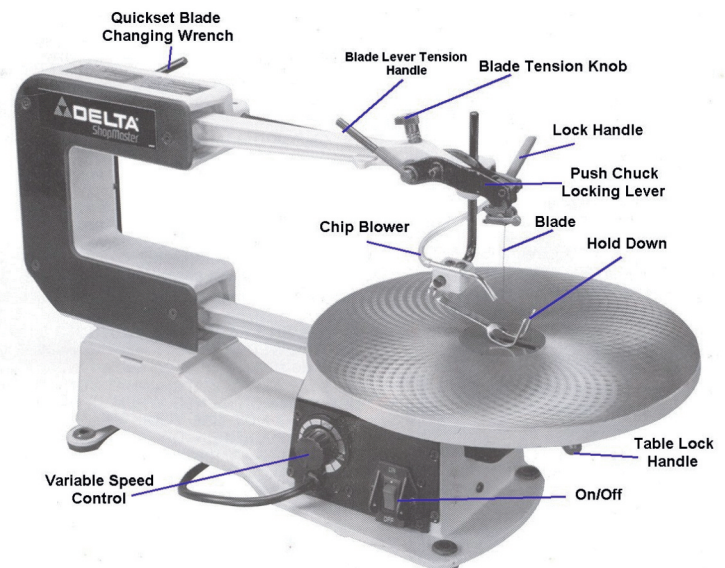
All materials should be inspected for defects such as warps, knots and foreign objects.

Make all blade changes and adjustments with the power supply to the saw disconnected.

After changing the blades you must ensure that the machine rotates freely by rotating it by hand with the machine unplugged from the power source.

Choose the correct blade type and speed for the specific material and the smallest radius being cut. Use thin blades and relief cuts for tight radius cuts.

The blade should be held firmly in the chucks, be square to the table, and be properly supported by the guide.



Be sure the hold down foot is pressing lightly against the work piece.

Guide the work slowly through the saw with both hands keeping fingers to the sides of the cut line. Don't force the stock but rather feed the stock slowly to let the machine do its work.

When finished turn off the saw and wait until the blade has come to a complete stop before clean-up.

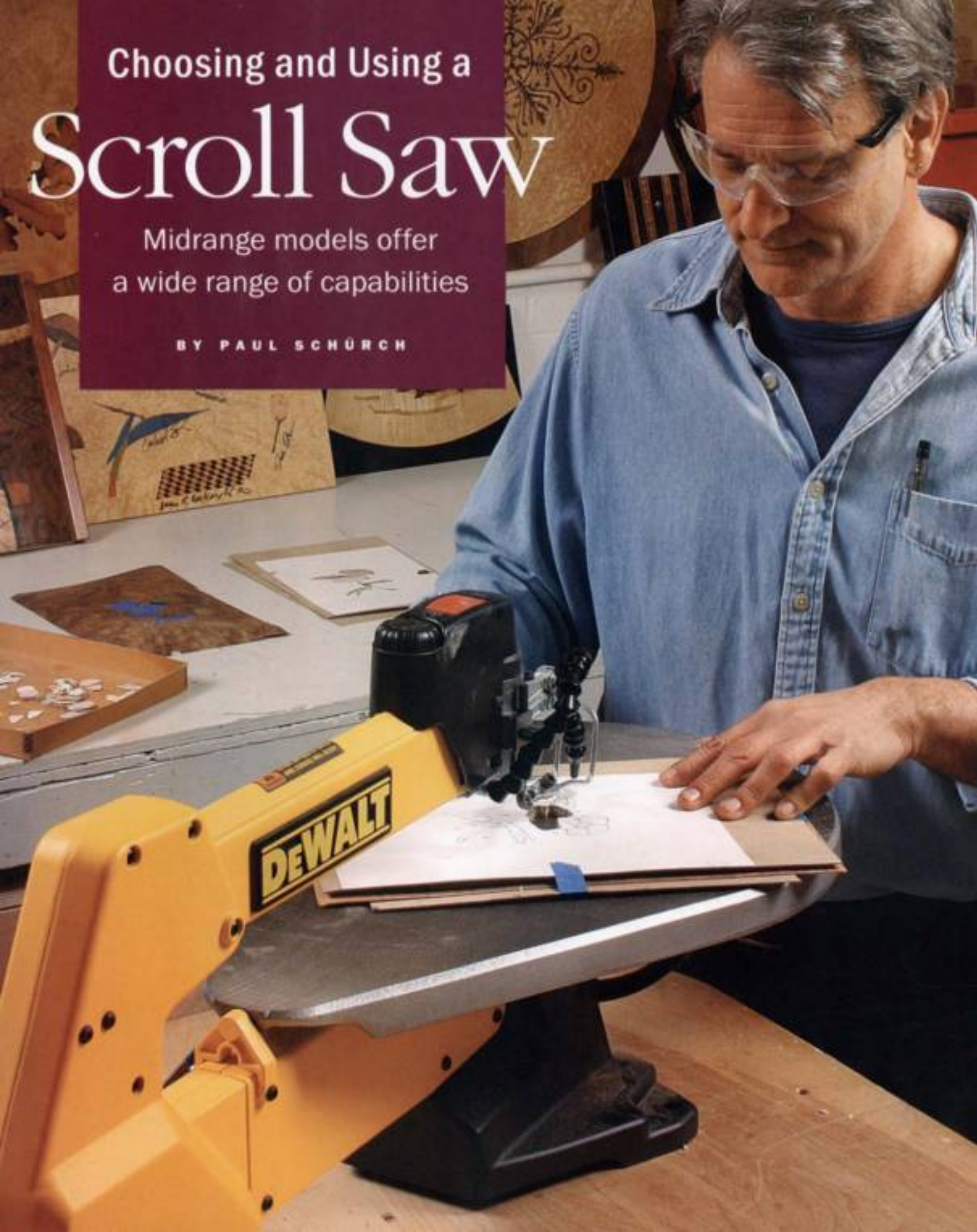
Do not attempt to saw stock that doesn't have a flat surface unless a suitable support is being used.



Choosing and Using a Scroll Saw

Midrange models offer
a wide range of capabilities

BY PAUL SCHÜRCH



The scroll saw holds extremely fine blades under tension, allowing it to do jobs that no other motorized saw can do. Unfortunately, many woodworkers think that a scroll saw is only for hobbyists who make fretwork, bookends, whirligigs, and knickknacks. As a professional furniture maker, I've found the machine much more useful than that, and I believe it makes a valuable addition to any woodworking shop.

I use a scroll saw to rough out dovetails, to cut mortise-and-tenon templates, to make small mock-ups of furniture I am designing, and to make cuts particular to marquetry, such as cutting "packets" of multiple layers of veneer. I've also cut material such as shell, bone, sheet brass, pewter, and copper for decorative hardware and inlay. It is even possible to cut 1/8-in.-thick glass for a curvy door panel using a barbed diamond-wire blade, or to perform detail sanding and polishing using small belts attached to the scroll saw like a blade.

It is true that most scroll-saw users don't focus on furniture making. But decorative fretwork and intarsia (a picture made of various woods, of various thicknesses) certainly qualify as woodworking. Some professionals also make a living gluing pictures onto seven-ply, 1/4-in. aircraft-grade plywood and scrolling beautiful puzzle patterns. If these areas interest you, there are clubs devoted to scroll-sawing, and scores of books and magazines that contain useful information, project ideas, and patterns.

Inlay, marquetry, and beyond

For inlay and marquetry, a scroll saw is indispensable. These machines give you an easy and accurate means of cutting highly detailed inlay pieces to add to your furniture. Whether it's a bellflower on a period table leg, or a mother-of-pearl square to be used as a decorative element, the process is straightforward. Draw

TOOL TEST

Turn to p. 60 for a review of five midpriced scroll saws, all suited to a wide range of tasks.

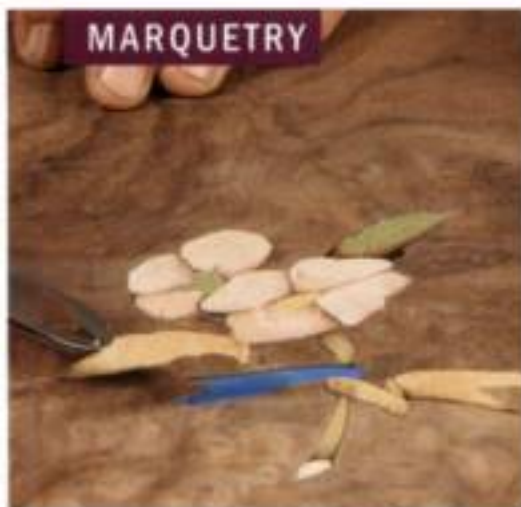


the design onto the inlay material—usually between 1/16 in. and 1/4 in. thick—and cut it out on a scroll saw with the table set at a slight 2° to 4° angle, beveling each edge of the material inward a bit. This is called a conical cut. Then place the inlay onto the background, scribe around the outline with a knife, and hollow out the recess with a small router and a small chisel. Clamp and glue the inlay firmly into place, and then level it with the background after the glue has set. The bevel-cut edges will ensure a tight fit with the surrounding wood.

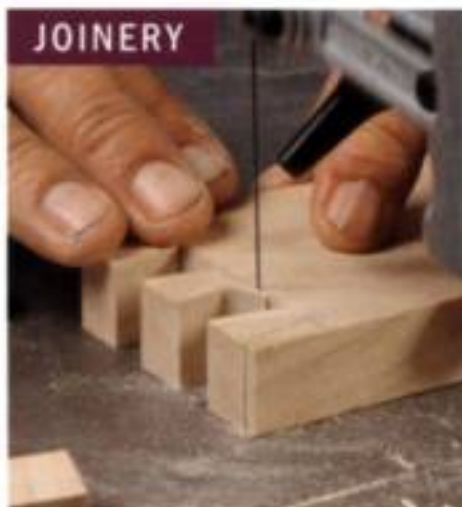
With a decent scroll saw, you can step past inlay into the world of marquetry, which involves making detailed pictures by joining multiple pieces of veneer. Panels of marquetry can elevate the look of your furniture and case work. Except for one machine, which takes only pin-style blades, all of the midrange saws tested on pp. 60-61 will perform the basic marquetry cuts well, including the packet, contour, conical, window, piece-by-piece, and bouble methods.

For packet cutting, my preferred marquetry method, a good scroll saw and a very thin blade make the job as easy as stacking and pinning together all of the veneers to be featured in the final picture, spray-gluing a drawing onto the stack, cutting out all of the pieces in one shot, and then pulling the pieces apart

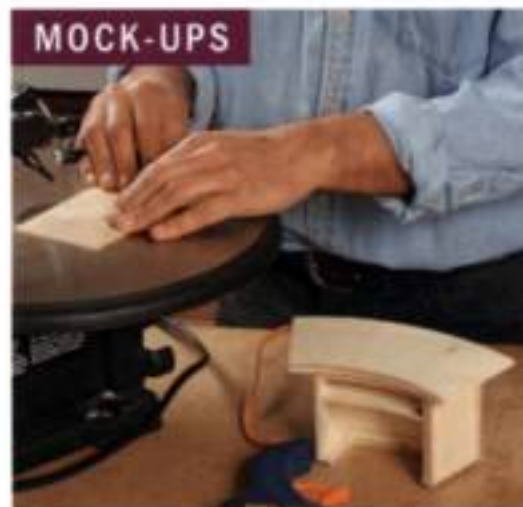
Scroll-saw uses in the shop



Indispensable for marquetry. A scroll saw can cut through a thick packet of veneers (facing page) with a very thin blade, cutting out all of the pieces for a picture in one shot.



Perfect for dovetails. After the initial cheek cuts are made, the tiny scroll-saw blade makes it easy to cut across the bottom of a dovetail socket and quickly remove the waste.



An easy way to test designs. With a scroll saw, small, intricate pieces are easy to cut quickly and assemble using hot-melt glue. This 1/10-scale model is a reading podium.

Scroll-saw uses (continued)



Endless options for pierced work. Schürch made this jewelry-box tray by cutting out small openings in solid wood and laying that fretwork onto a felt-covered plywood bottom. He detailed the carved leaf after the main vertical cuts were done.



and taping them into place. A #2/0 blade leaves only a 0.010-in.-wide kerf, which tends to close up in the final pattern. For more information on marquetry techniques, go to my Web site (www.schurchwoodwork.com).

Scaled mock-ups of furniture are very helpful in the design process, allowing a 3-D preview prior to drawing and building the actual piece. Models also are great for selling a design idea to a client. A scroll saw is ideal for the detail work involved in building a model out of thin materials. The pieces can be put together very quickly using hot-melt glue.

I sometimes use a scroll saw for cutting dovetails, roughing out the pins and tails before trimming them to the line with a sharp chisel, if need be. Other times I make the initial sawcuts with

a dovetail saw and then use a scroll saw to cut squarely across the bottom of each socket, removing the waste. If the blade is tensioned properly, the cuts will be accurate and need very little cleanup. I've seen other woodworkers (*FWW* #152, pp. 56-61) make the initial cuts on a tablesaw, then use a scroll saw to remove the waste.

Once you have a scroll saw, you'll find that lots of odd cuts become easier to make. I've used one to create matching templates in 1/2-in. plywood for routing odd-shaped mortises and tenons where large furniture components join (see *FWW* #94, p. 54). The matching inside and outside templates are attached temporarily to the mating workpieces, where they can guide a flush-cutting router bit. I use this technique often when joining solid wood legs

Scroll-sawing tips



blade. To cancel out blade drift when following a straight line, adjust the angle of the workpiece when pushing it into the blade. For best results, work in a series of short pushes, making small

ADJUST FOR DRIFT TO CUT A STRAIGHT LINE

I have found that the toughest techniques to master are cutting straight lines and going around sharp corners. Many blades are milled in a way that can leave the blade slightly sharper on one side, so it tracks like a dull bandsaw blade. As the blade dulls, the drift gets worse; keep blades well tensioned and change them often.

HOW TO TURN A SHARP CORNER

When cutting marquetry or finely detailed fretwork, negotiating sharp points and corners can pose a challenge. Essentially, you need to pivot the workpiece around the blade while the saw is running, reorienting it toward the new direction. This is accomplished by cutting up to the corner, then slightly pressing the workpiece against the side of the blade. This method stabilizes the workpiece without any unwanted cutting. Now maintain that pressure as you pivot the workpiece into the desired position, shifting the pressure onto the back of the blade as you go.



finewoodworking.com

Visit our Web site to see the author demonstrate straight-line cutting and turning sharp corners.

INLAY

Inlay becomes straightforward.

Tape the design to thin material and cut out the inlay. Then scribe around the inlay piece to lay out the recess. When cutting fragile materials like this abalone, make a zero-clearance plate from a piece of veneer.



directly to a top piece. On period furniture, I've used a scroll saw to cut out carving blanks for applied decorative elements.

Setting up your saw

It's important for first-time users to realize that scroll-saw blades break regularly, especially thin ones. A #2/0 blade, for example, will break in five or 10 minutes when cutting 1/2-in.-thick material. A broken blade can make a startlingly loud noise, but it doesn't necessarily mean you are doing anything wrong.

For best results, the blade should be tensioned to roughly an octave above middle C on the piano, or until a clear musical plucking sound is reached. If the blade is too loose, it will make a "thunk" sound when plucked and will tend to deflect in use, distorting the

cut, fatiguing the blade, and causing it to break early. With too much tension, the blade will snap more often or slip out of the blade clamps.

A few modifications—I recommend making changes and adding accessories to any scroll saw. A wider auxiliary table placed over the top of the standard table will support wider work. To turn the saw on and off, a foot-pedal switch (the electrical type that stays on only when the pedal is depressed) takes the panic out of scrolling detail work and stops the noise when the blade breaks. Also, I tape zero-clearance plates of thin cardboard, plastic, or veneer on the saw table to support fragile material and keep small pieces from dropping through the throat.

I don't like the blade guards on a scroll saw—they only get in the way—so I remove them. In the classes I teach, with students ranging in age from 8 to 85, I've never seen more than a minor cut on any scroll saw with the blade guards removed.

Paul Schürch, a furniture maker and teacher in Santa Barbara, Calif., specializes in marquetry.

Blade Sources

SCROLL-SAW BLADES

Wildwood Designs
www.wildwooddesigns.com
800-470-9090

Woodcraft Supply
www.woodcraft.com
800-225-1153

**BARBED
DIAMOND WIRE**
for cutting glass and
other very hard materials

Alpha Supply,
No. J0510B
www.alpha-supply.com
800-257-4211

MATCH THE BLADE TO THE TASK

Scroll-saw blade sizes range from the smallest #8/0 (pronounced eight-aught) to the largest #12 (sometimes called #0/12), with the most common for woodworking between #3/0 and #8. Thinner blades have more teeth per inch. The orientation of the teeth also is important (see chart at right). For more blade information, check out the excellent chart at www.olsonaw.com/scroll_chart_1.html.

AN ESSENTIAL BLADE KIT

These are the six blades Schürch uses most often, with Olson item numbers in parentheses.

#12 skip tooth (453): Heavy-duty blade for cutting straight lines in thicker material such as plywood.

#5 precision ground, reverse tooth (495RG): Used for straighter-line fretwork.

#5 skip tooth (446): Thinner depth than the precision-ground #5; turns tighter corners. Good for more detailed fretwork, as well as dovetails.

#2/0 skip tooth (440): The one I use for marquetry and other very finely detailed work. Kerf is only 0.010 in.

#1 metal-cutting (479): For metal, shell, and bone.

Tooth patterns



STANDARD TOOTH The basic, cut-anything blade.



SKIP TOOTH Runs cooler in harder material.



REVERSE TOOTH Bottom few teeth are reversed to reduce tearout.



PRECISION GROUND More aggressive and straighter cutting. Available in #5, #7, and #9, in skip tooth or double/reverse tooth.



DOUBLE TOOTH Slow cutting, but smoother results.



CROWN TOOTH Cuts on both upward and downward strokes; slow, but minimizes tearout. Good for plastic.



SPIRAL Cuts in any direction but leaves rougher, wider kerfs.

Scroll Saw Safety Quiz

Name:

Check the box next to the most correct answer

- 1 **When should permission be obtained from your instructor to operate the scroll saw?**
 - ☐ sometimes
 - ☐ never
 - ☐ always
 - ☐ when the stock to be cut is only small
- 2 **What is the proper dress when operating a scroll saw?**
 - ☐ remove jewellery
 - ☐ secure loose clothing
 - ☐ confine long hair
 - ☐ all of the above
- 3 **When should personal protective equipment (PPE) must be worn to operate the scroll saw?**
 - ☐ sometimes
 - ☐ never
 - ☐ always
 - ☐ all of the above
- 4 **What must you do when changing the blade or performing any other maintenance on the scroll saw?**
 - ☐ turn off the machine
 - ☐ turn off the machine and disconnect the machine from the power source
 - ☐ doesn't matter because the blades are only small anyway
 - ☐ keep the safety guard in place
- 5 **What should you do after changing the blade on the scroll saw?**
 - ☐ rotate the machine completely by hand before plugging in the machine
 - ☐ turn on the machine to check the tightness of the blade
 - ☐ rub the blade with machine oil
 - ☐ hold the stock tightly to the table
- 6 **What type of blade should you choose for cutting stock on the scroll saw?**
 - ☐ thin for straight cuts
 - ☐ thin for tight radius curves
 - ☐ wide for tight radius curves
 - ☐ wide for all cuts
- 7 **When cutting stock on the scroll saw where should you place your fingers?**
 - ☐ directly on the out line
 - ☐ ahead of the outline
 - ☐ to the side of the outline
 - ☐ behind the outline
- 8 **What should you do when cutting stock on the scroll saw?**
 - ☐ turn the machine on and off several times to get rid of the saw dust
 - ☐ feed the stock into the blade to slow down the motor
 - ☐ guide your work slowly through the stock and let the machine do its work
 - ☐ none of the above
- 9 **Where should you place the hold down foot when cutting stock on the scroll saw?**
 - ☐ 1" above the work piece
 - ☐ 1/2" above the work piece
 - ☐ 1/4" above the work piece
 - ☐ lightly against the work piece
- 10 **When can you attempt to saw stock that doesn't have a flat surface?**
 - ☐ never
 - ☐ when you use a suitable support
 - ☐ when you get help from a classmate
 - ☐ all of the above

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