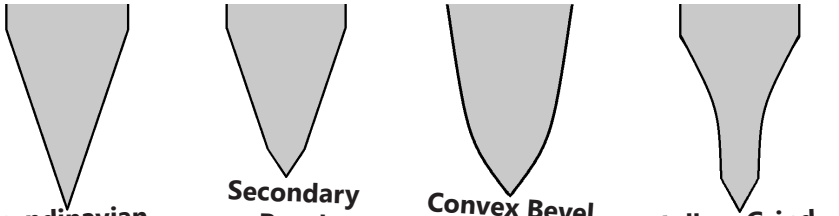
Sharpening

Tools must be sharp to be safe. A lot of injuries are caused or made worse by tools that are blunt or damaged.

Requirements

By Stage 5 in the Backwoods Adventure Skills a scout must be able to sharpen a knife and a hatchet/axe.

Types of cutting edges (Bevels, Grinds)



Scandinavian (Wood Carving Bevel)

Secondary Bevel (Pen Knife)

Convex Bevel (Axe)

Hollow Grind (Skinning Knife)

Cutting tools have many different shapes to suit different needs. In backwoods scouting we mostly use the Scandinavian grind for our knives because we are carving a lot.

A 'bevel' is where the knife slopes down to the cutting edge, or the wedge shaped part of the knife. A 'grind' is the shape of the knife further back from the cutting edge.

The Scandinavian grind has a single bevel and slides through wood very easily.
A pen knife usually has a second bevel that makes the edge thicker and stronger.
In practice we usually put a very slight secondary bevel on our wood carving knives to make the edge stronger.

We also use the Convex grind for our axes. The bevel is rounded here to give more support to the cutting edge.
Please note that the drawing has a lot more curve than an axe's edge would in reality.

Written by Liam Nielsen

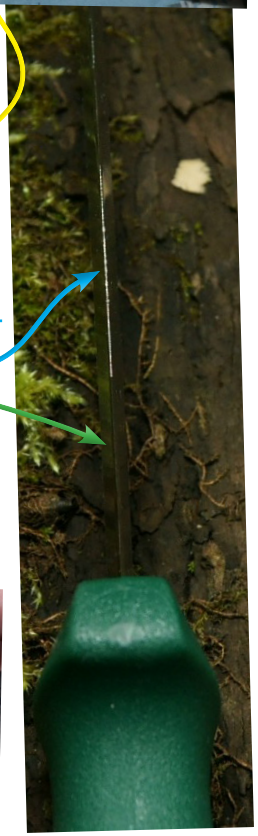
How to Know if Something is Sharp.

Before we get to sharpening we must know how to check if something is sharp.

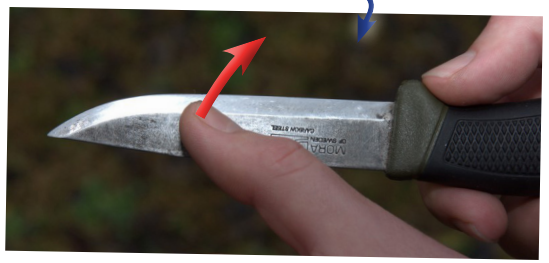
The obvious answer is that if the knife won't cut then it is blunt. But there are a few methods that can help us check for sharpness.

The first method is cutting thin paper cleanly, that is, without tearing.

Often the best way to check an edge is to look at it closely with our back to a strong light. If we can see a silver line at the edge of the knife then the knife is blunt. If the edge looks dark then it is sharp.

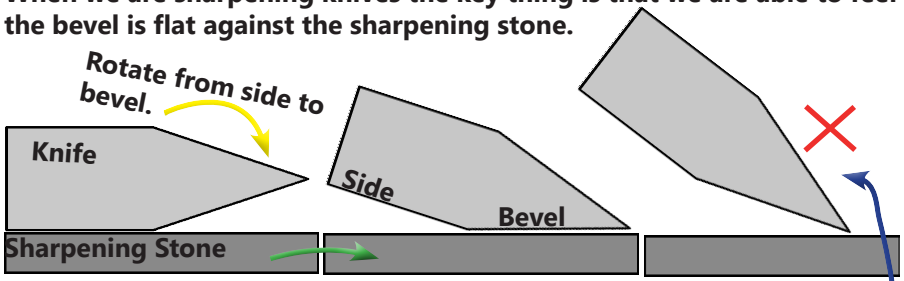


Finally we can gently slide our thumb over and away from the edge. If the knife 'catches' us then the edge of the knife has rolled. If the edge feels smooth on both sides then it has not rolled.

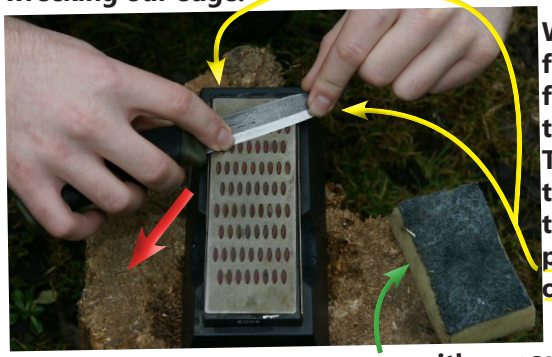


Knife Sharpening

When we are sharpening knives the key thing is that we are able to feel the bevel is flat against the sharpening stone.



We want to bring the side of the knife down to the sharpening stone and then rotate the knife over onto it's bevel. Doing this should prevent us from hitting the cutting edge off the sharpening stone and wrecking our edge.



When we rotate from the flat onto the bevel we will feel the knife solid against the sharpening stone.
To make sure we can feel that the bevel is flat against the sharpening stone we put our index fingers on the other side of the bevel.

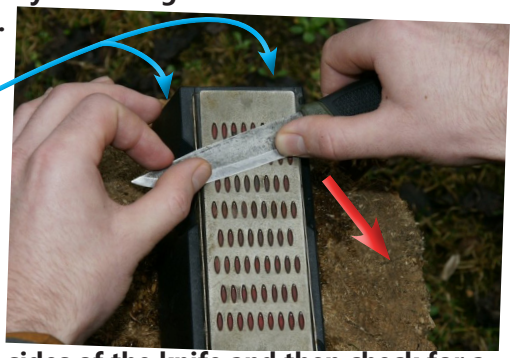
Always keep the stone wet with a sponge or cup of water.

When we are learning to sharpen knives we will sharpen the straight part of the edge first and then deal with the curved part near the tip (belly) separately.

We start with a fine grit (600 grit) for a few strokes, just to get our hands back to being able to feel the bevel is flat.
So with our index fingers on the bevel, bring the knife down on it's side and rotate to the bevel and then very gentle push forward feeling that the bevel is solidly in contact as we push.

After we have done five light strokes on one side we flip the knife over and now put our thumbs on the bevel and do five light strokes on the other side.
Again the focus is on going slowly and being able to feel that the bevel is flat on the stone all the time.

Now we will feel if the bevel is flat to the stone with our thumbs.



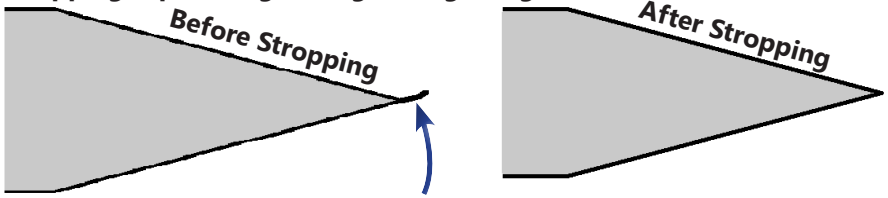
Once we are confident we can feel the bevel is flat to the stone we will switch from 600 to 200 grit. This allows us to remove lots of metal quickly.
We will do ten strokes on both sides of the knife and then check for a bur. If we don't find a bur then we keep repeating ten strokes on either side until we do.
Getting a bur means we have ground the bevel down to a new sharp edge.
We then repeat the same steps with 400 grit and then finish with 600 grit. The 400 and 600 grit polishes out the groves left by the 200 grit to give us a smooth bevel that slide through wood easily.

To sharpen the curved part of the knife near the tip (called the 'belly') we place our index fingers (or thumbs) on the bevel near the tip so we can feel things easier.
We then sharpen as normal but we will find that we have to rise our hand slightly as we go and let our wrist rotate a little in order to keep the bevel flat against the stone.
When we are more experienced we can sharpen the whole length of the knife at once. After sharpening we always strop our knives.

Written by Liam Nielsen

Stropping

Stropping is polishing an edge and getting rid of a 'bur'.



When we sharpen some of the metal doesn't grind off, it gathers at the edge and forms a wavy wire attached to the cutting edge, this wire edge is called a 'bur'.

A strop is a piece of thin leather stuck to a flat board. We could use glue or good quality double sided tape to stick old couch leather to a lath. To make it work well we rub 'buffing compound' into the leather to help it polish better. (Green buffing wheel compound works well).

To strop our knives we sit the bevel flat on the strop and drag the knife backwards and across the strop. We drag backwards because if we pushed the knife forward it would cut the strop.

As with sharpening we use our index finger or thumb to feel that the bevel is flat on the strop, and we strop gently.

We start with twenty light strokes on both sides. Then sets of five strokes on both sides. We are finished when we feel no bur.

Written by Liam Nielsen

Axe Sharpening

With axes we want a slightly rounded edge. The rounding shouldn't be very extreme for a scout axe that is used for carving, limbing and light splitting
In most cases the axe will be heavier than the sharpening stone so we will hold the axe still and move the stone.

Make sure your fingers are protected behind the sharpening stone.

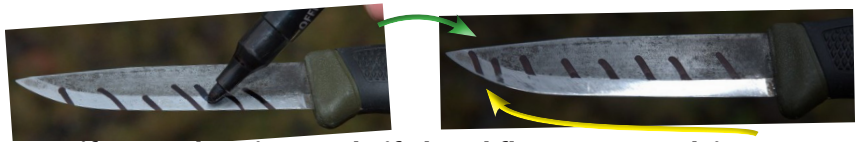
If the axe is heavy we can support it on a stump.

We sit the stone against the axes bevel and look at what angle the stone should it at. It is not easy to feel for the bevel like we do on a knife because the surface is curved and there is no 'solid' feeling of having the bevel flat to the stone.

When we have gotten a good idea of the angle of the bevel we start moving the sharpening stone in little circles.
In stead of counting strokes like with a knife we usually count seconds (i.e.) grind one side for twenty seconds, then the other side for twenty seconds. As with our knife sharpening we keep the stone wet.
Again we start at 200 grit and work up to 600 grit and then strop.

Tips

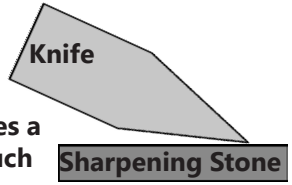
Colour the Edge



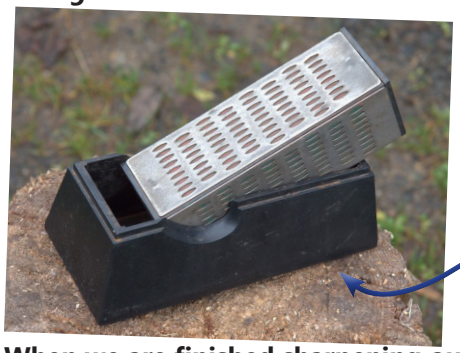
To see if we are keeping our knife bevel flat we can mark it. Here I need to be careful at the belly as I am only grinding the edge there.

Secondary Bevel

At the end of sharpening a Scandinavian grind knife we rotate the knife up a little and do five light strokes at 600 grit on both sides. This gives a slight secondary bevel that makes the edge much stronger.



Drying the Stone



We always keep our stones covered in a layer of water as we sharpen. So when we are finished sharpening we must always dry the sharpening stone. So we store them sitting half out of their holders in a warm, dry place.

Oil it

(the tool, not the stone)

When we are finished sharpening our knives or axes we must oil them so they are usable when we need them again.

For the steel of the knife or axe, any food safe oil is fine. The best is food grade mineral oil as it won't go off.

The wooden handles of our axes must be sanded or scraped and then oiled with boiled linseed oil every once in a while to keep the handle from deteriorating and the axe head coming loose.
Note: cloths with boiled linseed oil on them must be burnt after use as they can spontaneously combusted.

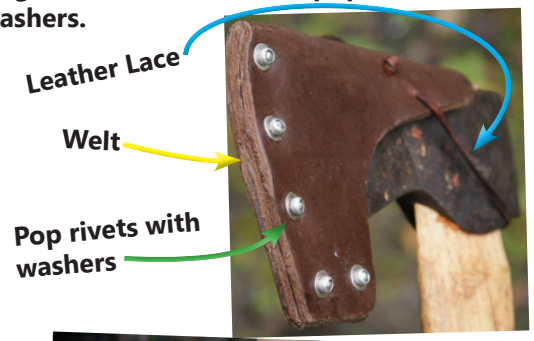
Written by Liam Nielsen

Learn on the cheap

When we start sharpening we will making mistakes. For example, it is very common to convex (round) the bevel on carving knives, etc.
So we can buy very cheap knives and practice sharpening with them. Very cheap knives are often dangerous to use because of their poor quality materials but we can still learn to sharpen with them.

Sheath it

Sometimes we will get axes with no sheath and it can be easy to just chance that it will be ok. But an axe that is sharp enough to safely use is very dangerous to leave without a sheath.
A leather sheath made from 3 to 4 mm quality leather is best because it will look the part for the scouts and help them see the axe as a proper tool. We make a working template in cardboard, cut out our pieces and rivet them together with Aluminium pop rivets (for car bodywork) and some washers.
We put a piece of leather in front of the edge called a 'welt' to protect the edge.
Then we use rope or leather laces held with a 'cord lock' to hold the sheath in place.

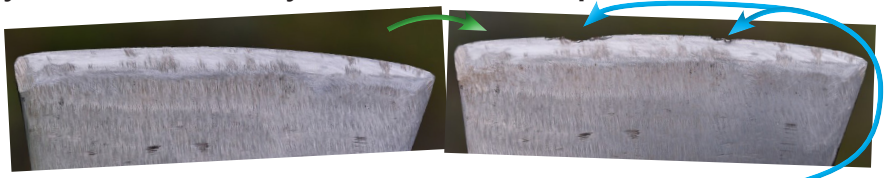


Curves

Some knives and tools have curves that make using a sharpening stone very difficult.
We can buy rounded sharpening stones or get some 'wet and dry' emery paper and wrap it around a dowel (cylinder).

Regrinding a chipped Axe

By Stage 8 a scout must be able to regrind a damaged axe. However, if you are a scout leader you will need to develop this skill a lot sooner.



When we are learning to use tools mistakes will be made. So we always have a first aid kit and sharpening kit to hand.

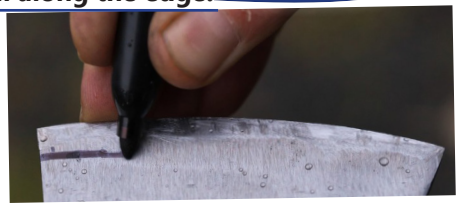
We use a heavy glove and a scrap of heavy leather or cloth to guard our hand as we file.

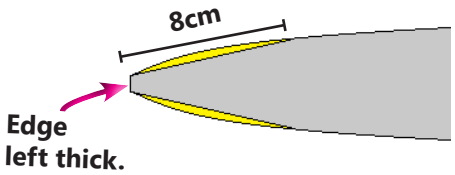
File diagonally to stop the edge undulating.

As with knives we look for the silver lines on the edge for damage.

To repair our edge we use a 'double cut bastard file' and file the whole edge until all the damaged area is removed. Looking at the edge we see a smooth silver line all along the edge.

Now we need to ensure our bevel will be the same on both sides. Make sure the edge is smooth, then use your finger as a gauge and draw lines about 8mm back from the edge on both sides.



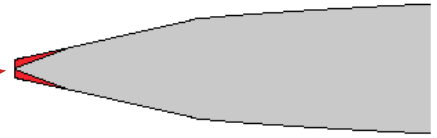


These lines are our file guides. We will file a flat bevel from the filed edge to the 8mm line. (Remove the yellow part from the drawing to the left).

Support the file with your index finger. And only file away from yourself.

We should regularly clean the file with a wire brush to unclog the cutting teeth.

Grinding wheels can be used here but you must not grind near the edge and must dunk your edge in water constantly. As it is very easy to overheat the edge and soften the steel. Thus ruining the axe.



Now we will file down to the edge to make it sharp. (Remove the red part from the drawing above). A grinder can not be used here. Finally we round the bevel a little with a '2nd cut flat file' and then sharpen and strop as normal to polish the edge.

Written by Liam Nielsen