



LAYERED PUZZLE suitable for GCSE and A-Level years

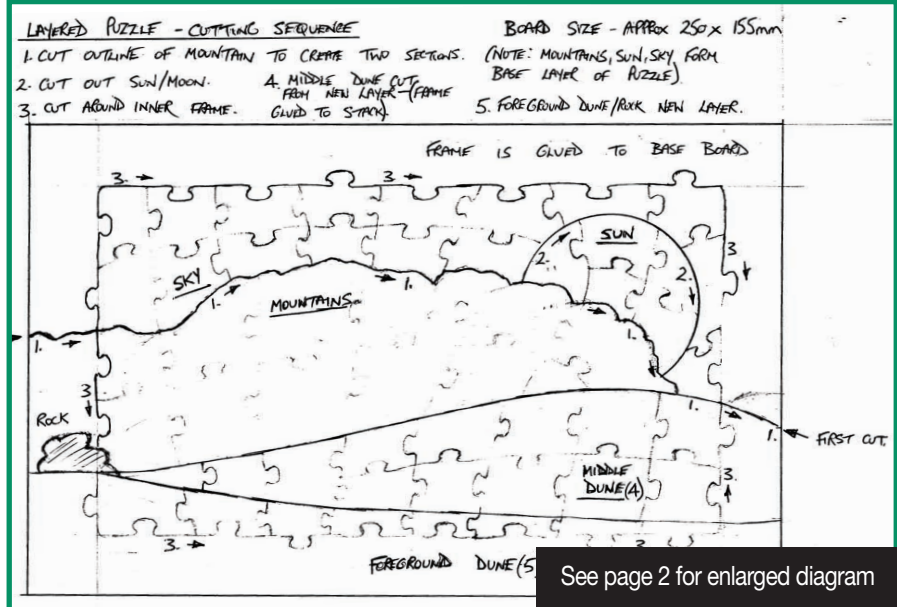


Phil Davy

Woodworking Project for the Design & Technology Departments of schools and colleges

Phil Davy, well known author and journalist in the field of carpentry, has specially prepared this project for GCSE and A Level years. The project is aimed at the professional teachers of joinery and is intended for teaching purposes only. This project should only be undertaken in supervised situations where Health & Safety procedures are adhered to.

All timbers referred to are available from Fitchett & Woollacott of Nottingham who offers deliveries throughout the UK



See page 2 for enlarged diagram

MATERIALS

Base – 19 or 25mm birch plywood or veneered MDF. Hardwood – at least three species of close-grained timber, preferably contrasting colours – ask Fitchett & Woollacott about availability. Species such as sycamore, maple, cherry, sapele, beech and American black walnut are suitable. Avoid woods such as oak and ash, as their open grain will make the smaller puzzle pieces likely to break. Timber should be no more than 8mm thick. If you have access to a planer thicknesser or thicknessing sander, reduce material down to 5 or 6mm. This makes it easier to cut on the scroll saw, especially on initial cuts when timber is stacked in three layers. Alternatively, use 6mm thick veneered birch ply, although exposed edges will obviously not be coloured. Wood stains mean you can use fewer species of timber and can of course introduce colour, but staining should be done after cutting the layered stack into sections.

TOOLS & EQUIPMENT

Scroll saw and blades (aka fretsaw), abrasives, spray mount for paper, wood glue, jigsaw or handsaw, bench plane, try square, steel rule, files. A disc sander is a fast way to clean up end grain, but you'll need an extractor to collect the dust, which can be considerable.

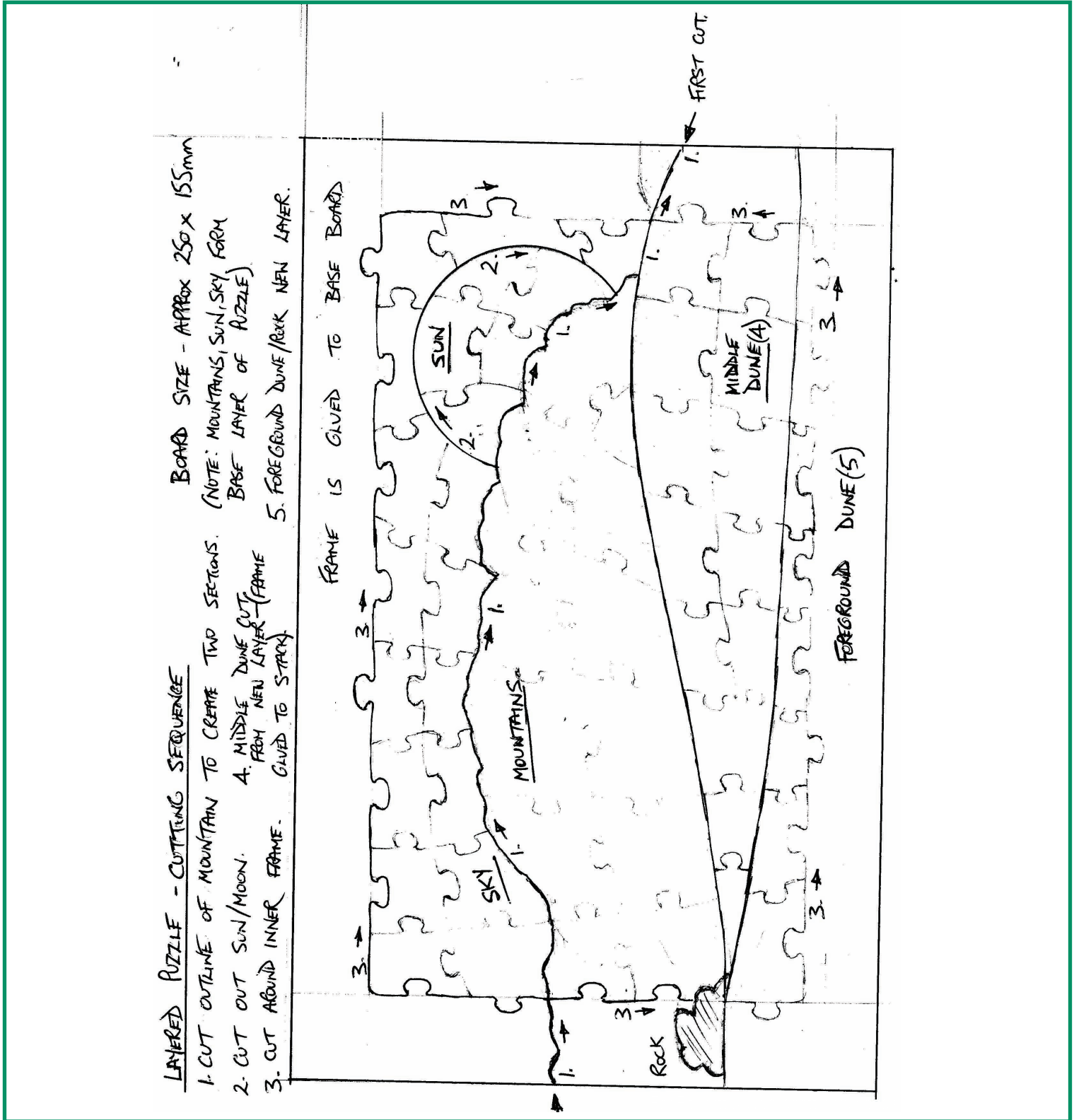
SAFETY – teacher supervision required

Eye protection required and masks for dust/fume protection. Use the machine's hold down or a push stick when cutting small pieces on the scroll saw. Unplug the machine from the mains when changing the blade.

MAKING THE PUZZLE

1. Cut base board to size and plane edges. Saw each piece of timber slightly larger than the base, then glue three pieces together, using just a dab of glue at each corner. Cramp at edges until dry.
2. Trim the timber stack with a bench plane so it's the same size as the base. On end grain plane in from each corner towards the centre to prevent the wood splitting.
3. Draw landscape outline or pattern on A4 paper (or use design provided). Don't make this too complicated – smooth, flowing lines are easier to cut on a scroll saw. Glue paper to the timber stack and draw a frame around the edge of the paper, about 20mm wide.
4. Make the first scroll saw cut across the timber stack from one side to the other to create two sections (see drawing). Continue cutting the main sections – ideally you should have at least three (including sun/moon) to make the most of the contrasting timbers. These sections will be interchangeable when cut and make up the background layer.
5. Draw on the individual puzzle pieces with ears and sockets, making sure you incorporate the inner border of the frame. Smaller pieces look better than big ones, although this involves more work cutting. Cut carefully around the inner border while layers are still glued together. If layers seem loose, wrap masking tape around edges.
6. Separate glued layers with a palette knife or similar. Rearrange the three coloured layers and glue outer frame sections to base board. Scrape off paper from top layer and sand surfaces clean.
7. Shape edges of sun/moon and mountains with files or abrasive paper to add relief. If you want to make a two-dimensional picture, draw on remaining individual puzzle pieces and cut to shape.
8. If making a three-dimensional layered puzzle, cut outline of foreground (rocks, sand dunes etc) on individual pieces of wood. Draw on frame, cut this out as before and glue to bottom of existing puzzle. Draw puzzle pieces on remaining sections and cut out to provide new layers.
9. Check all pieces fit together then sand all layers, finishing with 240 grit paper.
10. Apply an oil finish to surfaces of puzzle, wiping off excess after about 15 minutes. Allow to dry and repeat process if necessary. For a satin finish, apply a coat of clear wax with fine grade steel wool and buff to a sheen.

For Fitchett & Woollacott hardwoods stock sheet see page 3





A growing reputation in Timber Services



All timbers referred to are available from Fitchett & Woollacott of Nottingham who offers deliveries throughout the UK



Species	26mm	32mm	38mm	51mm	64mm	76mm	102mm
KD SE Ash - American	√	√	√	√	√	√	√
KD Prime SE Beech - White	√	√	√	√	√	√	-
KD SE Beech- Steamed	√	√	√	√	√	√	-
KD SE Birch	√	-	-	-	-	-	-
KD SE Canary Whitewood	√	√	√	√	√	√	√
KD SE Cedar - Brazilian	√	√	√	√	√	√	-
KD SE Cherry - American Red	√	√	√	√	√	√	√
KD SE Idigbo	√	√	√	√	√	√	√
KD SE Iroko	√	√	√	√	√	√	√
KD SE Jelutong	√	√	√	√	-	√	-
KD SE Koto	√	√	-	-	-	-	-
KD SE Maple - Hard	√	√	√	√	√	√	√
KD SE Meranti	√	√	√	√	√	√	√
KD SE Oak - Euro	√	√	√	√	√	√	√
KD WE Oak - Euro	√	√	√	√	√	√	√
Oak - PIPPY	√	-	√	√	-	-	-
KD SE Oak - Red	√	√	√	√	√	√	-
KD SE Oak - White	√	√	√	√	√	√	√
KD SE Sapele	√	√	√	√	√	√	√
KD WE Sycamore	√	√	√	√	√	√	√
KD SE Utile	√	√	√	√	√	√	√
KD SE Walnut - Black	√	√	√	√	√	√	-

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Trade counter open Monday - Friday 8.00am - 5.00pm Saturday: 8.00am - noon

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