

Create a shape with U-nu™

Counting and shape recognition for the EYFS & KS1

Children will discover regular polygons, exploring counting, angles, shape recognition & maths vocabulary.

When designing U-nu™ we only used three different angles between the slots on any of the pieces.

- 90° as used on the square, rectangle, circle, curve and one of the angles on the Y-shape
- 135° as used on two of the angles on the Y-shape.
- 150° as used on the angle shape

Ask the child/children to combine a number of the same shape using a 180° angle to join them together; or a straight piece if you prefer (the rectangle for example).

(photographs of three structures)

When built they will discover a quadrilateral, an octagon & a dodecagon; a four, eight & twelve sided shape. You will need to take care when they're building the octagon as there are two angles on the Y-shape.

This task can be extended for the real U-nu™ gurus. Try linking just the 150° angle shapes together. By doing it regularly you ought to achieve a polygon using eighteen pieces. By alternating the shape to be interior angle up – interior angle down, something else will be created. Find out what happens when you just use the 135° from the Y-shapes.



Closing a Quadrilateral

Investigating spatial relationships in the EYFS & KS1

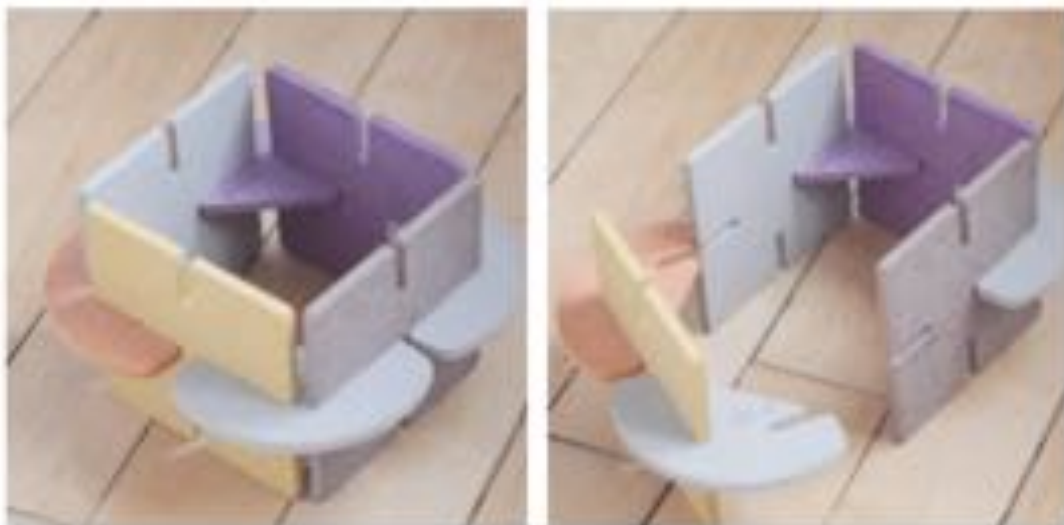
Children understand physical 'laws' when manipulating objects in space.

Depending on the age and ability of the child this exercise can require some adult support, but it's worth helping them understand the principals at play, as this understanding is a transferable skill which will extend the building experience in future structures.

You can begin by asking the child if they can build a closed square; like the walls of a house. They will need four squares for the four sides, and four other pieces with 90° angles in them (the curves look best and simplify the skill being learned). For younger children you may need to demonstrate the shape you want them to build.

The child will be able to put four squares together using three 90° curves, but once they have put the fourth square into its slot, they will not be able to put the final curve in to close the square. We've designed the U-nu™ slots to have a little give, but there simply is not enough space to slot in the final curve.

The child will need to build the structure in two halves and join them together in order to fit the last 90° curve into place. This may be learnt by the child through trial and error but it is worth helping the younger child to understand this principle through demonstration.



Counting on Counting with U-NU™

Basic counting and spatial awareness in the EYFS KS1 & KS2

Children use basic counting and organisational skills.

Every activity that employs more than one object can be an opportunity to count, but basic counting can be extended to include the development of organisational skills. So here are some ideas of how to expand what at first may seem to be a rather pedestrian task.

For younger children in the EYFS let's just get going with some counting of pieces, count the sides, count the colours etc. Okay but what if we extend it to counting the slots, and what if those slots are in a complex structure? What if we ask children in year six to build a complex structure and then ask them how many slots in the yellow pieces remain unfilled? What if we asked the same question but ignored the colour and wanted to know how many slots in the Y-shaped pieces remain unfilled? Obviously the older the children the more complex the counting exercise can be.

I'm sure you can see how the organisational skills are well and truly at play in this exercise. If you don't believe me try it for yourself, it's very easy to loose count when you're dealing with a complex structure with 280 pieces in it. I certainly find it difficult, and I consider my maths and spatial skills to be vindicated by the fact that I invented U-NU™!



Just use one shape of U-nU™

Exploring pattern in the EYFS & KS1

Children will explore repeating patterns learning more about shapes and angles.

This is a really simple activity and I'm guessing that most people reading this far will already have understood how it works. Ask the children what happens if you just use one shape (this obviously won't work with triangles because they only have one slot so the maximum number they can join together will be two, so the activity would be very short!).

The activity works best with the larger sets of U-nU™ and depending on which piece is being used different patterns will occur, this is great as it opens up the conversation of how the shapes are different. Ask the children about the angles and how this affects the structure. Try asking a couple of children to join their structures together, ask them how the new structure differs from the original.



Taking turns with U-nU™

Cooperation communication & planning for the EYFS KS1 & KS2

Children will negotiate with each other and develop empathy for the needs and desires of others.

This exercise can be done in a number of ways; the first is to give a number of children a set amount of shapes. They each take their turn to add one of their shapes to the developing structure, it's sometimes easier to get the ball rolling with a small structure of three or four shapes for them to build on.

The children will learn to take turns. They are likely to offer suggestions as to where the next child should put the next shape. Encourage them to both listen to the advice being offered, and also to allow each person to decide for themselves where the next piece should go, both are valid team activities.

Another variation on this is to get each child to select a stack of one or two shapes. Where they have elected to use just one shape they can either take their turn as before, or the children can negotiate with each other which person should go next. The negotiating can be interesting as each child can have an input on whose shape they feel will suit the developing structure best.



Slots are not compulsory in U-nU™

Creativity in the EYFS KS1 & KS2

Children develop higher order thinking, manipulating & balancing skills.

Children may intuitively choose to connect a piece without using one of the slots. They may even choose to simply lay pieces on others in the structure. Encourage them when this happens or suggest it when you feel it may be appropriate for them to try it. By viewing any area of any piece of U-nU™ as a connection opportunity children can break out of the idea that everything has to be built by the 'rules'.

An extension of this is to build more than one structure that combines with others. This enables children with more experience to build some very articulate representations of real-world objects & creatures.

My seven-year-old son Frank built the train pictured below by employing this very same technique.



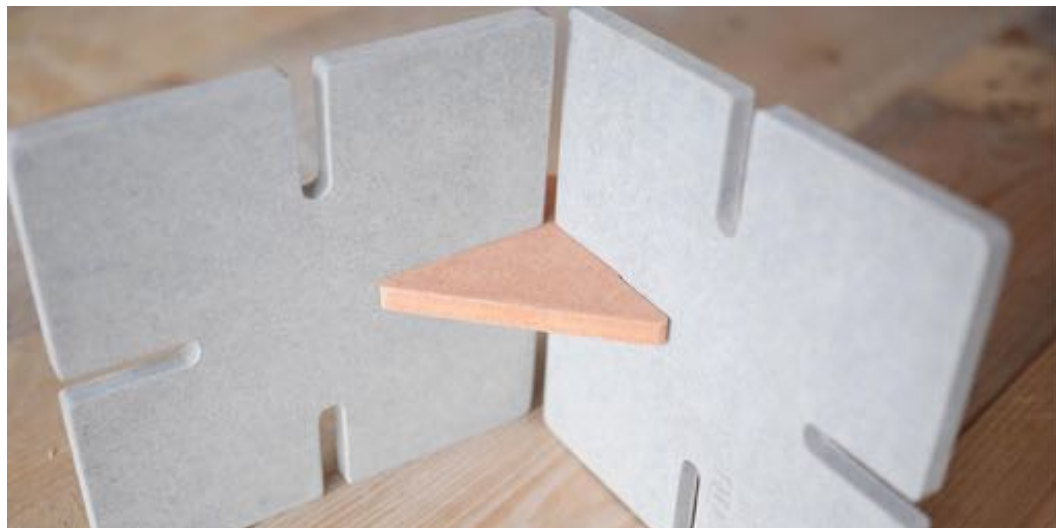
Revealing Hidden Shapes with u-nu™

Shape recognition in the EYFS & KS1

Children discover and name new shapes created by combining pieces of u-nu™

This is a very straightforward question and answer dialogue between the practitioner and the child. As a child builds with u-nu™ they will inevitably create shapes that differ from the original geometry of the pieces they use. For instance when two squares are slotted into a curve shape at right-angles to each other, the interior of the structure creates a triangle. Ask children to find these hidden shapes. They could be described as secret shapes and this may lead to them holding special status in the narrative of the child's play.

Some shapes they discover may actually be in the negative space between the pieces of u-nu™ encourage children to look for these shapes too.



Create an Environment for Furry Friends with U-nu™

Geometry, teamwork, problem solving and PSE for the EYFS KS1 KS2

Children explore designing a structure with a practical purpose

My children Stanley and Frank devised this activity when the weather outside was miserable and they wanted to provide an indoor corral for their guinea pigs rather than leave them in their hutch all day. They began by mapping out an enclosure on a wooden floor with u-nu™ but soon decided to include defined areas for guinea pig activities such as eating, exercising and sleeping.

When I discovered what they were building the structure for, I intervened with the suggestion of first laying down some newspaper for sanitary purposes. They did this and continued to build together.

Before too long they had created a structure with a roof, which was open on one side, they decorated it with a spire of sorts and lined the inside with sawdust bedding describing it as a guinea pig palace. Outside this structure the boys decided the guinea pigs needed an area for eating and drinking and cordoned off an area for this purpose incorporating an arched doorway into the dining area.

Happy that the physical needs of the guinea pigs were now met, and that the corral perimeter kept their pets from wandering off, the boys decided to create what they earnestly believed would be a kind of guinea pig assault course with bridges and fenced off paths that formed a maze leading to a piece of broccoli. In the end the guinea pigs took some persuading that this was an activity they would relish but they did seem to enjoy the broccoli.

By the time the structure was finished, Stanley and Frank had installed towers along the perimeter and had incorporated written signs denoting the purpose of each area, which they stuck on to the structure.

The guinea pig corral was deemed a great success but we had to disassemble it to reclaim our dining room in time for an evening meal. I took care to disinfect the u-nu™ they'd used as some of it had inevitably become wet when the pets had felt the call of nature.

This activity can be adapted for a setting that doesn't have pets by substituting guinea pigs for stuffed toys or small world figures.



Tidying up with **u-nu™**

Shape and colour sorting in the EYFS and KS1

Children categorise shapes and colours matching and creating patterns

An ongoing activity in many settings involves encouraging the children to take responsibility for their own environment. We do this at every opportunity as it helps the children to develop as independent people.

Play will often result in an untidy area within a setting that presents problems for future activities if not dealt with. In our own nursery setting we have a defined area for construction and this forms part of our continuous provision. In this area we have low shelves where we keep the construction toys. On the u-nu™ shelf we have stuck photocopied pictures of each of the seven u-nu™ shapes.

When it comes time to tidy away we encourage the children to find the shapes and return them to sit on top of the corresponding picture on the shelf. Some children actually relish this activity; sorting the shapes into groups and then putting them into a colour order that they find pleasing before returning them to the shelf.

We always allow a little extra time to complete this activity as shape sorting is in itself a great way to develop higher order thinking in young children.



Stacking Pieces of **u-nu™** to Create a mood

Exploring pattern, aesthetics and a visual vocabulary in the EYFS KS1 & KS2

Children devise a colour order to place pieces of u-nu™ describing a mood

Many children have enjoyed this activity at one time or another. For the very youngest child there is a certain satisfaction to placing things in a repeating pattern. The beautifully subdued colours of u-nu™ have been chosen to compliment each other which heightens the enjoyment of this activity.

As a practicing artist I have often been seduced by the effect that one colour has upon another, and as an Art teacher I've watched many students enjoy the same activity. Combining different colours creates different moods. For instance stacking the two darkest colours, brown and purple alternately will produce a dark and serious effect, while somehow replacing the brown with yellow produces a much more cheerful mood and changes the way we view purple.

Explore this with children of all ages and encourage them to describe a mood with the patterns they produce.

Stacking pieces in a pattern can also provide a variation on the appearance of any structure. Take for example an activity where some children have built a bridge. They will have built some form of leg to raise the bridge from the surface it stands on, by replacing this 'leg' structure with a stack of u-nu™ pieces in a pattern they will be able to accentuate certain characteristics of the bridge. As described earlier, dark pieces may provide a serious air of gravity and solidity, whereas grey and yellow stacked together may provide an air of floating lightness.



Build a Vehicle with **u-nu™**

Science, problem solving, & creativity in the EYFS KS1 & KS2

Children explore the attributes of vehicles and recreate them with u-nu™

The very first time I introduced the prototype of u-nu™ to a group of pre-school children, within minutes some of them had created what they described as spaceships. One child filled all four slots on a circle to form these rudimentary spaceships, with a triangle denoting the front (pointy) end. Once one child had made one of these spaceships other children joined in. Before too long there was a whole bunch of them on the floor and lines were being drawn up between the goodie and the baddy spacecraft and one child was getting ambitious with a design for a mother ship.

Fantasy spacecraft are a great way of children exploring the different shapes and ways of connecting u-nu™ as there can be no right or wrong outcome, and the finished structure will form the basis of narrative play.

As children become more acquainted with u-nu™ their structures become more sophisticated, they will design vehicles using the circle shapes for wheels and building up from there. The wheeled vehicles can be tricky for a younger child and indeed present significant challenges for older children, but the resilient nature of a child's imagination will result in children of all abilities describing the structure they have built as being a car or a train or any other type of vehicle.

Rockets are ever popular as are other flying machines. Some children use the large scale of u-nu™ to create vehicles that they can then interact with as if they were driving or flying them.

Older children can attempt to build more accurate recreations of vehicles such as trains or cars. They may design a vehicle that has appeared in a book or something they saw on a class visit. Always remember to photograph the finished structures and use them to inspire the next group that undertakes the vehicle building challenge.



Abstract Symmetry with **u-nu™**

Patterns, geometry, vocabulary & creativity in the EYFS KS1 & KS2

Children explore symmetry and abstract design with u-nu™ using language to describe form

Symmetry is a natural outcome for many children building with u-nu™. Each slot provides a new opportunity to place the next piece into a structure and by balancing this with an identical piece on the opposite side a symmetrical repetition will develop.

There is a great deal of satisfaction to be gained by allowing a structure to evolve rather than be predetermined from the outset and u-nu™ is the ideal construction set to encourage this freedom. By then imposing rules of symmetry upon the development of the sculpture children feel the outcome is ordered and therefore, somehow more valid.

This is a fabulous way of introducing the idea of abstract form with young children. We can encourage them to describe their structures in terms of how it makes them feel; whether it is calm or boisterous; happy or sad; heavy or light; serious or funny.

By asking these questions of a child who has built a structure they are pleased with we can introduce new vocabulary appropriate to the age group in question.



Building a Wall with U-NU™

Dexterity, spatial awareness and balance in KS1

Children will develop handling skills, cooperation skills and will be dealing with issues of stability.

In this activity you may observe children assembling panels of U-NU™ as they play, combining large shapes such as squares or circles using the rectangles to join them together. Ask them if they can repeat the exercise and join the resulting structures together. Before long they will have assembled a panel incorporating numerous pieces. Ask the children to see if they can combine the pieces so that they stand up on their own. Some children will plan to join the panels together using angles to provide stability or by giving the panels stabilising ‘feet’. Both methods work, but some children may need a little help to arrive at this solution, that’s okay, they will still be dealing with the challenges of dexterity and balance; keeping the panels together as they join to make larger and larger walls.

Once children have got the idea this is a fantastic activity building ever-larger enclosures. The combination of the colours provides a very satisfying aesthetic. Encourage the children to select which colours and shapes to use; redesigning & modifying the resulting pattern to suit their desired aims and intentions.



Going the Distance with U-NU™

This activity is great for either KS1 or KS2.

Children will explore collaborative creative construction, weight distribution, measuring & subtraction.

Split the class into groups and give them an equal number of pieces making sure they all have the same number of each shape. Give them 20 minutes to build a structure that sits firmly on the desk or floor but has one long arm protruding as far as they can get it from the base, at the end of the activity the arm must not be supported by any other object.

The children are then asked to measure the distance from the base to the tip of the farthest piece in the air. Naturally the children will counter weight the structure and because this could result in two arms of equal length, they will need to subtract the distance of any other part of the structure that protrudes from the base as shown in the photograph below. There can be a winner for distance, design and perhaps even most ambitious!

