Pathfinder Honour:

Trainer's Notes

Metal Craft: Craft Ideas

Instructions to Trainers / Instructors of this Honour

A big thanks for being involved with this honour.

The following examples are provided to help you get started.

Always remember that the well being of all those involved with the following crafts is paramount.

Acknowledgements

Please refer to text.

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1. INTODUCTION

A number of simple ideas are outlined in the following pages. These metal crafts are all made from basic, inexpensive materials and a minimum of tools and equipment is needed.

Please feel free to exercise your creativity and adapt as you see fit.

If you'd like to share any of your creations, please let us know.

Have Fun!

2. REFLECTOR OVEN

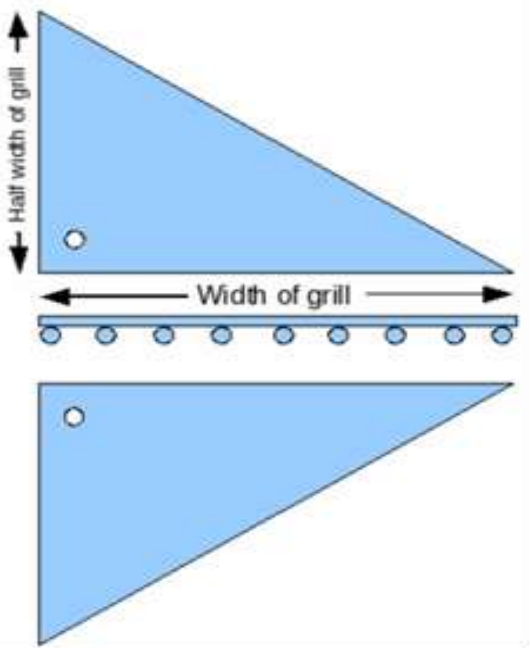
Source: Jim Thomas, North American Division of SDA who compiled the Notes on:
http://en.wikibooks.org/wiki/Adventist_Youth_Honors_Answer_Book/Arts_and_Crafts/Metal_Craft

A useful project to make that might be of special interest to a Pathfinder is a reflector oven.

This particular design folds flat for easy stowing in a backpack. It can be made from aluminium flashing, eight hinges, a pre-made grill, a drawer handle, some rivets, and a couple of nails

The first step is to find a grill or a grate that you can use in the oven. The grate can be easily removed and is not modified in any way, so if necessary, it can be "borrowed" from a toaster oven, hibachi, etc. The only requirement is that it be rectangular.

<u>Dimensions of the triangular side panels</u>



Once you have a grill, you can begin laying out the other pieces which are all sized according to the dimensions of the grill.

Cut out the triangles that will form the side panels. These triangles should be the same width as the shortest dimension of the rectangular grill.

The triangle's height should equal half this same dimension. Make four of these and make a hole on the corner where the right angle is formed. You should also trim the sharp corners so that they are rounded (and thus present a smaller hazard to the end-user).

Once the side panels are cut out, use the long dimension of the triangle (the hypotenuse) to set the width of the top and bottom panels. The length of these pieces should be equal to the longest dimension of the grill.

Once these pieces are cut out, you need to put a small X crease in them to stiffen them. This can be done by either laying them over a length of upturned angle iron and tapping the crease in with a rubber mallet, or by laying it flat on a floor, and then laying a stiff straight-edge (such as a yardstick) wherever you want the crease. Then work your way under the free end as you hold the straight-edge firmly in place.

Next it is time to drill some holes in the flashing. Clamp all four triangles together and lay a hinge along the bottom edge (the one which is as long as the grill is wide). Mark where the holes should go, and drill through all four pieces at once. This will ensure that the holes are all located identically. Next, clamp the top and bottom panels together and lay one of the triangles on top of them, lining up the matched dimensions. Mark the holes and drill them out. Do this to both sides. Finally, decide where you would like two more hinges along the back of the oven, mark the hinge holes, and drill them out.

The hinges should be secured to the panels with rivets rather than with screws. You can use pop rivets, but you will need to "peen" them over so that the hinges can fold flat. This can be done once the rivets have been attached by the pop-riveter by placing them on the face of an anvil (or on the face of a sledge hammer), and then hammering the unfinished end of the rivet until it is completely flattened.

Pay special attention when attaching the hinges that the hinges will fold in the right direction. It is very easy to put a hinge on backwards. If you do this, simply drill through the rivet to remove it, and try again.

Once all the hinges are in place, you may slip the grill in place. Secure it by running a nail through the holes punched in the right corner of the triangular panels. Pass the nail through the first hole starting on the inside of the oven. Flex the edge the panel inwards so that the nail can pass through the grill (see photo). The nail should next pass through the hole in the lower triangle, back to the inside of the oven. Insert the second nail on the other side.

Once is assembled, find the balance point for mounting the drawer handle in the top panel. Ideally, the grill should remain level when it is lifted by this handle (you might even want it to tip backwards slightly). Drill holes for the screws. If the screws are too long (after all, they are designed to go through a wooden drawer face, not a thing sheet of aluminium flashing), you will need to cut them shorter with a hacksaw. Then attach them firmly.

To use the oven, load the items you wish to bake onto the grill and place it within the fire ring of a nice bed of hot coals. Prop the back up with a rock (perhaps a rock from the fire ring). Keep an eye on your baked goods and turn them over if necessary.

3. SILVER FISH

Source: John Sommerfeld, South Queensland Conference, based on template, p34 of:
Slade, Richard. *'Take a Tin Can; How to Make Decorative Models'*, Faber & Faber, London, 1973.

The silver fish shown opposite was made from very simple materials and tools, namely:

- The bottom of a disposable aluminium cooking tray
- Two marbles
- Some super glue from the 'cheap' shop
- A pair of heavy-duty scissors

A template is shown overleaf.

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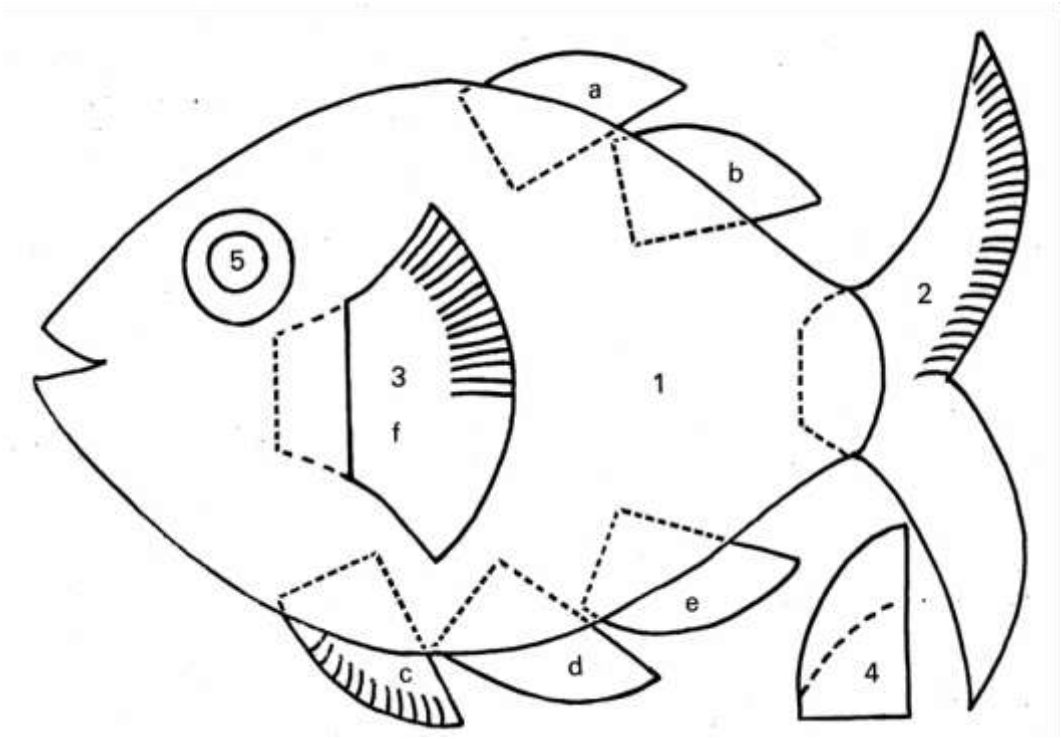
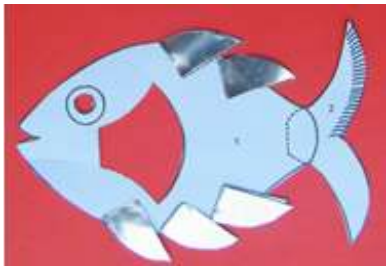


Instructions

1. Using the template shown above, cut out of foil:
   - Two body shapes (no.1). Don't forget to include slots for the pectoral fins (no.3)
   - One tail fin (no.2)
   - Two pectoral fins (no.3)
   - Five fins (no.4)
2. Make holes (no.5) in the bodies for the eyes ensuring they are directly opposite each other.
3. Make the scales by embossing both bodies (no.1). MAKE SURE YOU KEEP AWAY FROM THE OUTER EDGES.
4. Insert the pectoral fins (no. 3) into each body and carefully glue them in position with a small drop of super-glue. **BE CAREFUL NOT TO GET ANY SUPER-GLUE ON YOUR BODY**. Gently hold these fins in position until the glue dries.
5. Place the other fins on top of a template, so they are lined up. See diagram. Note that tail fin is yet to be put in place
6. Carefully place a small drop of super-glue on each of the fins
7. Before the glue on the fins dries, lower one body side into position on top of the fins and template. Gently hold in position until the glue dries.
8. Turn the body with the fins stuck on it insert a marble in position for the eye and place a light rub of super-glue around the edges.



9. Lower the other body side in position. Gently hold in position until the glue dries.
10. Fringe the fins as shown in the picture.
11. Lacquer as required.
12. The fish may be suspended by poking a hole at the centre of gravity. See picture on previous page. Why not make a mobile by making a whole 'school of silver-fish'!

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4. TIN-CAN-O-THORUS

Source: John Sommerfeld, South Queensland Conference

This gentle creature was last seen heading for the recycling rubbish bin. It was munching on its favourite food – Nasturtium flowers.

It was created from very simple materials and tools, namely:

- A collection of 'tin cans' (Eating their contents was enjoyable)
- Super glue from the 'cheap' shop
- Tin snips
- Pliers
- Battery drill and twist drills
- Pop riveter and rivets
- Self tapping screws and screwdriver

Instructions.

1. Make a collection of tin cans and ensure they are all cleaned properly
2. Using your imagination, modify the cans as appropriate (and any other material you see fit) and join them together using the most effective methods (super-glue, pop rivets, self tapping screws etc) **BE CAREFUL NOT TO GET ANY SUPER-GLUE ON YOUR BODY**.
3. Lacquer as required.
4. That's all folks – have fun!

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5. MOTHER DUCK PEN-AND-PENCIL HOLDER

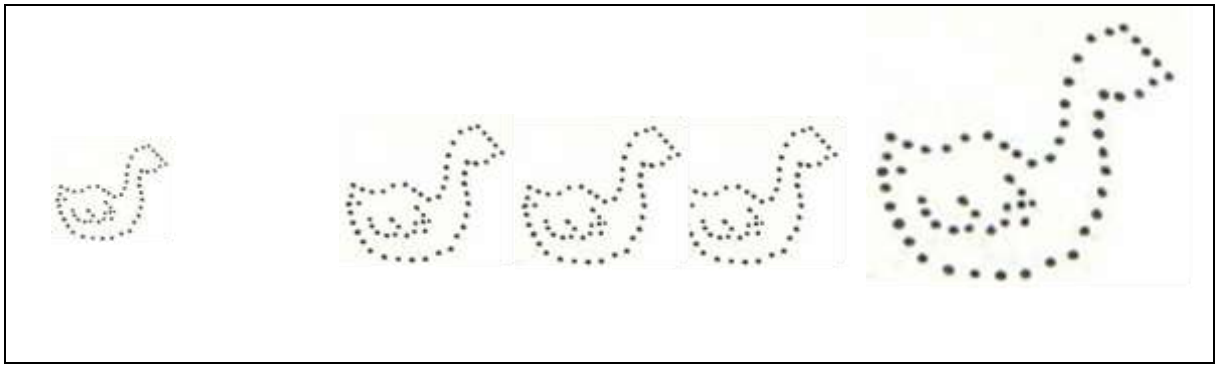
Source: John Sommerfeld, South Queensland Conference
Adapted from: http://www.craftown.com/punch/punch1.htm

This rotating pen holder was created from very simple materials and tools, namely:

- A shiny 'tin can'
- Paper and sticky tape
- Battery drill and twist drills
- Punches with different sized points.
- Ball peen hammer
- Scrap wood (for base)
- Self tapping screw and screwdriver
- Flat spacer washers

Instructions:

1. Copy the template shown below and fix it onto the tin can using sticky tape. You may have to increase or reduce the size of the template to suit the diameter of the tin can.



2. Using the 'bluntest' punch, punch the holes for the mother duck. Mother duck has the largest indents. Make sure the indents are consistent for her. Note that you will need to place the tin can over a secured piece of round scrap timber to prevent the can from being badly dented or squashed as you bang away.
3. Using a finer punch, punch the holes for the three larger ducklings.
4. Finally, punch the holes for the smallest duckling which is being left behind. The finest punch is used.
5. Drill a hole in the centre of the bottom of the can. It must be large enough for the screw to pass through.
6. Finish off the block of woods and install the can using the screw and enough spacer washers to allow the can to rotate freely
7. Lacquer as required.