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"Christmas pyramid"



Material list

		Part
2	Poplar plywood	6 x 210 x 300 mm 9/10/11
2	Modelling plywood	1,5 x 235 x 240 mm 1/16
1	Beech wheel with 12 holes	3
1	Wooden ball, less hole	4
4	Dowels	∅ 6 x 300 mm 2
1	Wire	∅ 3 x 100 mm 6/8
1	reducer 4/3mm	5
1	Dowel	∅ 8 x 200 mm 7
1	Glass bearing	14
1	Brass sleeve	17
4	Tea light holder	15

Please Note

The OPITEC range of projects is not primarily intended as toys for young children. It is for teaching, designing and making to ensure that pupils experience a range of tools and processes.

1. Product Information:

Article: Christmas Pyramid.

Use: As decoration

2. Material Information:

2.1 Material: Plywood, Beech wood

Working: Sawing, planning, shaping and sanding

Joining: Gluing

Finish: Decorate with varnish or paint

2.2 Material: Steel

Working: Sawing, snipping

Finish: No special finish required

3. Tools:

fretsaw: Use a fretsaw for all curves and rounded edges

Note: Fretaw blades are inserted from underneath with the teeth facing forward (It cuts as you pull the saw).

PUK saw: Use this type for all dowels and strip wood.

Sanding block: Use a block and glass paper for the edges and flat surfaces

4. PARTS LIST

Part.	Quantity	Description	Material notes		
1	12	Flügel	Modeling ply	1,5 x 235x 240	Cut to pattern
2	12	Fan blade holder	Beech dowel	d = 6 x75 mm	Cut off
3	1	Rotor head	Beech wheel with 12 holes		Ready made
4	1	Ball	Wood	d = 25 mm	
5	1	Reducer	Reducer piece	4 auf 3 mm plastic	Ready made
6	1	Axle	Metal	d= 3 mm 70 mm	
7	1	Pole	Beech dowel	d = 8 mm 140 mm	Cut off
8	1	Bearing	Remainder from step 6	d= 3 mm auf 25 mm	cut off
9	1	Turntable	Plywood	6 mm 210 x 300 mm	Cut to pattern
10	1	Star	Plywood	6 mm 210 x 300 mm	Cut to pattern
11	1	Bow	Plywood	6 mm 210 x 300 mm	Cut to pattern
12	1	Foot	Plywood	6 mm 210 x 300 mm	Cut to pattern
13	1	Base	Plywood	6 mm 210 x 300 mm	Cut to pattern
14	1	Glass bearing			Pre-made part
15	4	Candle holders			Pre- made
16	3	Crib figures	Modeling ply	1,5 x 240 x 235	Cut to pattern
17	1	Axle guide	Brass guide	ø5 x 0,5 x 15	

5. Instruction overview:

5.1 Making the individual parts for and construction of the rotor and pillar

5.2 Making the individual parts and the base

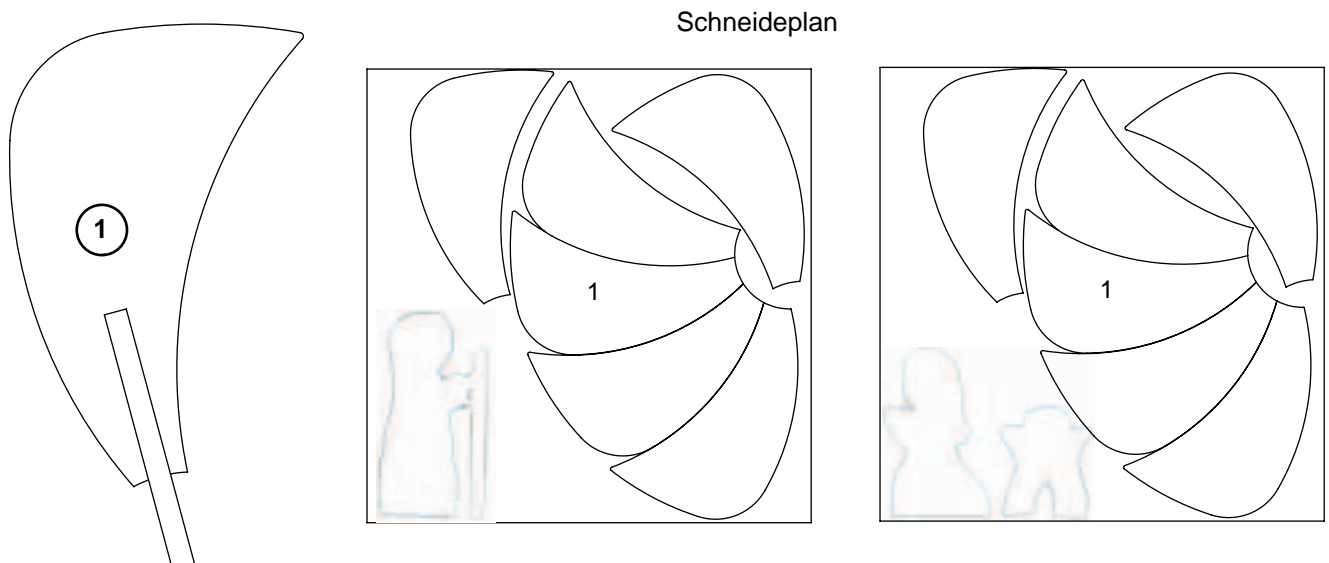
5.3 Assembly of the finished pyramid

5.4 Making the crib figures

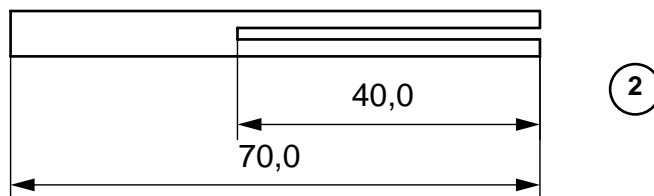
5.5 The end assembly

5.1 Making the parts for and construction of the rotor and pillar

5.1.1 Trace out the patterns for the vanes on to the two sheets of plywood 1.5 x 235 x 240mm

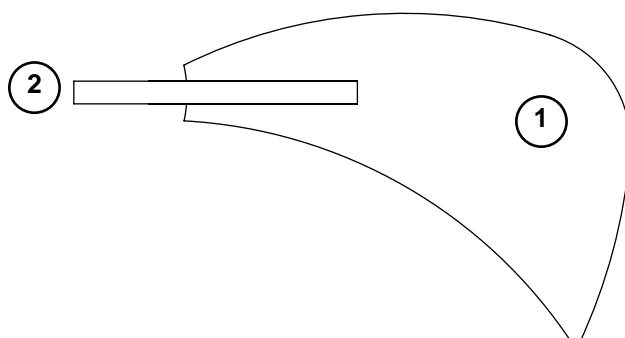


5.1.2 Mark out and saw the 12 vane holders (2) 6mmdia x 70mm from the dowel 6mmdia x 300mm using a PUK saw .. sand the ends smooth with a block and glass paper

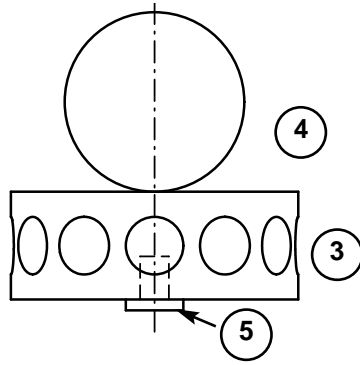


5.1.3 Place the vane holder dowels upright in a vice with about 45mm protruding above the jaws. Saw a 45mm deep slot in each one for the vane to fit in. Carry out this procedure with all the 12 vane holder dowels.

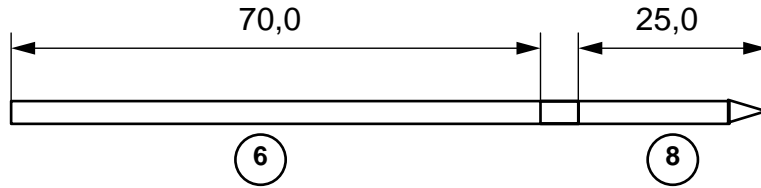
5.1.4 Finally glue the dowel holder of to the vanes with PVA white glue Check the position of the holders on the plans



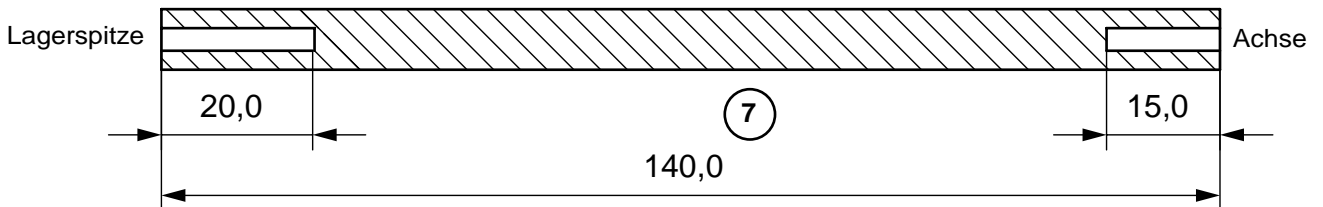
5.1.5 Glue the wooden ball (3) on to the centre of the rotor head and the reducer underneath the rotor head wheel



5.1.6 File the welding rod (6) to a point on the end. Then cut off 25mm measuring back from the point (8) leaving a piece 70mm long. File all the ends clean of burr



5.1.7 Take the pillar (7) 8dia x 200mm and saw it to 140mm long. Finally drill the 3mm dia holes in the ends. These must be vertical (Your teacher will help set up this stage)

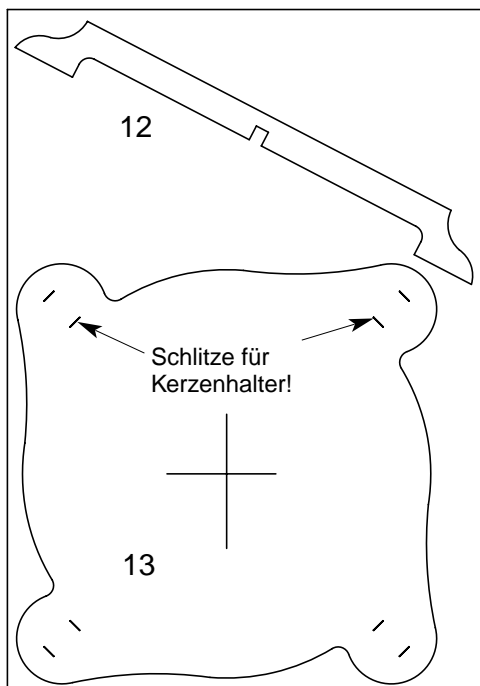


5.1.8 Insert the bearing point (8) in the pillar

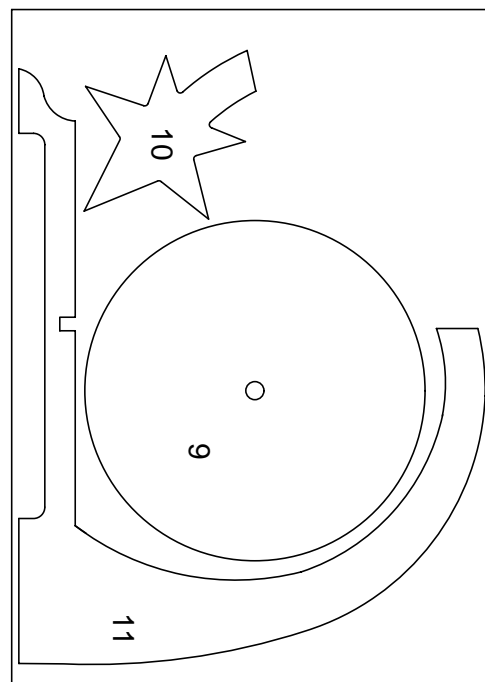
5.2 Making the individual parts and constructing the base

5.2.1 Trace the outline of the turntable (9) the stars (10) the star bow (11) the foot (12) and the base (13) from the patterns on page 7/9/11 on the two plywood sheets 6 x 210 x 300mm and cut them out with a fretsaw. Sand all the pieces to finish.

Schneideplan



Schneideplan

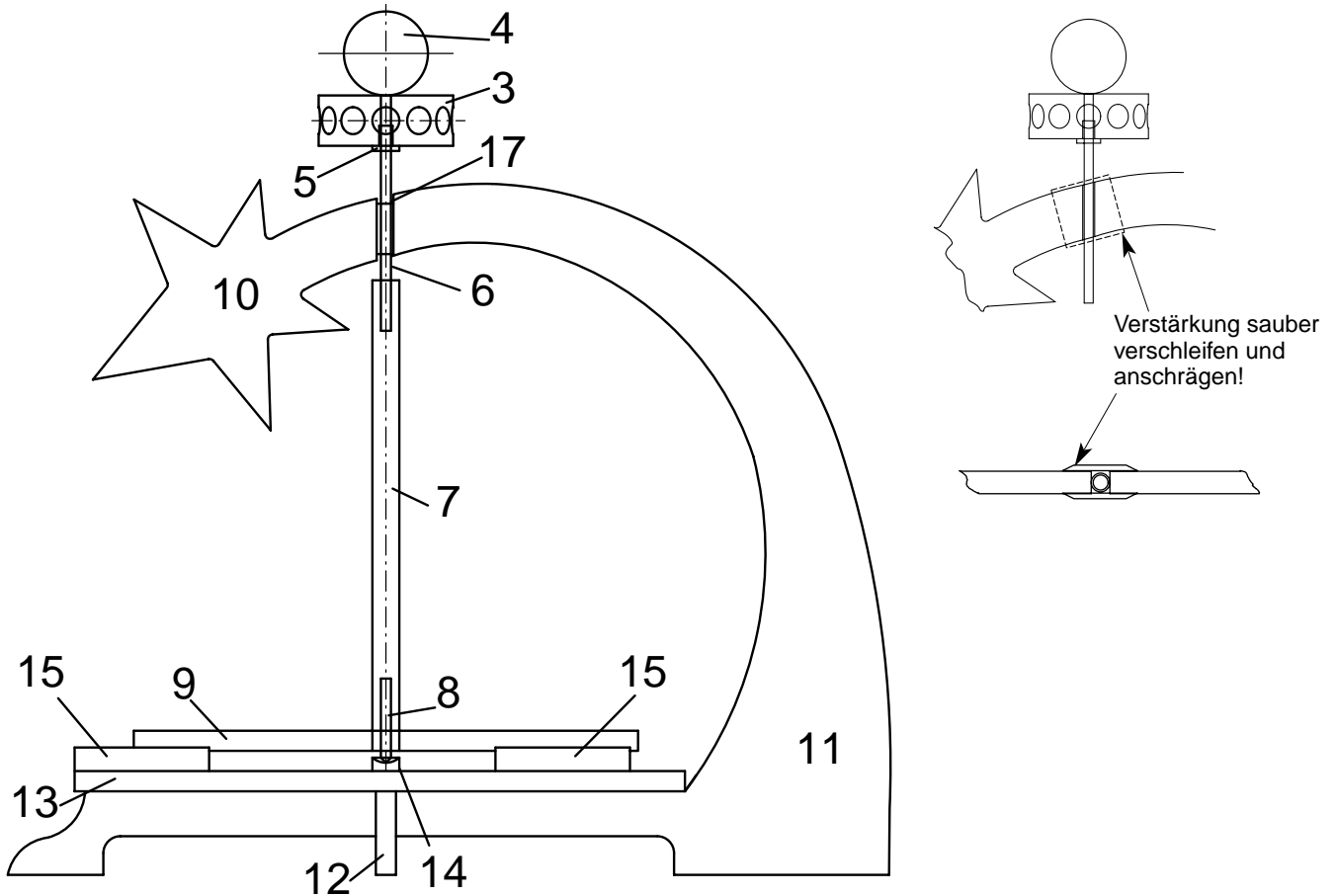


5.2.2 Lay the star bow on a flat surface and place the brass bearing (17) in between the star bow (11) and the star (10). Glue it in leave to dry place with a 2 part glue and leave to dry thoroughly.

Note: Lay the pieces on a piece of plastic first so that they do not stick to the work surface!

5.2.3 Glue a couple of pieces modelling plywood 1.5 x 20 x 20 on either side of the joint as a re-enforcement (see detail drawing). For the best optical effect chamfer the ends as shown

5.2.4 Glue the glass bearing (14) with two component glue on the middle of the base. Leave to dry.



5.2.5 Check that the foot slot (12) fits exactly in the star bow slot. File them to fit if necessary and glue them together

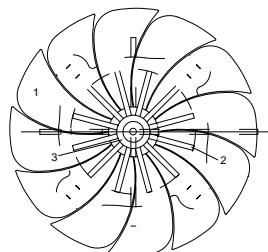
5.2.6 Drill the 8mmdia hole exactly in the middle of the turntable (9) (See pattern on page 9)
Place the central pillar at 90 degrees and glue it in place. Work carefully so that the turntable will turn accurately when completed.

5.3 The end assembly of the pyramid

5.3.1 Bend the tabs on the candle holders (14)so that they can be inserted in the slots in the base. Once in the slots bend the tabs back

5.3.2 Place the turntable and pillar on the glass bearing
The rotor and bearing can be inserted in the top brass tube and in the hole in the pillar

5.3.3 Now place the vanes in the rotor head , slightly angled, the exact adjustment can be carried out when the candles are burning.



5.4 Making the crib figures

5.4.1 The pyramid figures can be your own

The design is not however suitable for heavy figures made of plaster, clay or ceramics etc
There are patterns for crib figures on page 11, they are designed to be sawn of the
Modelling plywood and decorated.

Any figures must be place evenly around the turntable so the that their weight is spread evenly

5.5 Finishing

5.5.1 Painting / decorating

The pyramid will look good if left in its natural form. If you wish to decorate it use acrylic paints ..

A coat of clear varnish will protect your work

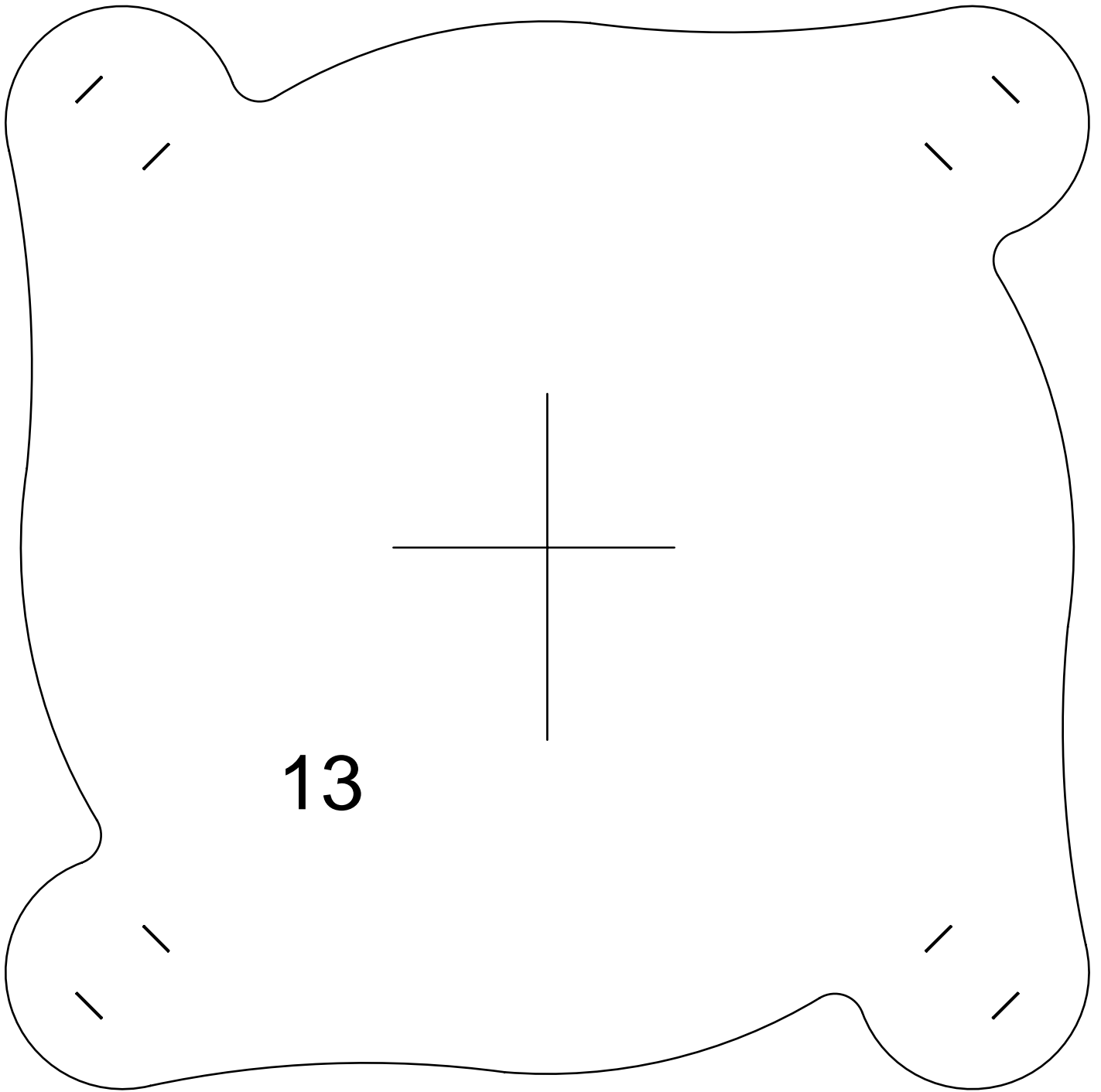
The picture in our catalogue will give you some ideas for painting

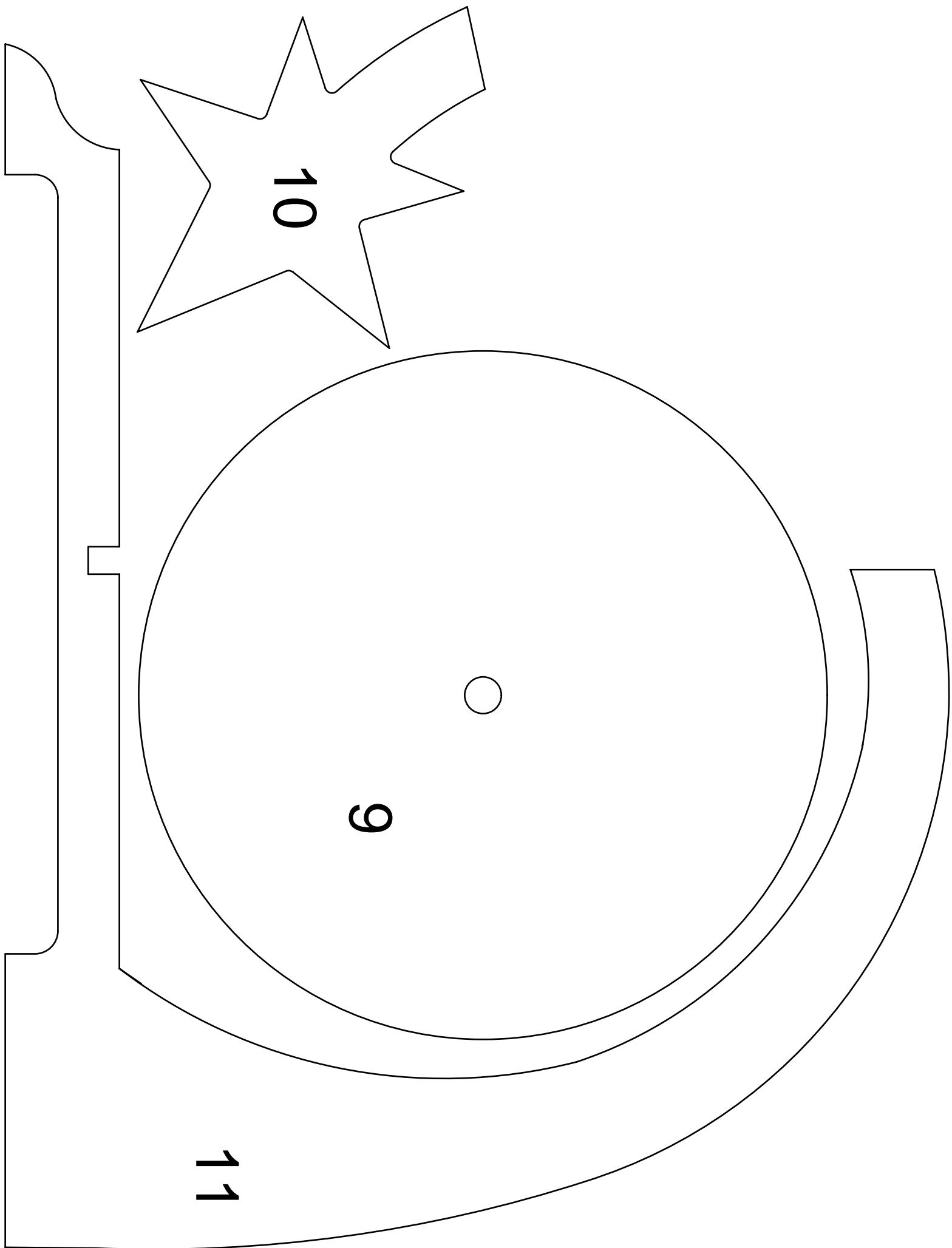
We wish you fun and success with this pyramid project!



NOTE!!

**Never leave the Christmas pyramid unattended whilst
the candles are burning!!!**

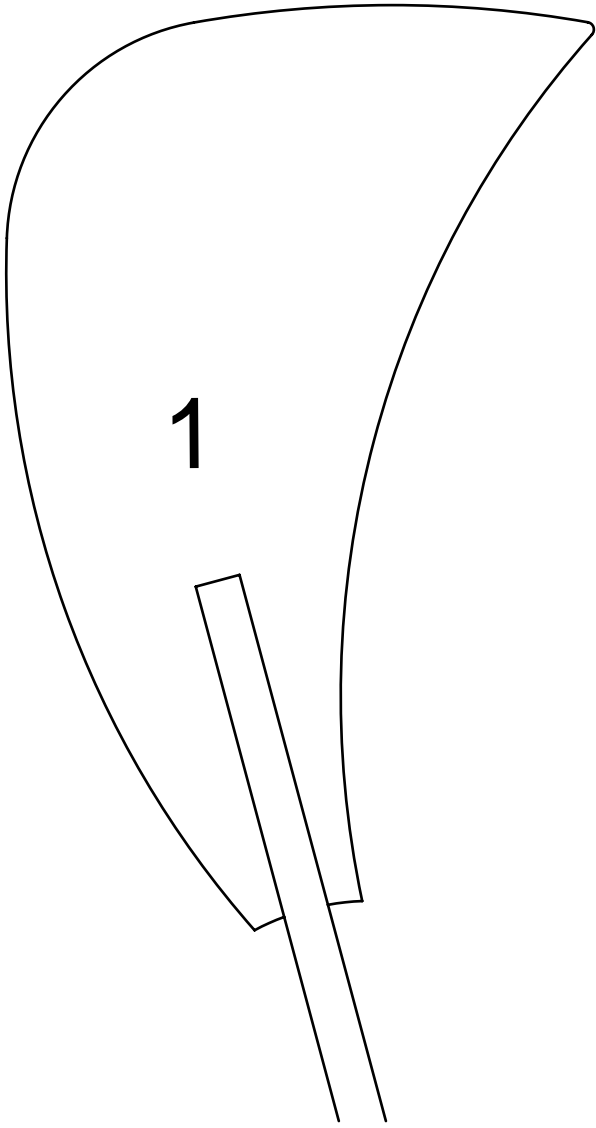




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11



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