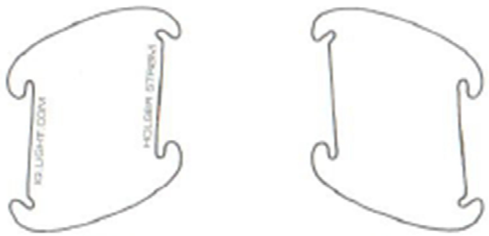
All IQlight™ elements are identical.

The front of each element is marked with a text.



Front Back

The elements are usually assembled with the front facing outward.

Each element has two curved and two straight edges.

A curved edge is ALWAYS placed over the straight edge of another element.

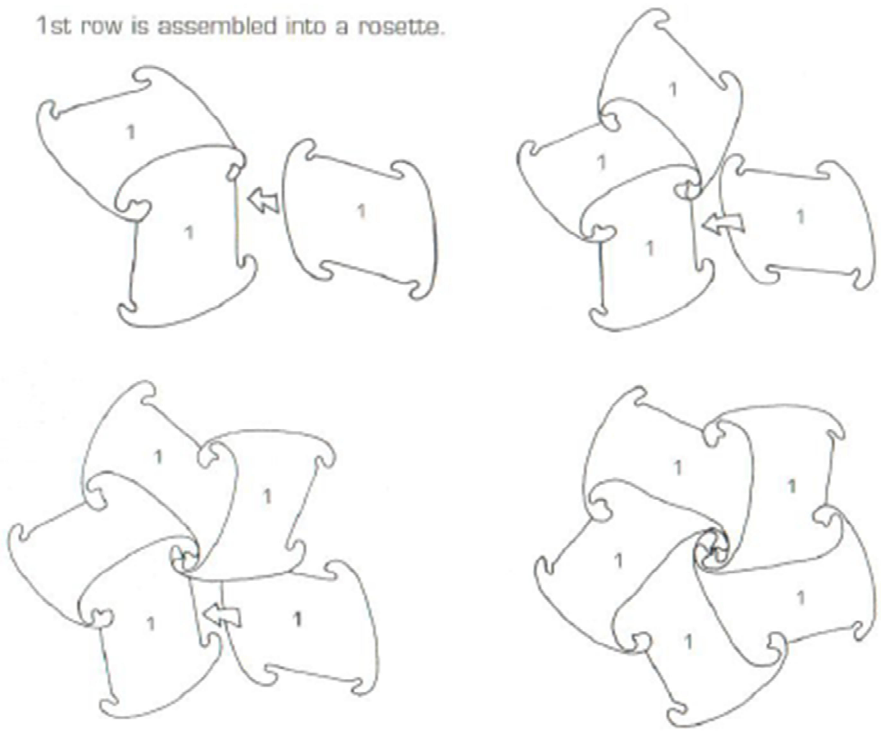
The enclosed poster shows an overview of IQlight™ models.
The number over a model picture shows the amount of elements needed.
The diagram under the picture shows the construction of the model.

To assemble the round IQlight™ model with 30 elements

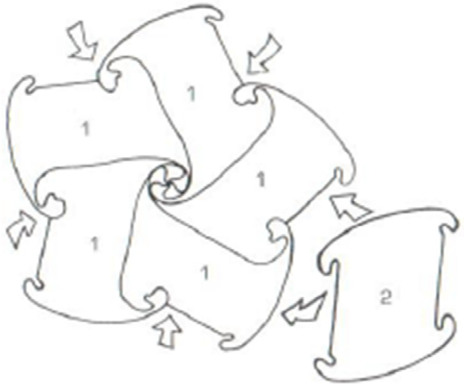
first examine the diagram:

1st row:	5 elements
2nd row:	5 elements
3rd row:	10 elements
4th row:	5 elements
5th row:	5 elements

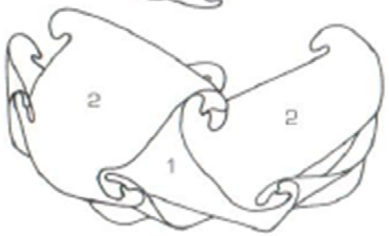
1st row is assembled into a rosette.



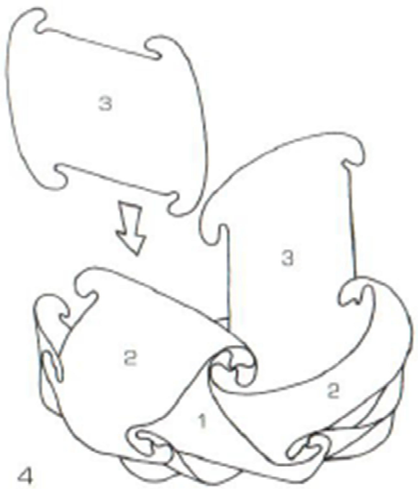
The 5 elements of 2nd row are attached one by one in a ring around 1st row's rosette.

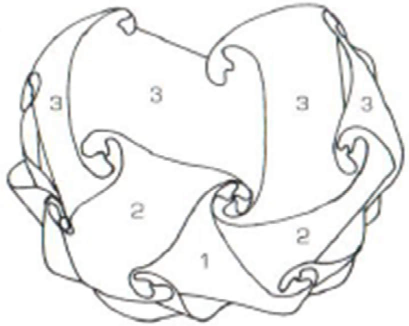


Turn the work upside-down so that it sits on the table like a bowl. See that all the hooks are correctly joined.

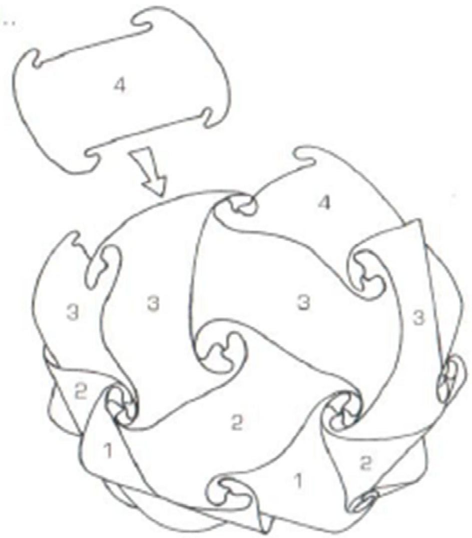


3rd row is a ring of 10 elements, which are attached to the rim of the »bowl« and also joined to each other.

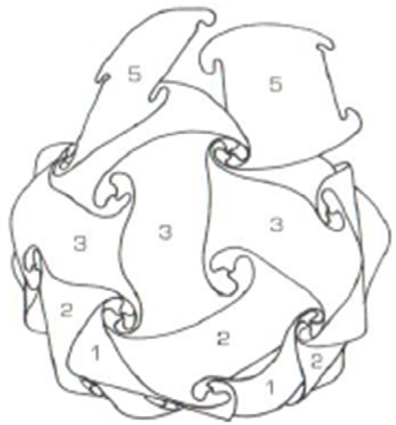




4th row narrows the sphere and...



5th row closes the opening.



When the sphere is finished, check that all hooks are locked, and that curved edges cover all the straight edges.

If the sphere is very difficult to assemble, start again from the beginning. Try marking the middle of the rosette with a piece of string or similar. Remember always to place the front of the elements outward. Check after each row.

(The elements may be labelled with stickers that can be removed after assembly. The 5 elements of 1st row are labelled 1, those of 2nd row are labelled 2, the 10 of 3rd row are labelled 3, and so on).

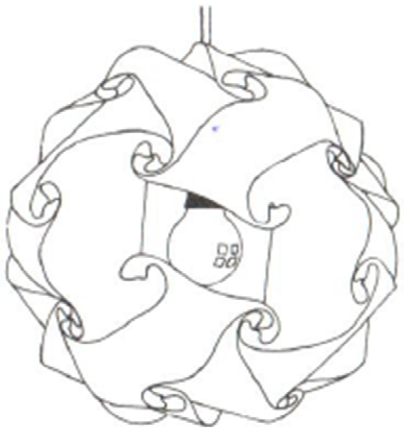
The flex (cord) with socket and light bulb can now be inserted.

The sphere has 12 joints with 5 hooks in each, and 20 joints with 3 hooks in each.

Loosen 2 of the hooks in a joint of 5, and feed the flex (cord) and socket through the joint till the lightbulb hangs in the middle of the sphere.

Close the hooks around the flex (cord).

You can check that the lightbulb is centered by loosening one element in the side of the sphere and looking in.

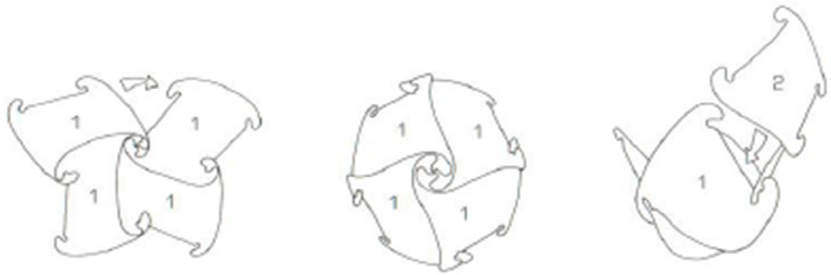


The IQlight™ system offers many other possibilities:

30 elements can also make 2 small lamps (15 + 15 or 12 + 18) or 3 smaller lamps (9 + 9 + 12). The assembly method is the same, but you can start with a rosette (1st row) of 5, 4 or 3 elements, and then continue with more or fewer rings.
Smaller lamps require weaker / smaller light bulbs. See enclosed folder for maximum wattage.

Try to assemble this 12-model:

The diagram shows 3 rows, each of 4 elements:



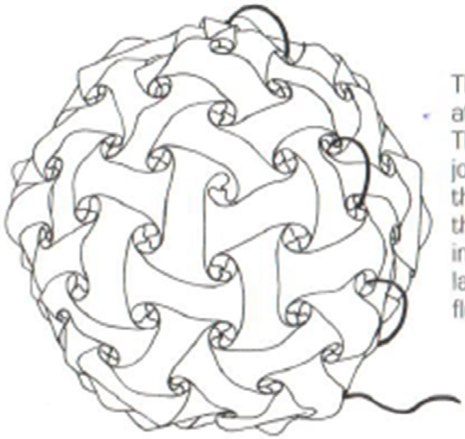
The last row is a little harder to assemble due to tension in the construction. In this model the flex (cord) with socket and bulb is fed through a 4 hook joint.

A number of models are assembled with the back of some of the elements facing outward.
This is shown in the diagrams by a dot in the middle of each element in question.

Take for example a 20-model:

Here the first 2 rows are assembled in the usual way, but 3rd and 4th rows are added with the backs facing outward.
This model cannot be assembled differently, as you will see if you try.

Larger lamps can be made by increasing the number of elements used. The larger you build, the more difficult it becomes, but it also gets more exciting. Theoretically there is no limit to the size or number of variations, but a lamp can be too heavy to be carried by the hooks.



The 120 model is best and most attractive standing on the floor. The flex (cord) can go through a joint near the bottom and follow the surface of the lamp in and out through the joints to finish by going in through the joint at the top. The lamp can then be carried by the flex (cord) if it is thick and round.

The geometry behind the IQlight™ system

Platonic Solids:

The regular polyhedra - solid figures with identical regular polygonal faces - were already known in classical Greece and were named after Plato, who used them in his theory of the structure of the world.

Regular polygons

The equilateral triangle is the simplest regular polygon. The simplest polyhedron, the tetrahedron, can be constructed with 4 of these as its faces.
A tetrahedron can be inscribed in a sphere.

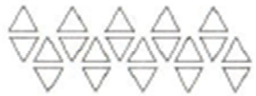
Tetrahedron

The octahedron's 8 faces are also equilateral triangles. As the number of faces in a regular polyhedron increases, the form of the polyhedron becomes more spherical, a sphere having the smallest possible surface area in relation to its volume.

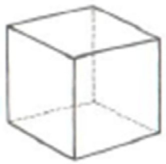
Octahedron

The spherical form is clearly visible in the icosahedron, which is comprised of 20 equilateral triangular faces. When balanced on a point, the icosahedron can be understood as a »ring« of 10 triangular faces with a rosette of 5 faces above and another rosette of 5 below.

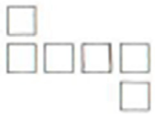
Icosahedron



Besides these 3 polyhedra with triangular faces, we are familiar with one with 6 square faces, namely the regular hexahedron, also called the cube. The cube is probably the most common polyhedron, as the box shape has become part of our culture.

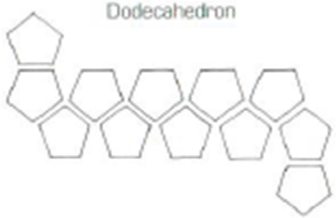


Hexahedron



The last of the 5 Platonic Solids is the regular dodecahedron, which is comprised of 12 regular pentagonal faces with three corners meeting at each apex. It may be understood as a top and a bottom face, with 2 rings of 5 faces each between top and bottom.

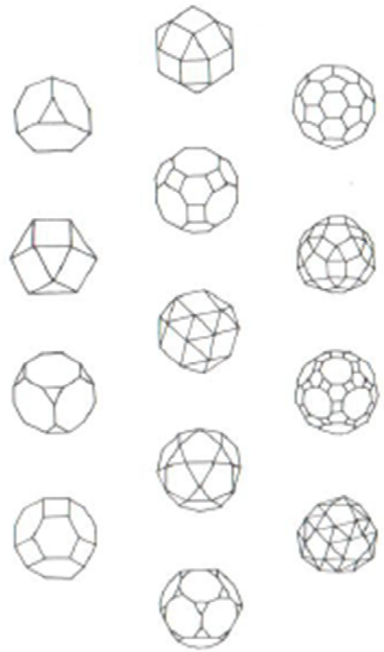
Dodecahedron



When 3 regular hexagons are placed together they form a flat surface, therefore a »sphere« cannot be formed out of regular hexagonal faces only. Regular polygons with more than 6 sides cannot form a polyhedron, as 3 corners cannot meet if the corner angle is more than 120°.

Archimedean Solids:

Archimedes described a series of »semi-regular« polyhedra, whose faces are a combination of different regular polygons. The semi-regular polyhedra can also be inscribed in a sphere and can have hexagonal, octagonal, or decagonal faces combined with triangular, square or pentagonal faces.



Semi regular polyhedra: The Archimedian Solids

Rhombic Polyhedra:

There are numerous polyhedra comprised of non-regular polygonal faces. The two that are dealt with here are both comprised of rhombic faces:

Rhombic dodecahedron)

The rhombic dodecahedron has 12 rhombic faces and is related to the cube, as seen when drawing the short diagonals of the rhombic faces. It is also related to the regular octahedron, as seen when drawing the long diagonals of the rhombic faces.

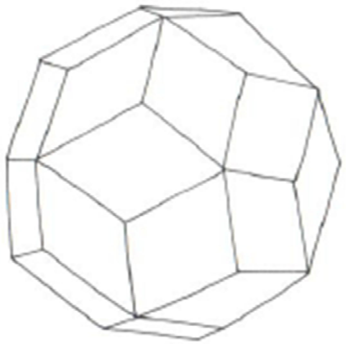
The rhombic triacontahedron has 30 rhombic faces.

All five Platonic Solids can be inscribed in this interesting form, which leads us to the subject of this booklet:

Rhombic triacontahedron

- the IQlight™ lighting system

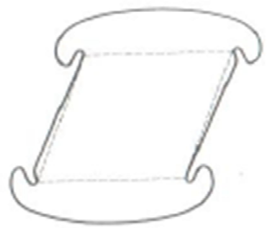
Holger Strøm started taking interest in the rhombic polyhedra in the early 1970's while he was employed by the Kilkenny Design Workshops, Ireland.



As a packaging designer he used cardboard and paper for his experiments in the search for the polygon best suited as an element for building lampshades.

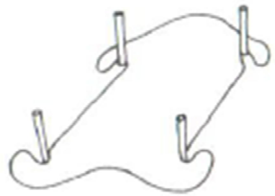
The rhombus was chosen as the basic element, and the rhombic triacontahedron as the geometric model for the construction.

Assembly needed to be as simple as possible, and after several experiments a hook was placed in each corner of the rhombus, the hooks being connected in pairs by a soft curve. Regardless of whether three, four or five elements meet, the corners form decorative circles.



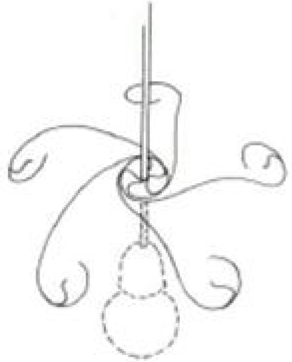
It was also desirable that the same element could cope with different degrees of contortion depending on the size and shape of the construction. The material needed to be more pliable than cardboard and stronger than paper.

Experiments with pliable sheet plastic allowed a new possibility: tension within the element. When a sheet is curved in one direction, it becomes more rigid in the other direction.



The tension was created by lengthening two opposing sides, so they would curve out when hooked together and thereby give the two other sides the rigidity necessary for a 3-dimensional construction.

Because of the flexible elements, both flat and sharply curved surfaces can be formed.
The openings ventilate the bulb and help diffuse the light without showing the bulb.



The tension in the material allows the elements to grasp the flex so tightly, that no other means of mounting is required.

The sphere's function as a lampshade requires a material that admits most possible light while avoiding glare from the bulb.

A rigid plastic sheet met the requirements, and the shape of the element gave an incredible degree of variation in form and size. This is why we have made a small model that you may use for training and maybe assemble in different ways before deciding which lamp you want.

The trade name of the lighting system IQlight™ refers to the geometry: Interlocking Quadrilaterals, and not as you might think: Intelligence Quotient. Have fun!