

Qubits[®]

BUILDING SET



Welcome to Qubits!

Congratulations for selecting the Qubits Building Set as a worthy addition to your #STEM - #STEAM Makerspace Classroom. Also perfect for Homeschool Bins.

Enjoy our digital booklet. Please browse the photos for inspiration and instruction.

Welcome aboard!



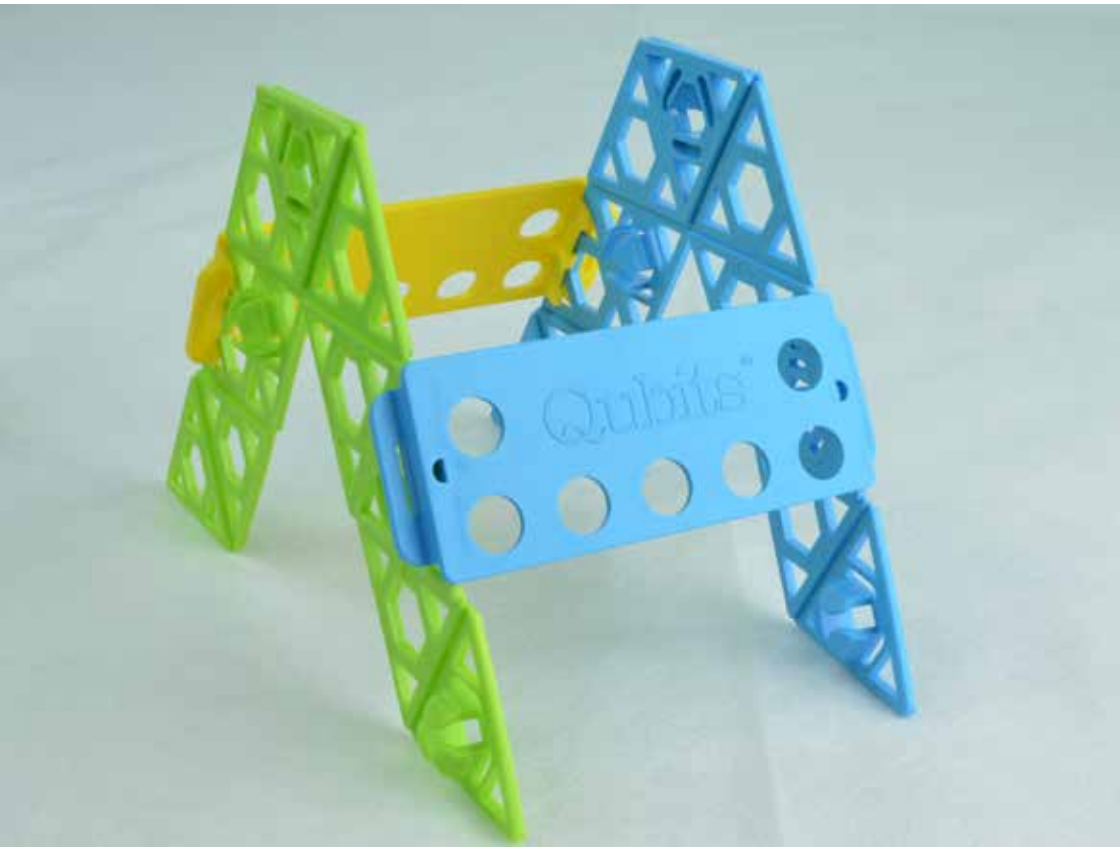
They FLOAT!

Shown with a slab of 2" closed-cell foam

This PDF booklet presents photos submitted by our customers along with pics taken by our staff.

These assembled projects will serve as inspiration. Zoom in to see the details of their construction. Qubits are perfect for the Makerspace / STEM / STEAM environment. You can bend Qubits, score them with cuts, modify them with clippers, attach things to them with Hot Glue, secure them with Beads and strap them with Zip-Ties. Whatever works to help you build a complex contraption is fair game.

There are NO RULES.

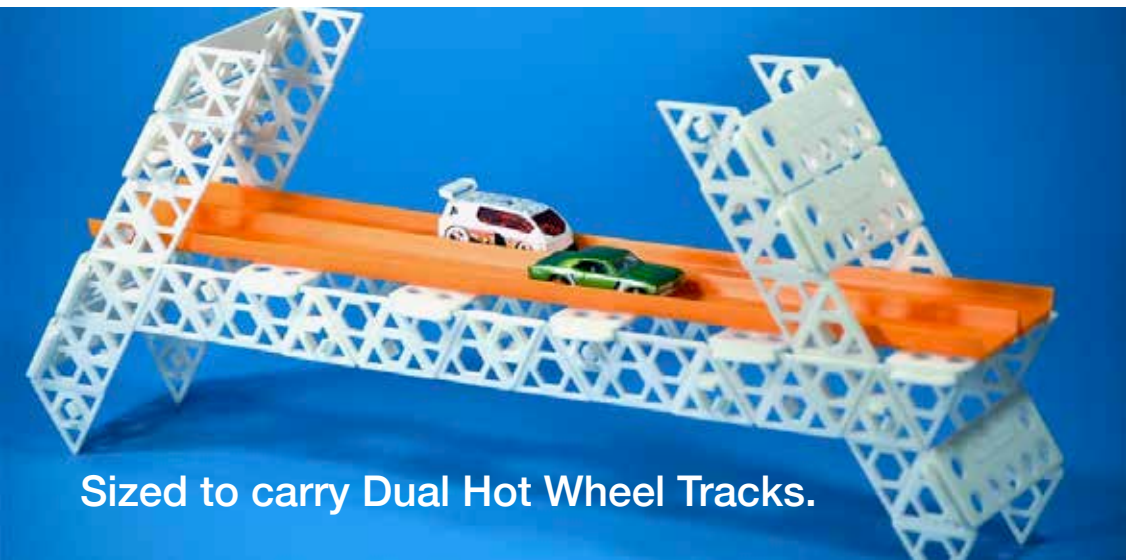
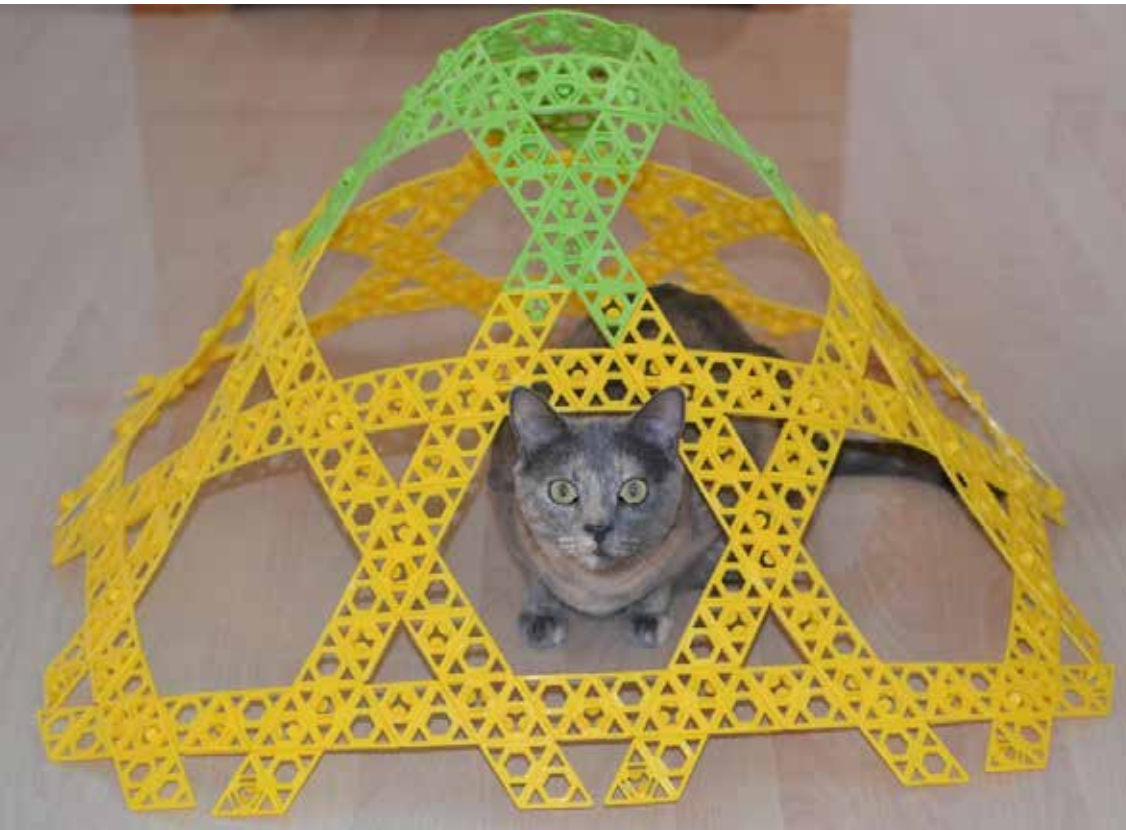


Brief History

Qubits started as a US Patent for a modular building system. Similar in many ways to the Geodesic Dome patent by Buckminster Fuller.

The Qubits patent number is printed on every piece. Can you find it?

Type that number into Google Search with the word **PATENT**. You can then read the actual United States Patent.



Sized to carry Dual Hot Wheel Tracks.

In 2007 The Modular Building Element became the Qubits® STEM Building Set. Qubits were also featured during the First Season of ABC Shark Tank. 1st version of Qubits were sold by Discovery Toys. We are currently producing and selling Qubits 2.0 Since then our toy has been adopted by over a thousand classrooms for use in their STEM - STEAM & Makerspace Labs.

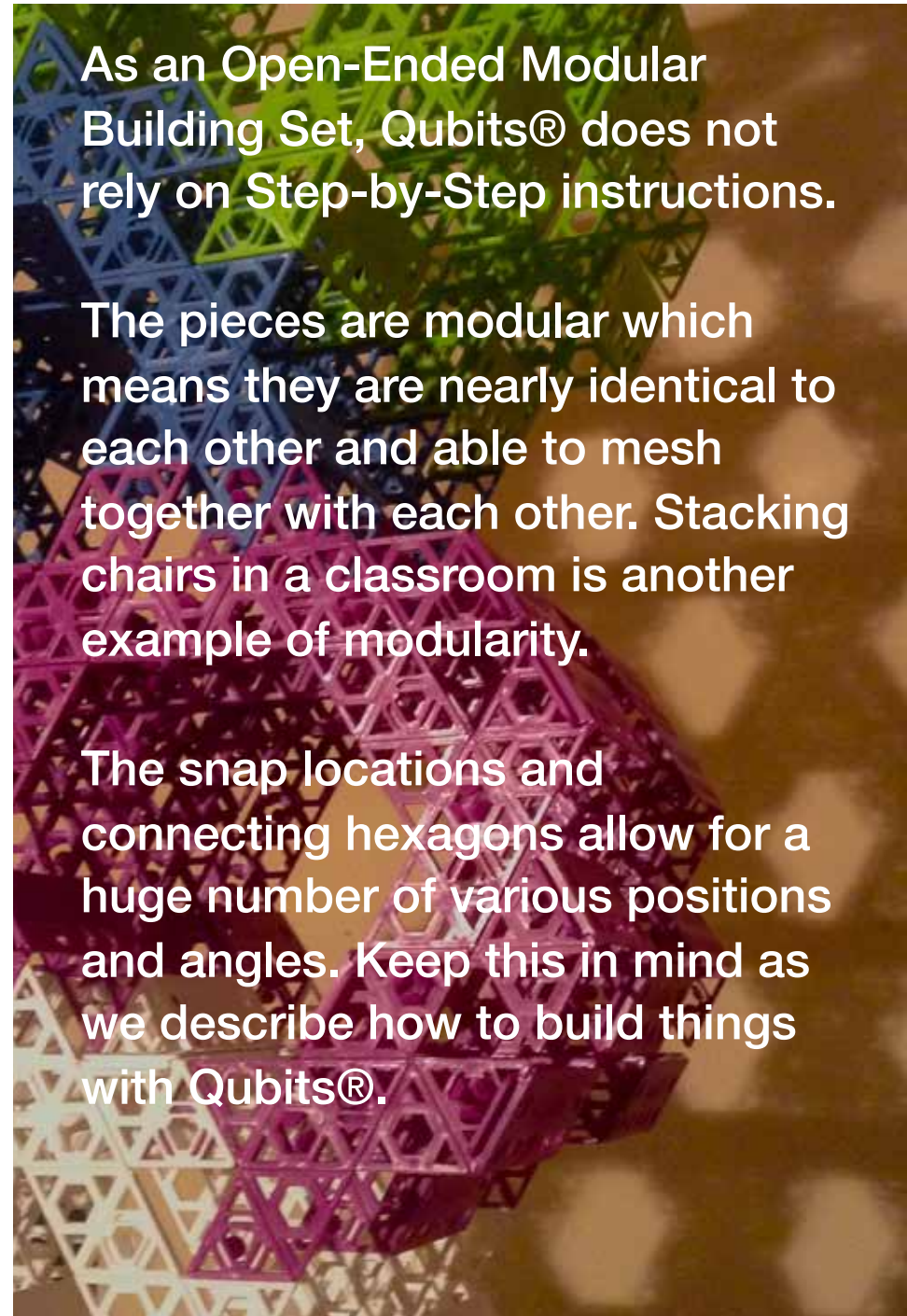
It is compatible with many subjects, Engineering, Architecture, Structures, Robotics, Biology, Geometry, and Math.

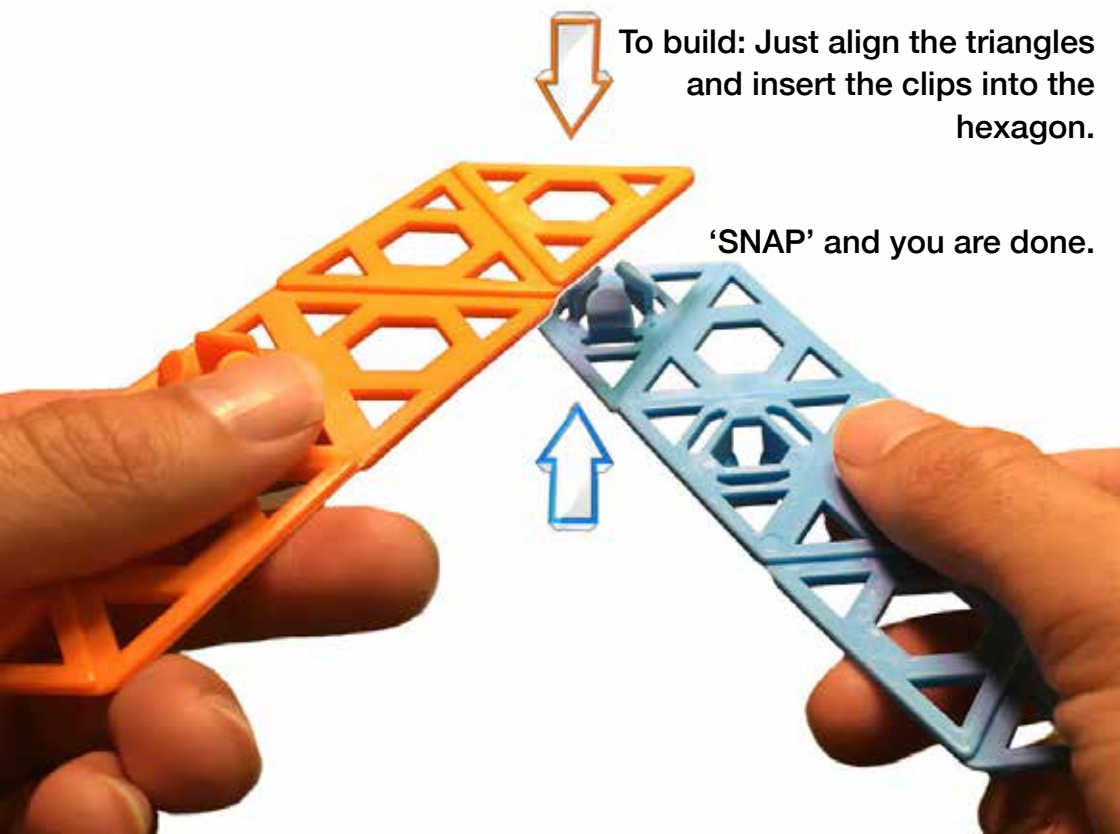


As an Open-Ended Modular Building Set, Qubits® does not rely on Step-by-Step instructions.

The pieces are modular which means they are nearly identical to each other and able to mesh together with each other. Stacking chairs in a classroom is another example of modularity.

The snap locations and connecting hexagons allow for a huge number of various positions and angles. Keep this in mind as we describe how to build things with Qubits®.





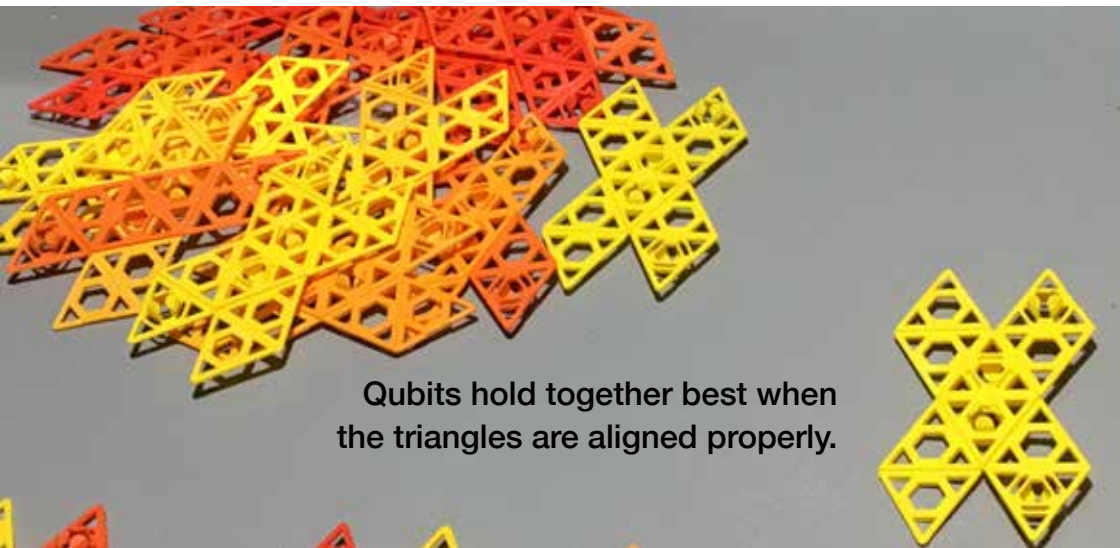
To build: Just align the triangles and insert the clips into the hexagon.

'SNAP' and you are done.



The Bridge Piece snaps onto the Qubits like this.

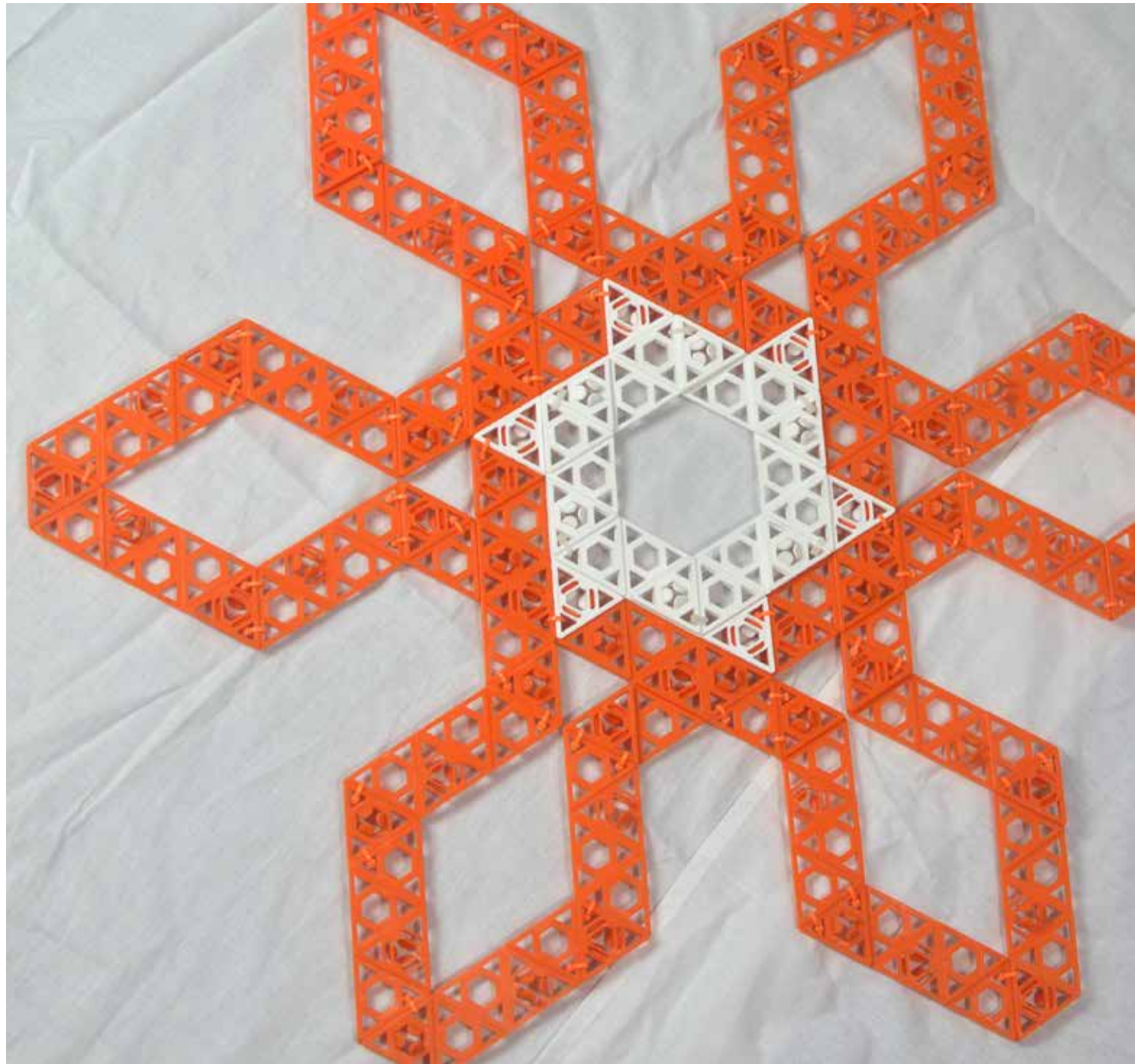
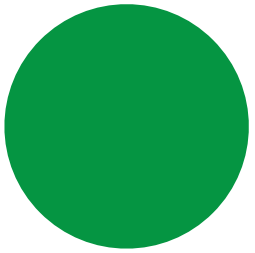
EASY TO BUILD!



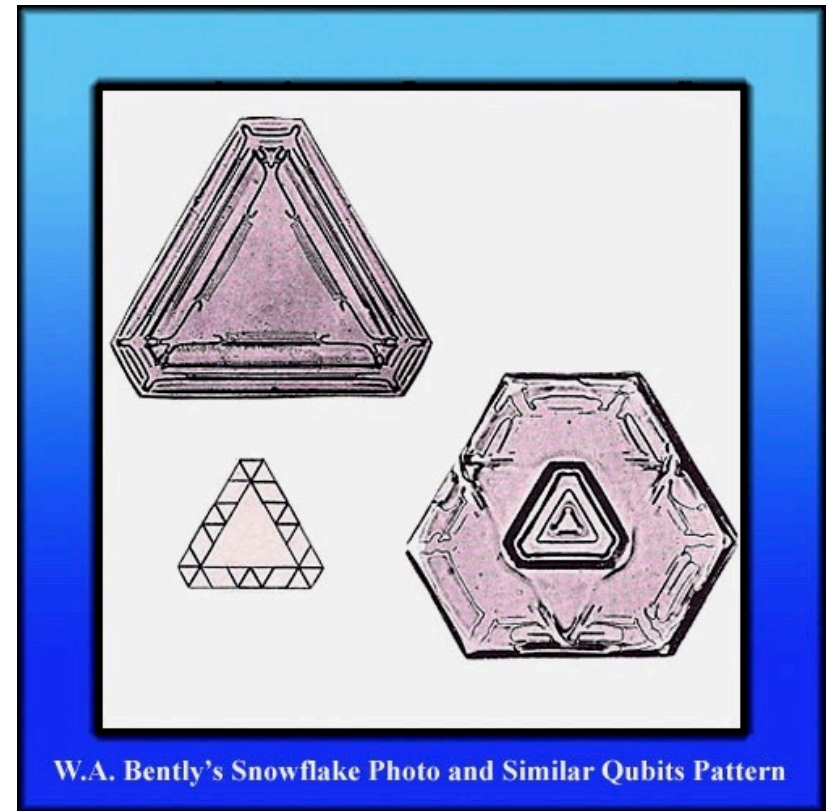
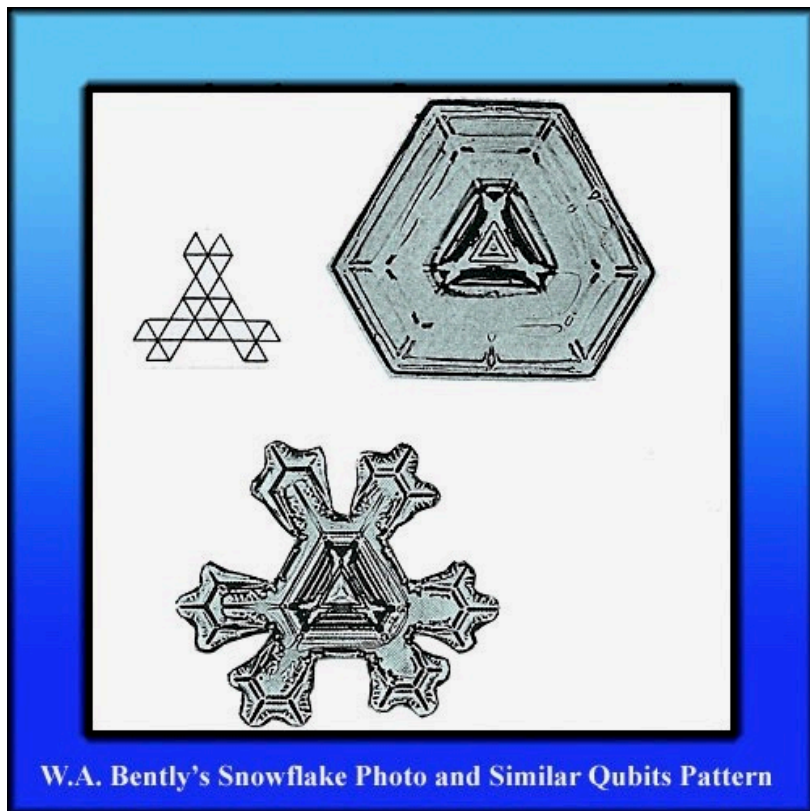
Qubits hold together best when the triangles are aligned properly.

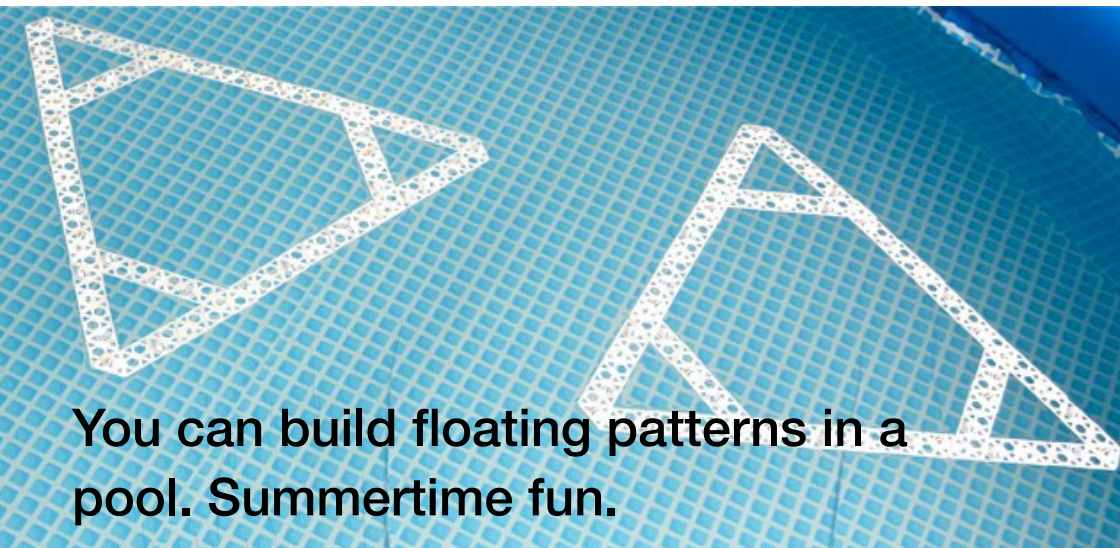
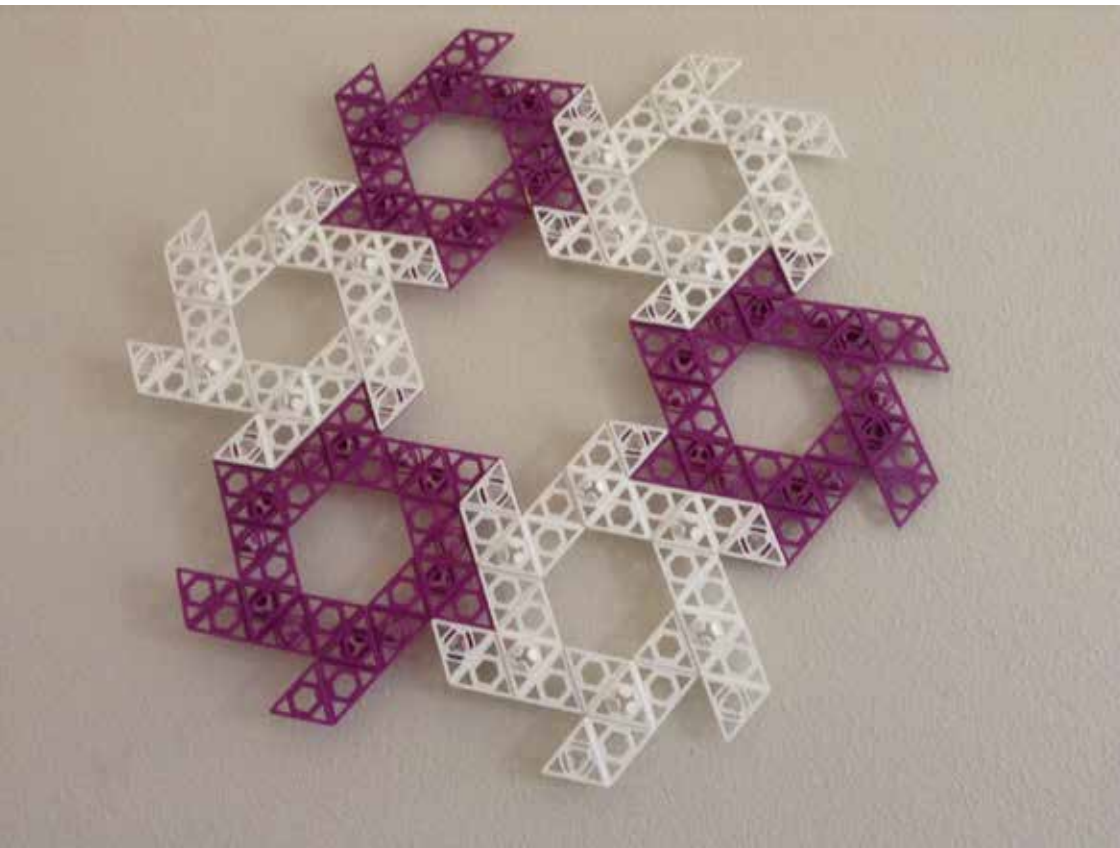
2D Patterns

Geometric
Symmetry



Geometric Patterns exist in Nature at many levels. At a microscopic scale you can see patterns in snowflakes. Qubits can match those patterns. Play with patterns on a tabletop. How many different ones can you make?





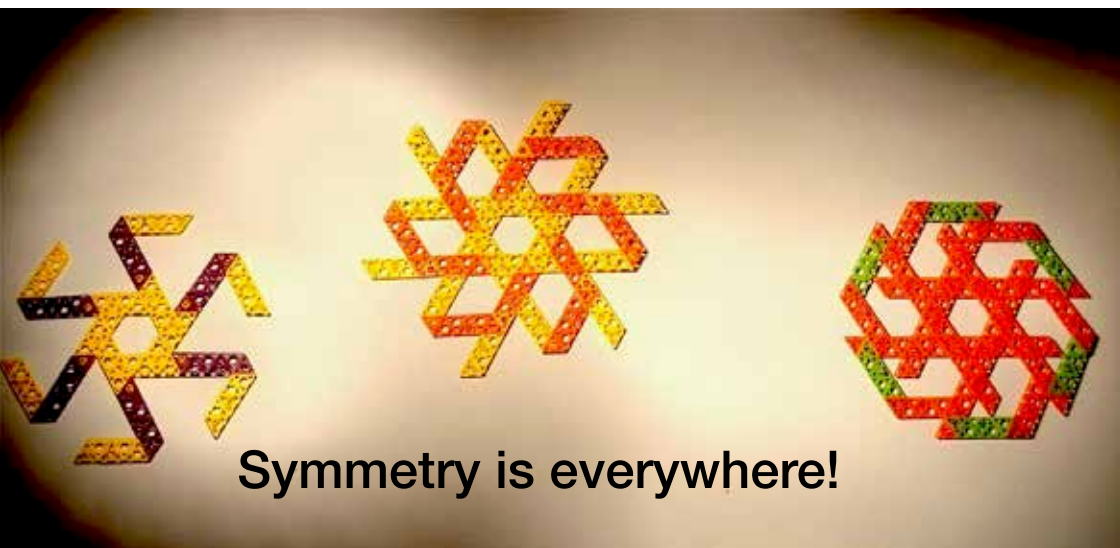
You can build floating patterns in a pool. Summertime fun.



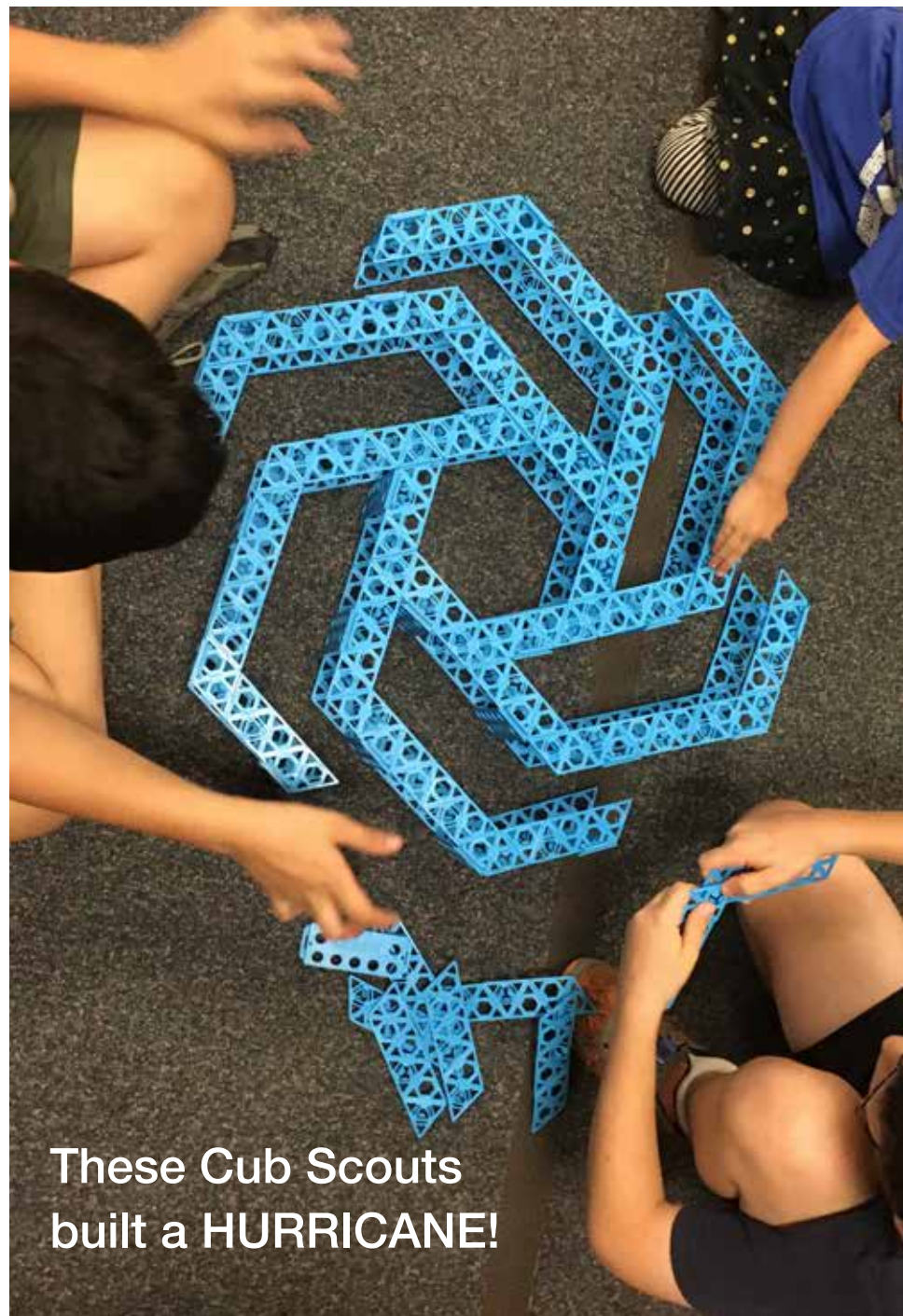
Build each of the shapes shown on the instructions that came with Qubits.



You can also invent your own symmetrical shapes.



Symmetry is everywhere!



These Cub Scouts
built a HURRICANE!

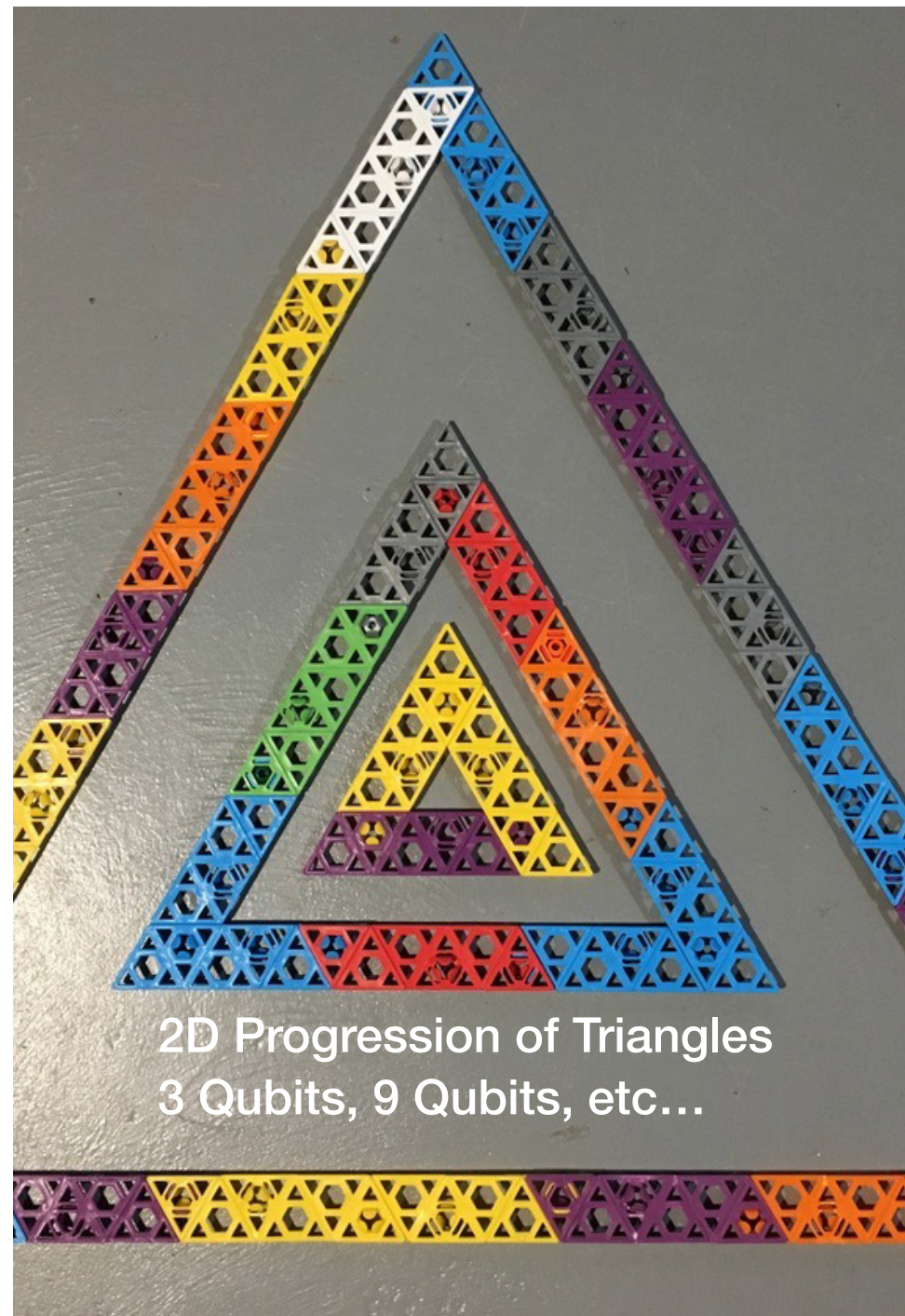


Springtime Artwork on a Classroom Bulletin Board.



Bottle Rocket Design

See the Bi-Lateral Symmetry?



2D Progression of Triangles
3 Qubits, 9 Qubits, etc...

HOOPS

They Introduce Progression

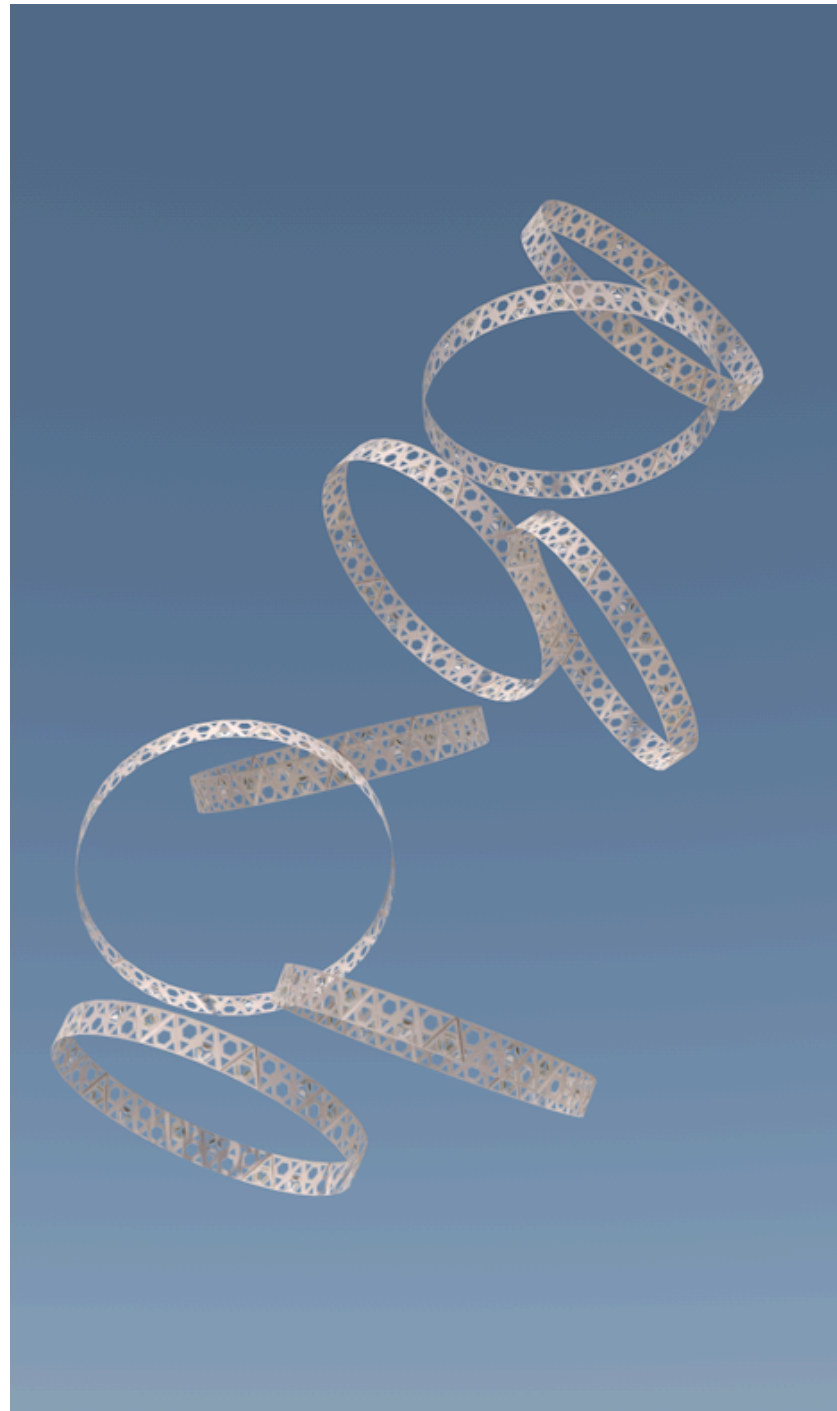
Hoops can be made with the following number of Qubits. This is a geometric sequence.

2,4,6,8,10,12,...

* * * *

Hoops are an important part of tubes and spheres. Make them the first shape you master.

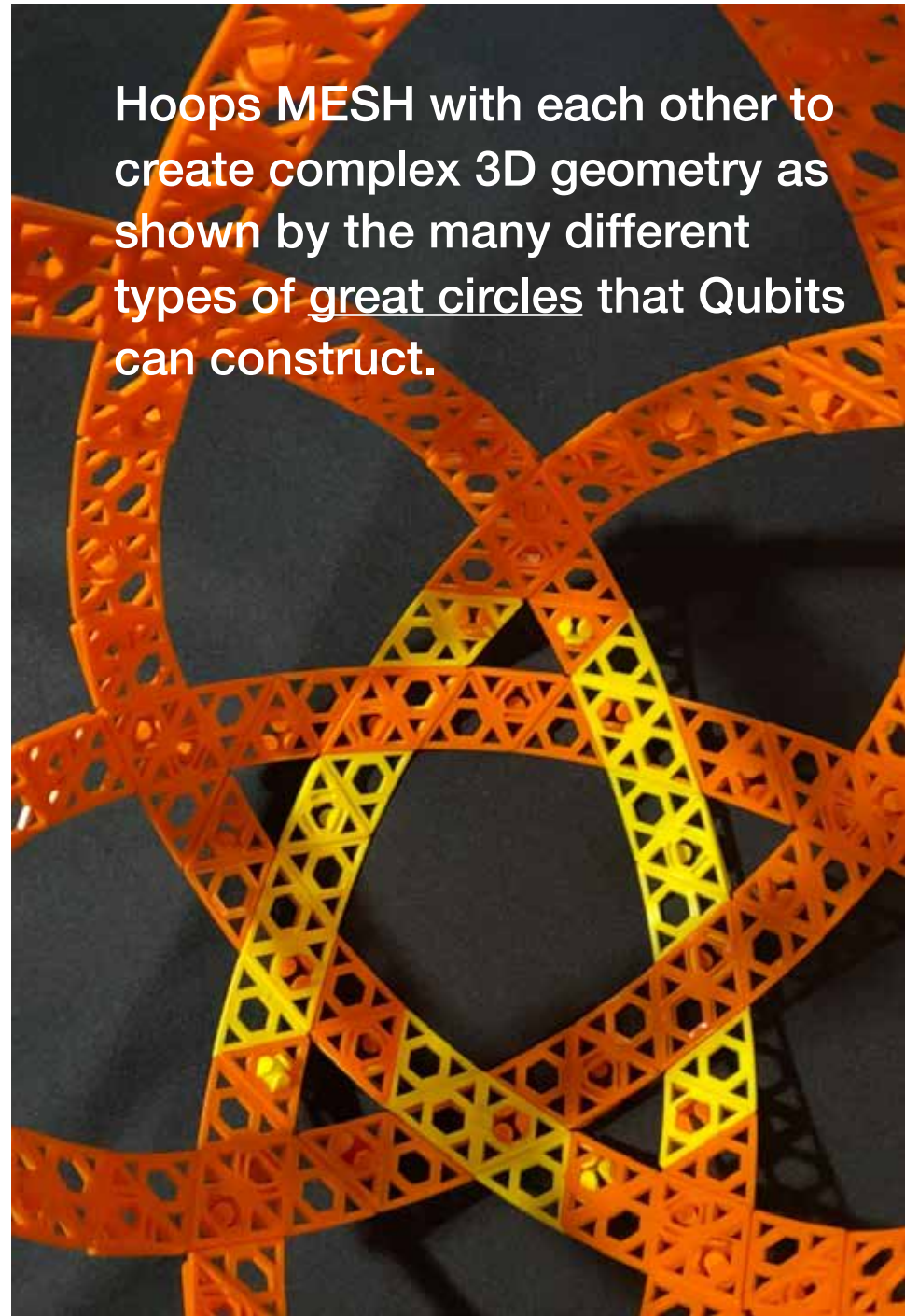
* Sizes 2 thru 8 need to be secured with beads. As explained later.



Hoops work perfectly when building Bird Feeders and Houses.



Hoops MESH with each other to create complex 3D geometry as shown by the many different types of great circles that Qubits can construct.





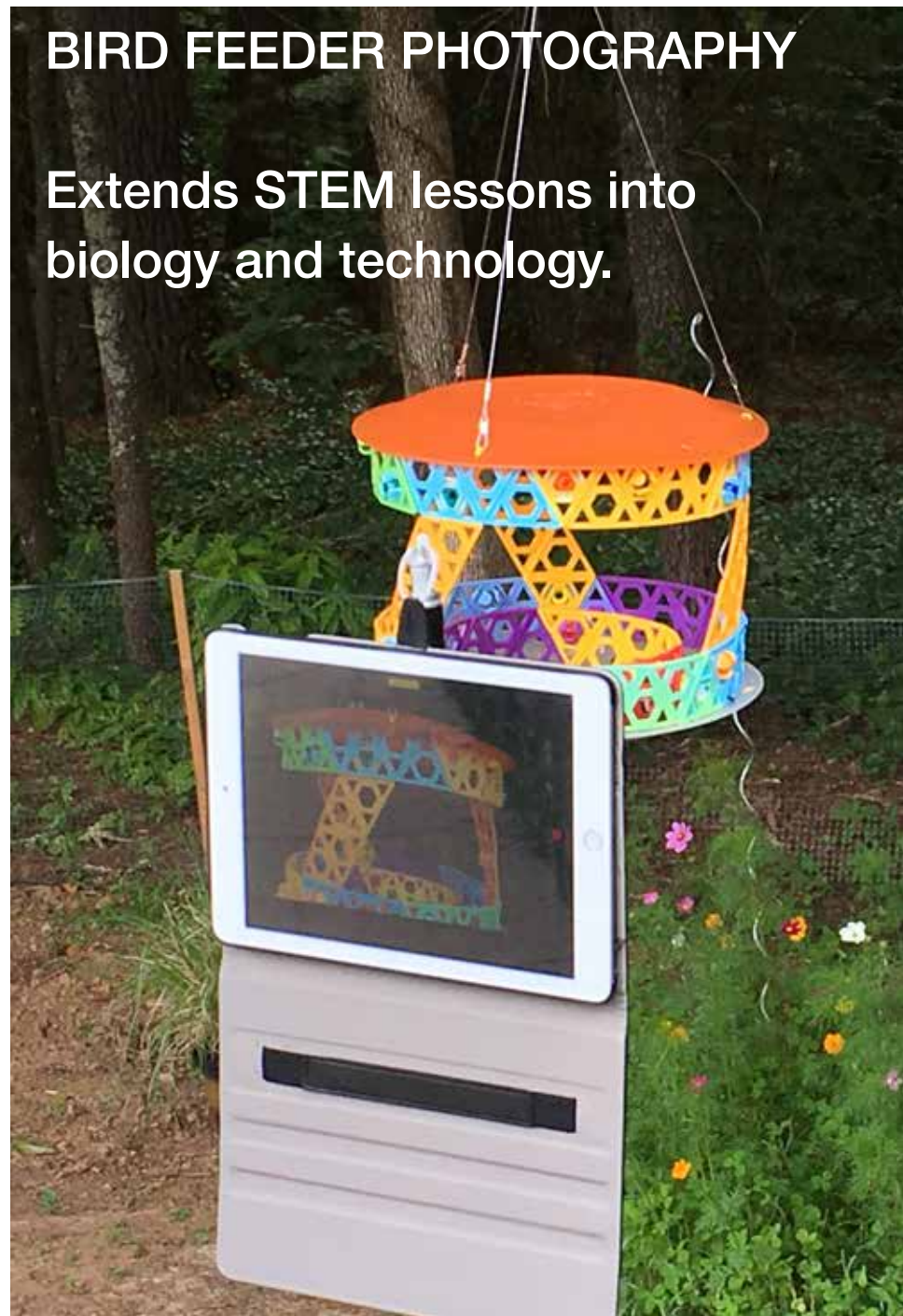
Progression of Qubits Hoops 2,4,6,...



Beads, not Glue.

BIRD FEEDER PHOTOGRAPHY

Extends STEM lessons into biology and technology.



Seedlings color coded and protected, ready for a season of rain and sun.



All ages can make hoops!



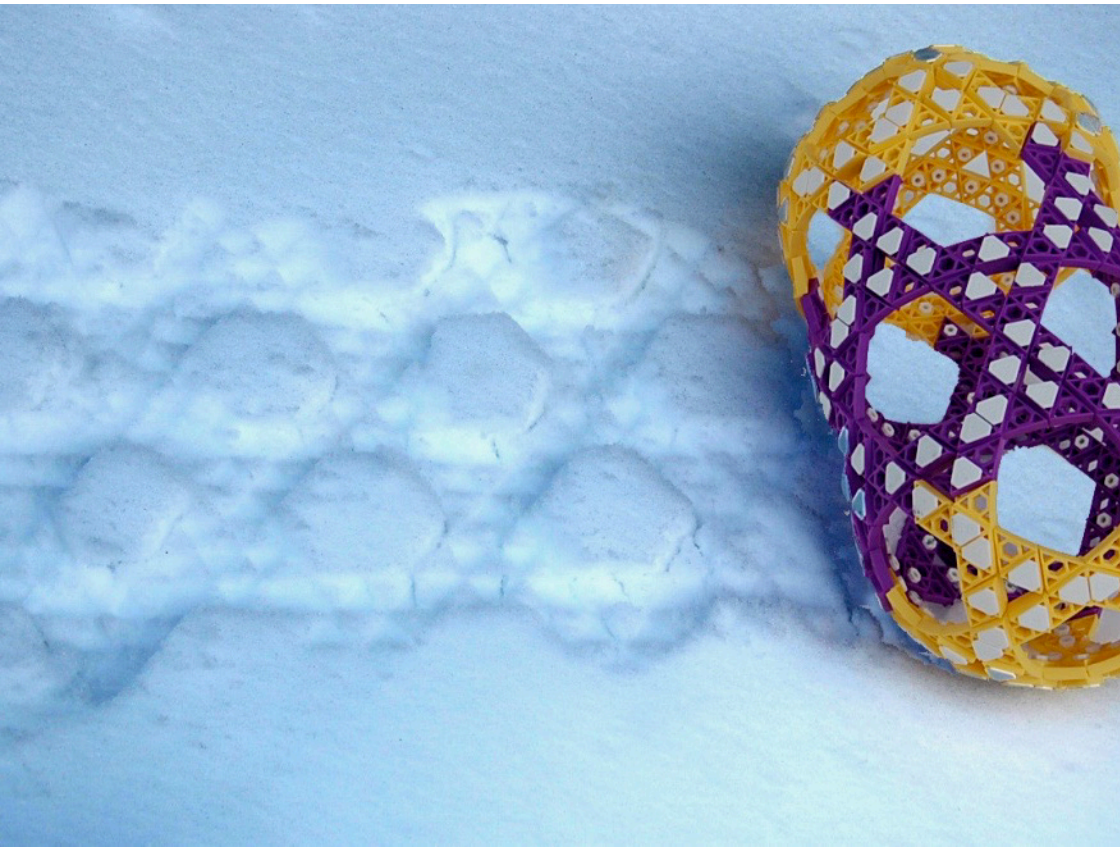
Tubes

Qubits Style

Another 3D geometric shape that Qubits can create are Cylinders or Tubes. The tubes can sometimes be capped off making them Capsules.

We have used tubes to create support structures for horticulture projects. Tomato plants, peas and sunflowers have all benefited from





As you can see from this imprint in the snow, a Qubits tube is made from a repetitive pattern that is connected to itself. Tubes can be various sizes with various patterns. Go ahead and make a repetitive pattern and problem-solve a tube structure.





Meet KK, she is a Cancer Survivor

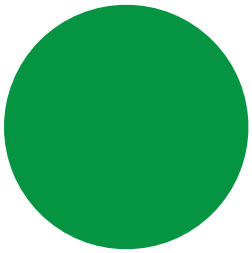
Visit <http://www.whippingchildhoodcancer.org/>

**Hoops make tubes.
Tubes make Rovers.**



Spheres

A speciality of Qubits



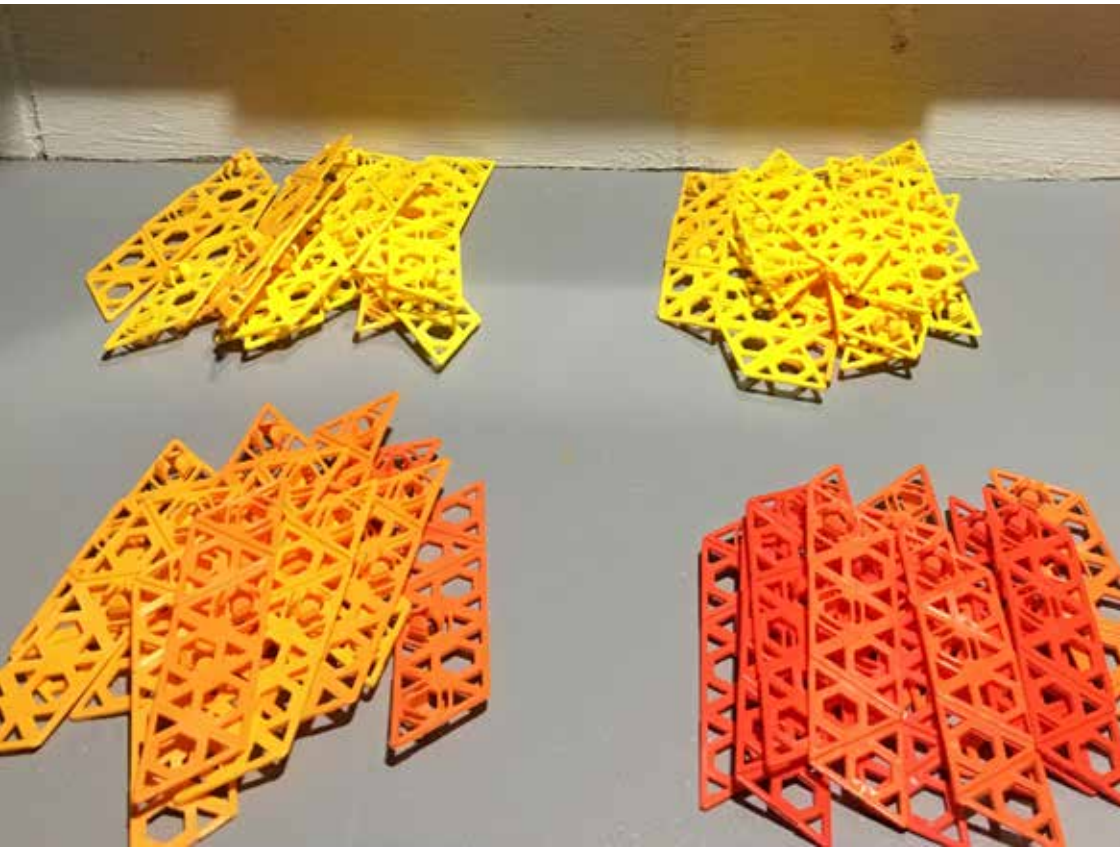
As outlined in the US Patent, Qubits are able to create spherical structures. If you create half a sphere, you get a DOME. If you create an elongated sphere it becomes a TUBE and a perfectly round Sphere makes a BALL which can spin, be tossed or tumbled down a hillside. Pets even like to explore Qubits shapes.





A DOME is 1/2 a SPHERE





Making a Sphere:

There are many steps involved with making a sphere. Let's break it down.

First notice the slight difference between the two Qubits.

There are Qubits with (1) snap connector and there are Qubits with (2) snap connectors. Sort them into separate piles. Put the pile of single connectors to the side, we will use them last.

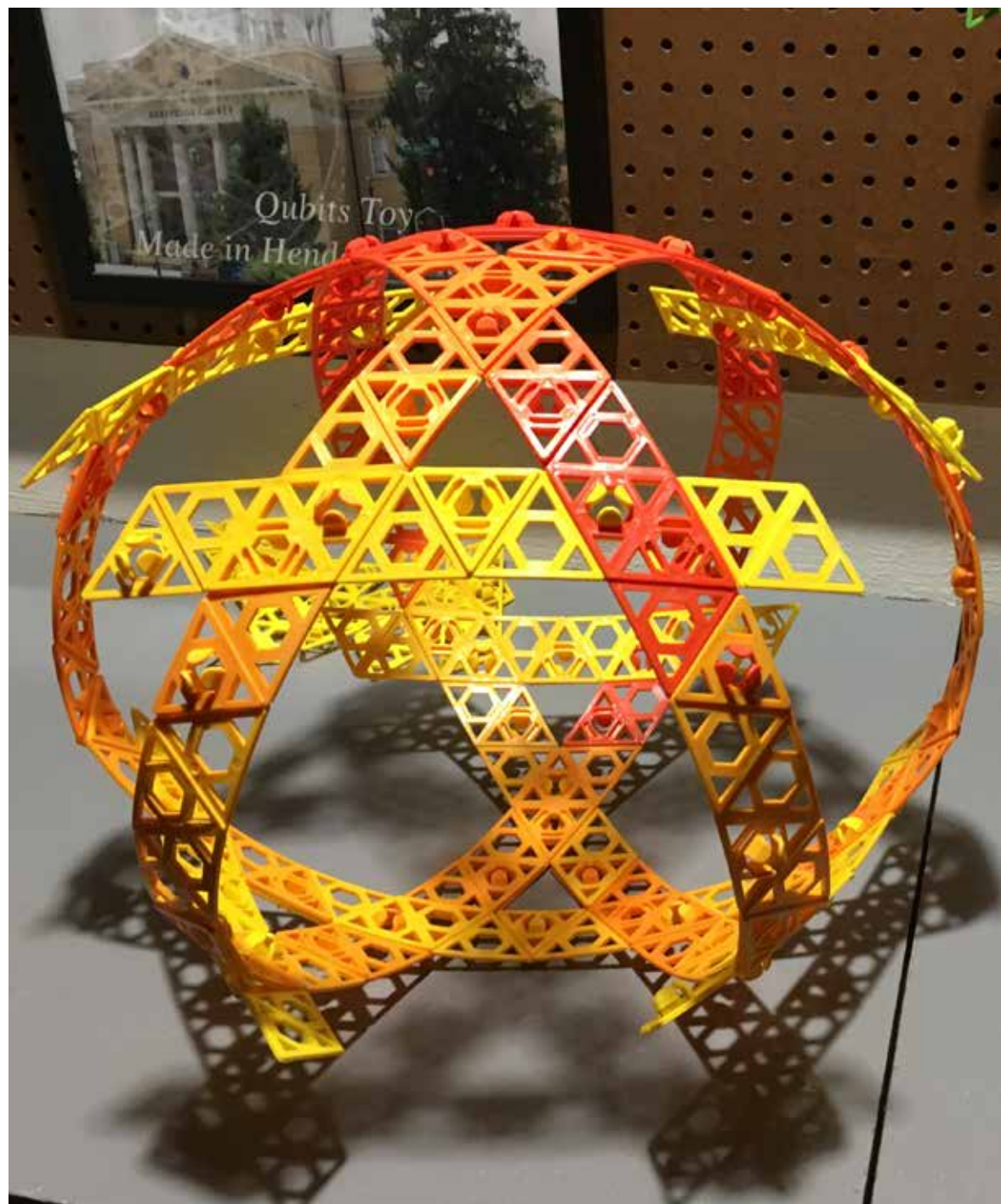
Now count (10) Qubits and make a straight line with them.



Carefully bend the straight line and connect it with itself. Remember the straight line must have 10 pieces. Now you will have made a hoop. The hoop is fragile because the snap connectors could pop open easily. If you have a weak connector, just bend the snaps outward to increase their holding power. Now connect three hoops at the RHOMBUS center to create a symmetrical lightweight sphere. This shape takes 30 Qubits. As you build the sphere will become more sturdy. That is an effect called structural redundancy.

Once you create the 3 Hoop Sphere, you can start to fill in the missing pieces. Start to infill with straight lines of (2) Qubits each. Find where they fit, you should find 6 locations as you can see in this photo. They add up to 12 Qubits. At this point you have used a total of 42 Qubits.

Notice we have not used BEADS to lock the shape. They are not necessary. We will talk about the Large Hole Beads a little later in this booklet.





Finally use the rest of the pieces to connect all the straight line segments into hoops. As you can see the sphere is made of (SIX HOOPS consisting of 10 Qubits each) for a total of 60 Qubits. Whenever you find that the connectors don't connect with each other, just use the single connector Qubits (Remember you put them aside) They will allow you to finish the sphere perfectly.



SMALL SPHERES

In this photo you can see a 60 Qubits Sphere and a 24 Qubits Sphere. The small sphere uses (4) Hoops of (6) Qubits.

$6 \times 4 = 24$ Qubits.

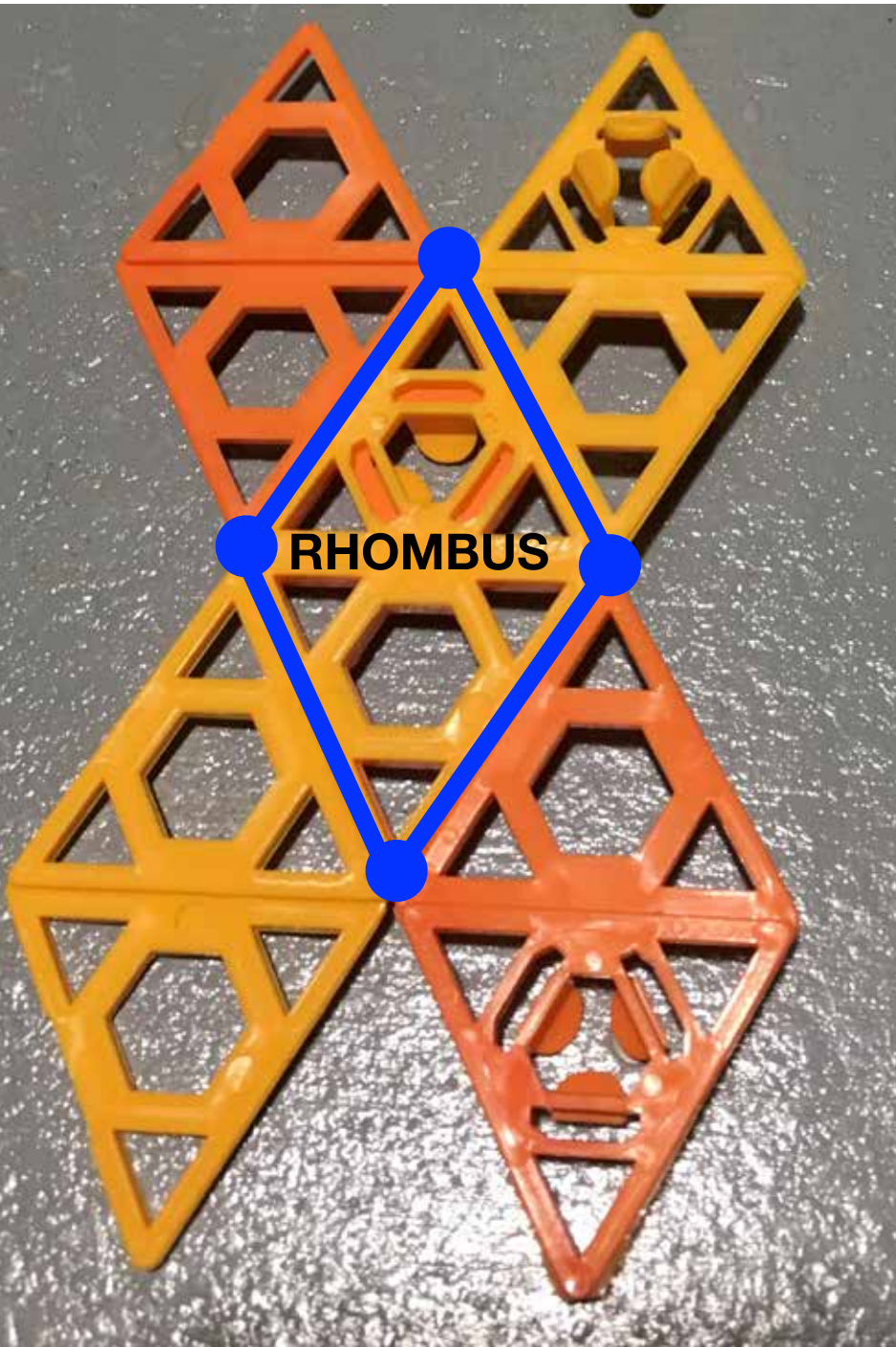
The small sphere really needs the beads because the stress of the tight bend makes it challenging. So lets use a different method.



Meet the Scissor Shape

This shape, made from (2) Qubits, is the most useful shape you can make. It is simply a criss-cross of two Qubits at the center RHOMBUS. Often referred to as the Scissor Shape because in your hand it looks like a scissor.

Take 24 Qubits and assemble them into 12 Scissor Shapes.



Now assemble the 12 scissor shapes into four connected Vortex shapes. The pattern looks like this.

Since this geometric pattern will become a 3D sphere it can be considered as a NET.

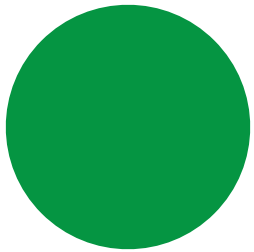
Qubits follows nomenclature of traditional geometry. Many of the terms used in geometry are also used with Qubits.



Once you have a pattern matching this photo, insert beads at each of the snaps to create a strong continuous shape. The shape can then be bent to make a sphere shape. Bead those last connections and you will be done!

Qubits Toolbox

You can build literally anything!



We use many tools in the Qubits Workshop. These tools are not required when just having fun with Qubits. However when building super strong curved shapes, robotics or inventions, you want it to be as strong as possible, these tools will help.



Large Hole Beads are found on our website and Michaels.com. They are perfect for “LOCKING” the Qubits into each other. Simply connect the Qubits and push a bead into the snap. No Glue!

Then when you want to disassemble the shape, just use the tip of any Qubits piece to “POP PUSH” it back out. It really is that simple.

Brick Toys require SUPER GLUE for strength which is dangerous to smell or touch. We use small beads which are far safer and much stronger.



Another useful item are 4” Zip Ties.

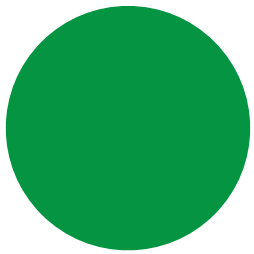
Found at any Home Depot. Great for attaching electronics to Qubits. If there is no other way of making a connection, Zip-Ties will do the job.



Plastic snips, needle nose, allow you to trim the zip ties. Remember always wear your safety goggles when building with zip-ties and beads.

Robotics

Qubits connect with Technology

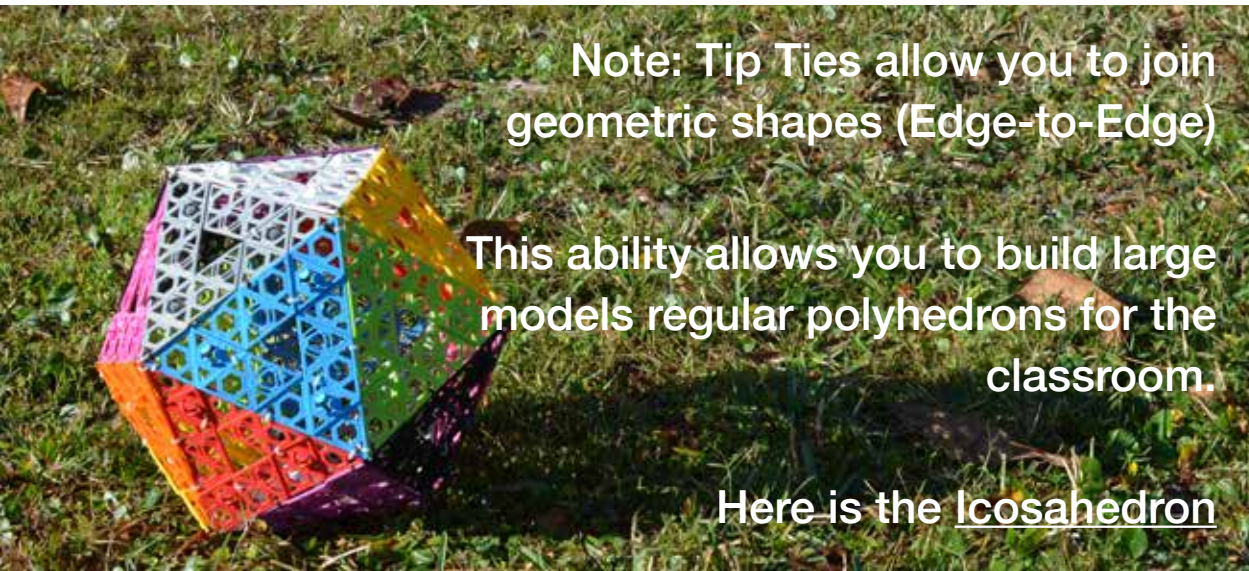


Those holes and small triangles are perfect for threading wires for electronic projects.

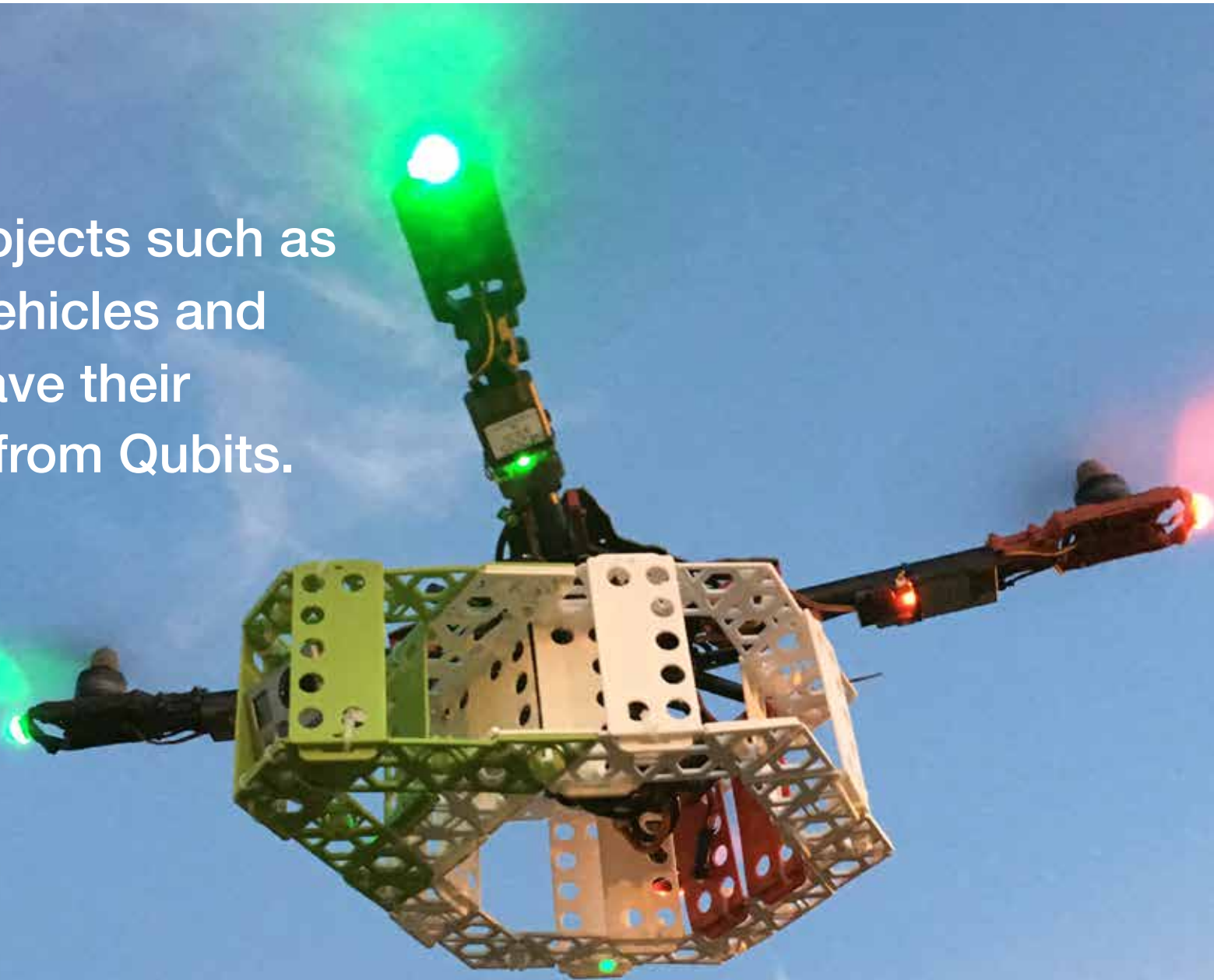
Note: Tip Ties allow you to join geometric shapes (Edge-to-Edge)

This ability allows you to build large models regular polyhedrons for the classroom.

Here is the Icosahedron



Advanced projects such as drones, RC vehicles and robots can have their chassis built from Qubits.





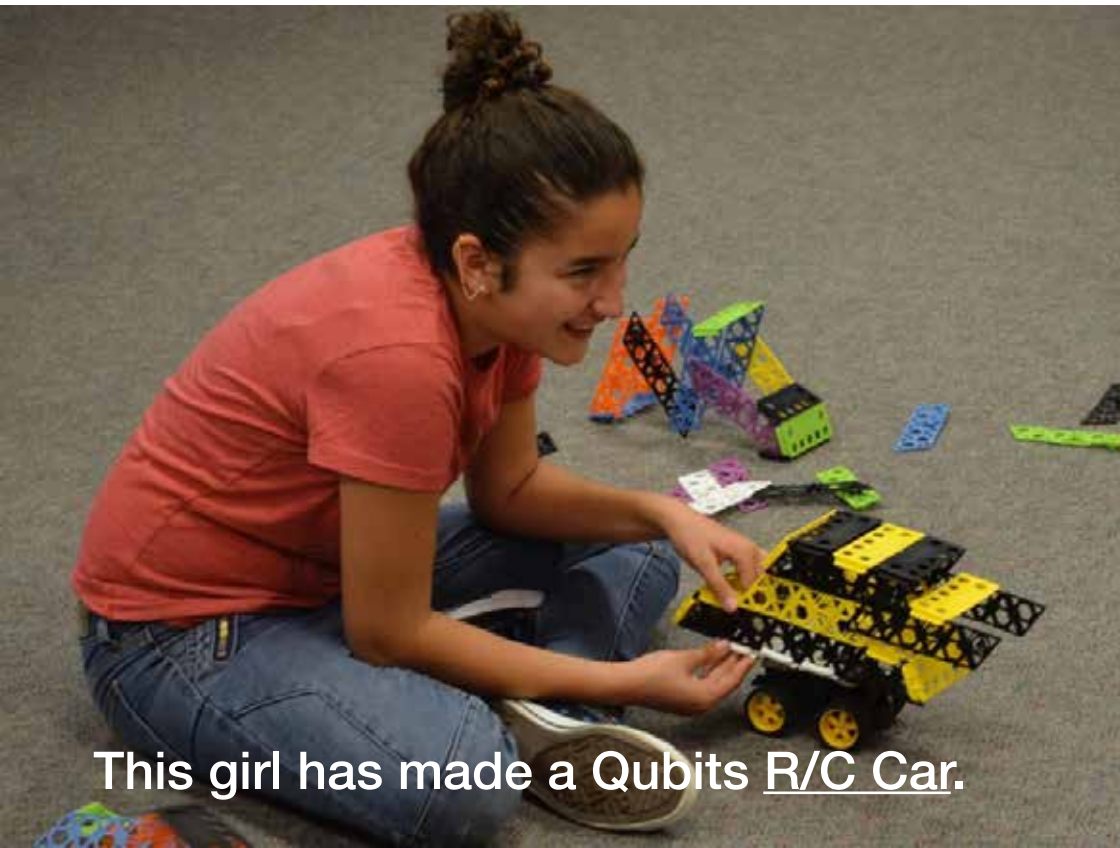
Drone photography is an important STEM technology skill.



Ready for takeoff.





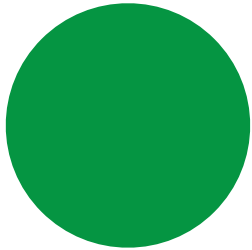


This girl has made a Qubits R/C Car.



Rovers and Vehicles

Gets the kids running in the outdoors.



A complex project perfect for Middle and High School students that they can share with lower grades. Kids are helping kids get motivated with STEM projects.



Look for
Inspiring
source photos

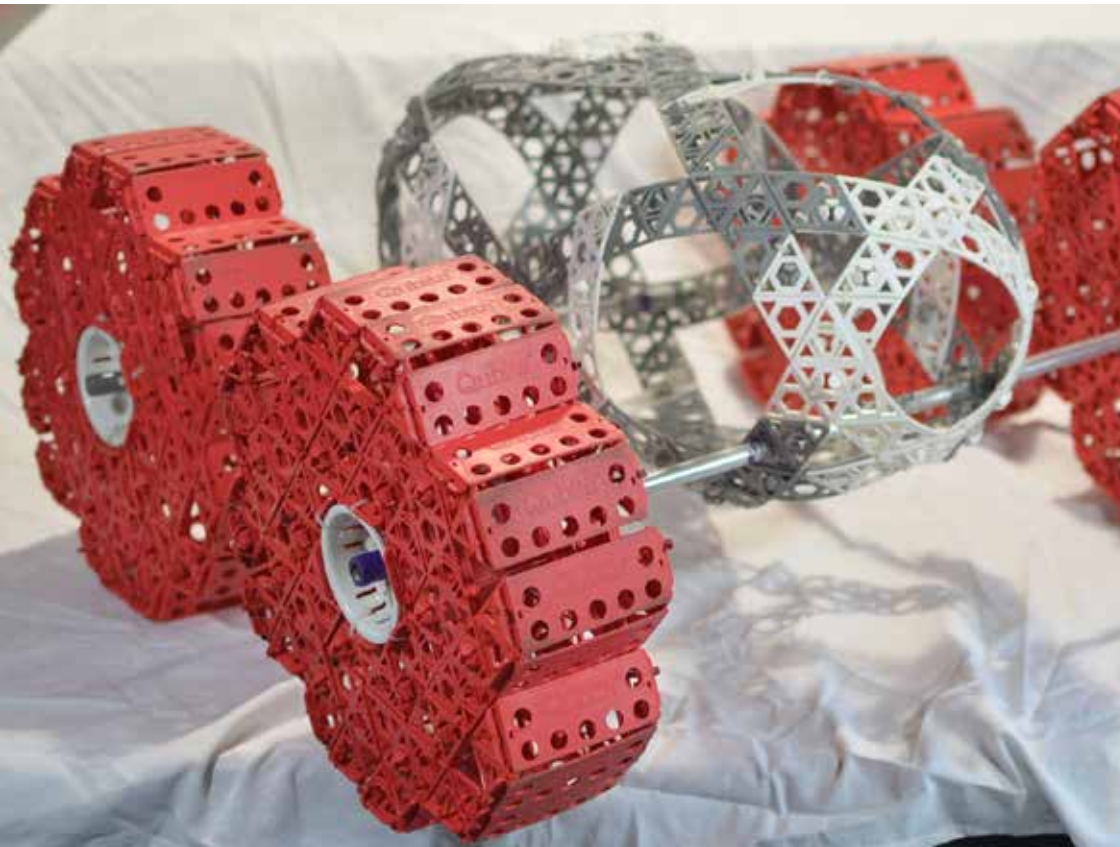


Design a shape, duplicate it, then
extrude it into 3D by adding Bridges

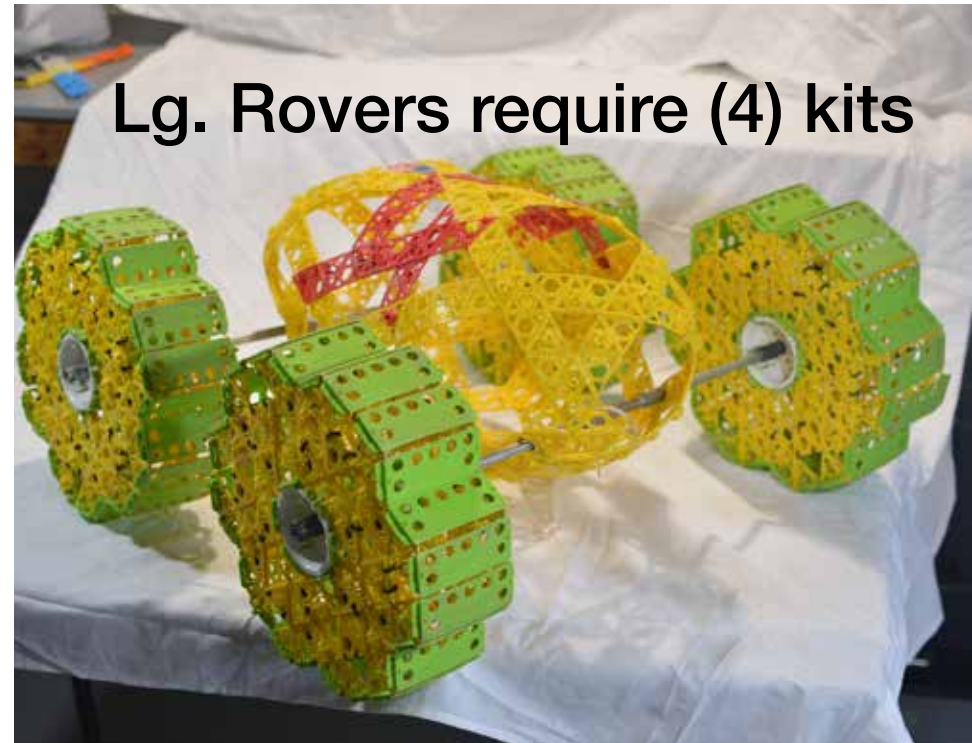


This is the finished project. It could have been a car
just as easily.





Rovers can be built from a Capsule and four wheels.



Lg. Rovers require (4) kits



Sm. Rovers use only (2) kits



Rovers are extremely popular with kids outdoors. It a STEM Exercise!



Water Bottle Rocket

Integrates with your coursework regarding aerodynamics

Single bottle or even double bottles are possible.

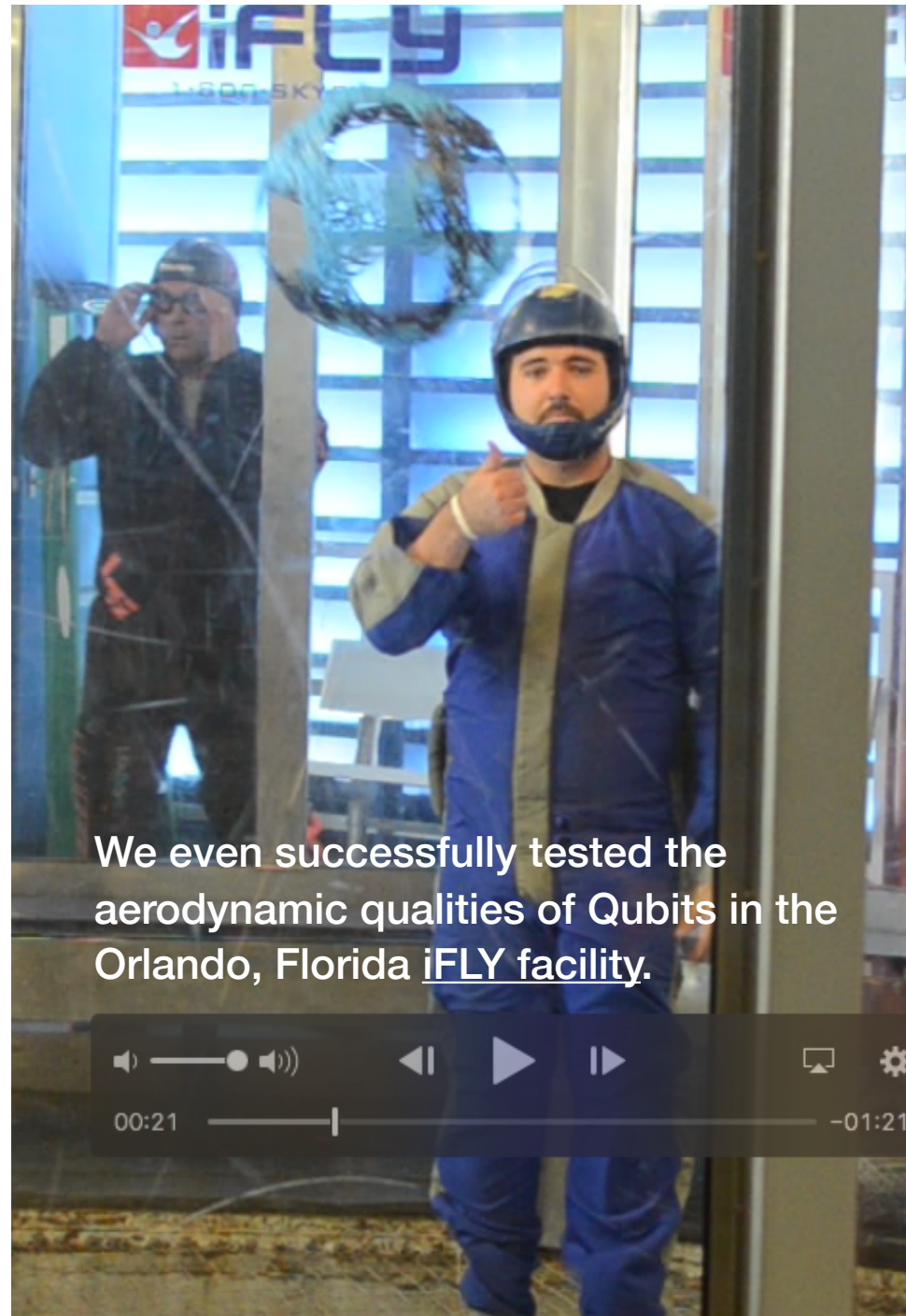




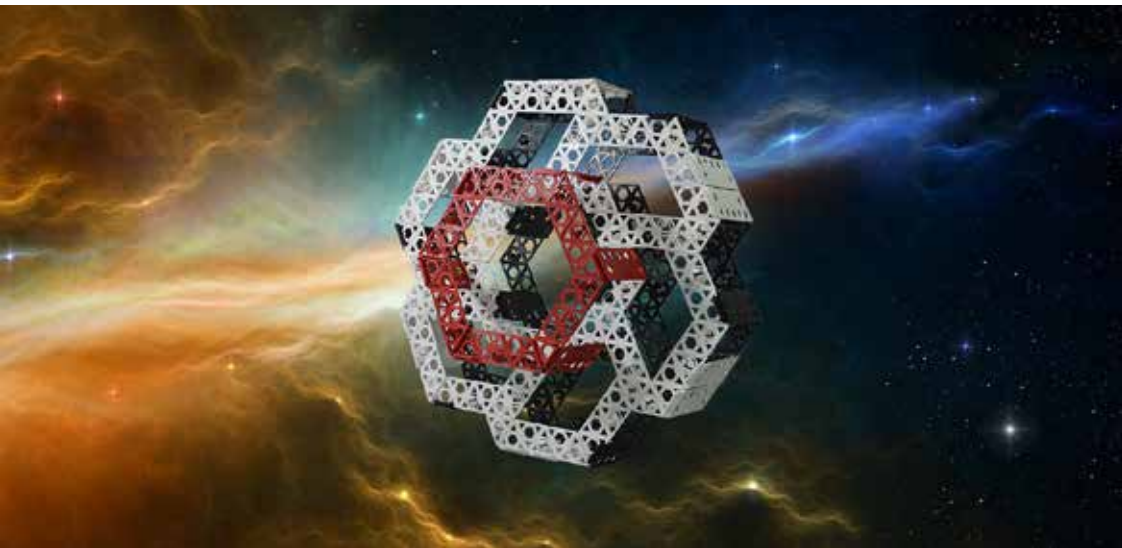
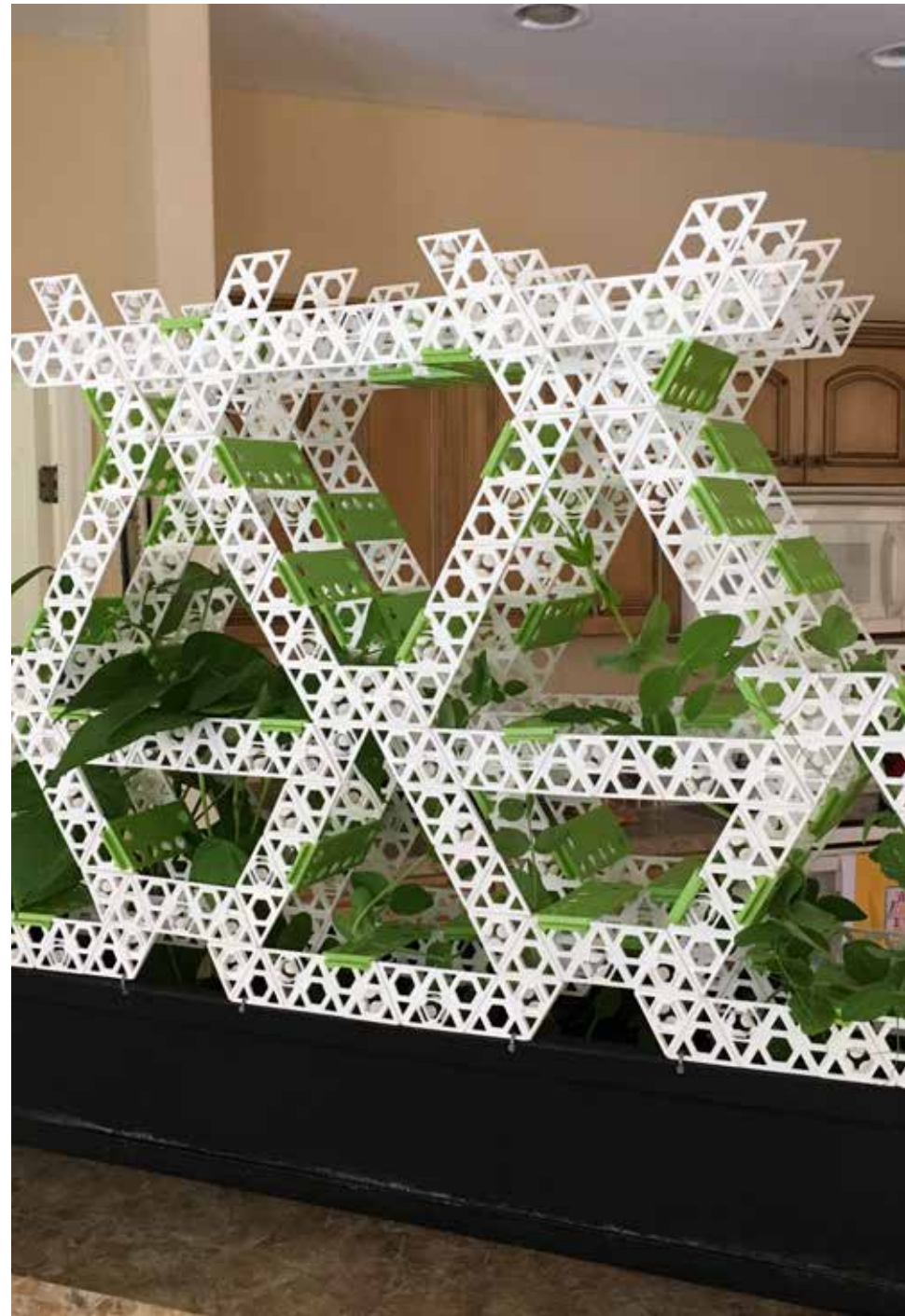
Sculpted Designs invoke STEAM!

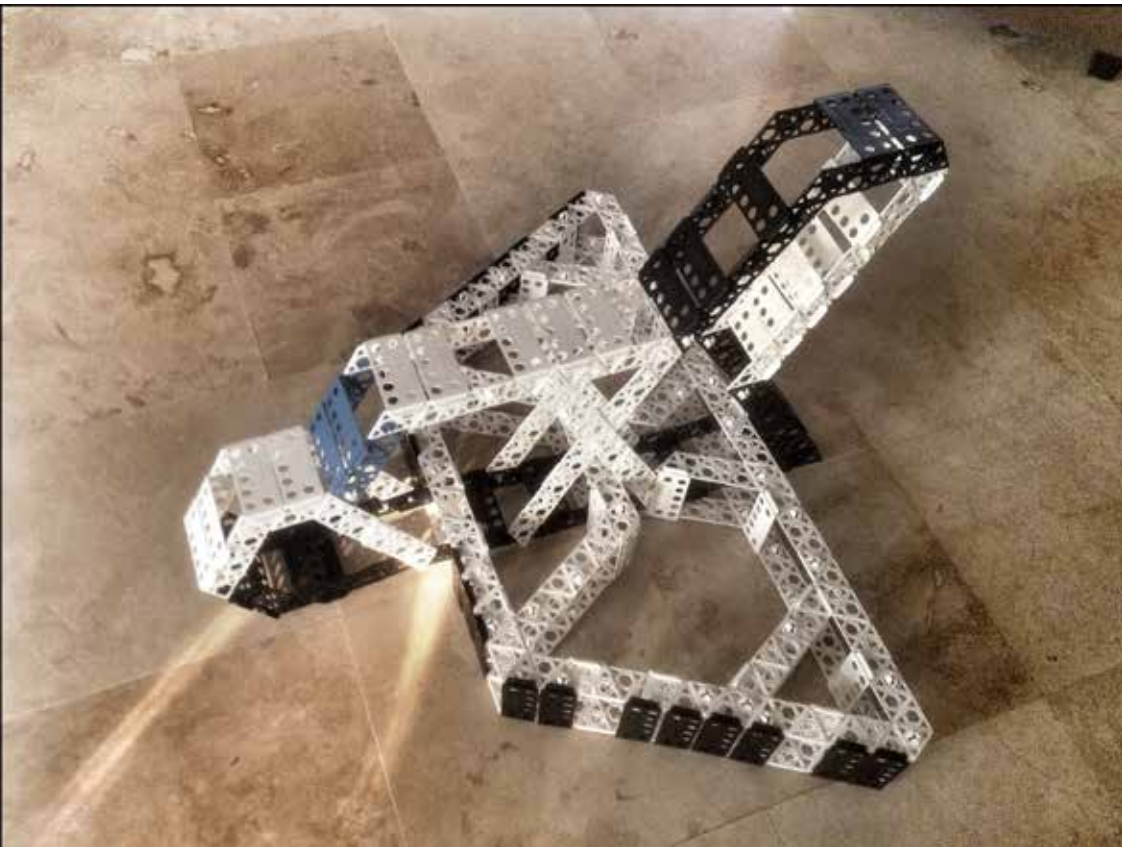


Bridge Designs!



We even successfully tested the aerodynamic qualities of Qubits in the Orlando, Florida iFLY facility.







A Qubits workbench is a very busy place. Busy hands and busy minds.



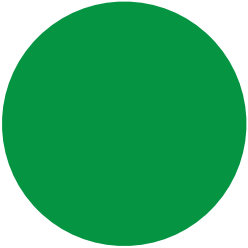


Find some
inspiration
and build it
in 3D.



Team Building

The Classroom Set is good for the whole classroom.



Working together this class built a bridge structure that spanned a 4' gap between tables.







Team Building
breaks down
barriers while
it builds
confidence.



This STEM Academy used team building to set a World Record.



Amazing
16' - 6"
Built by 6th
Grade Class
over a three
day period



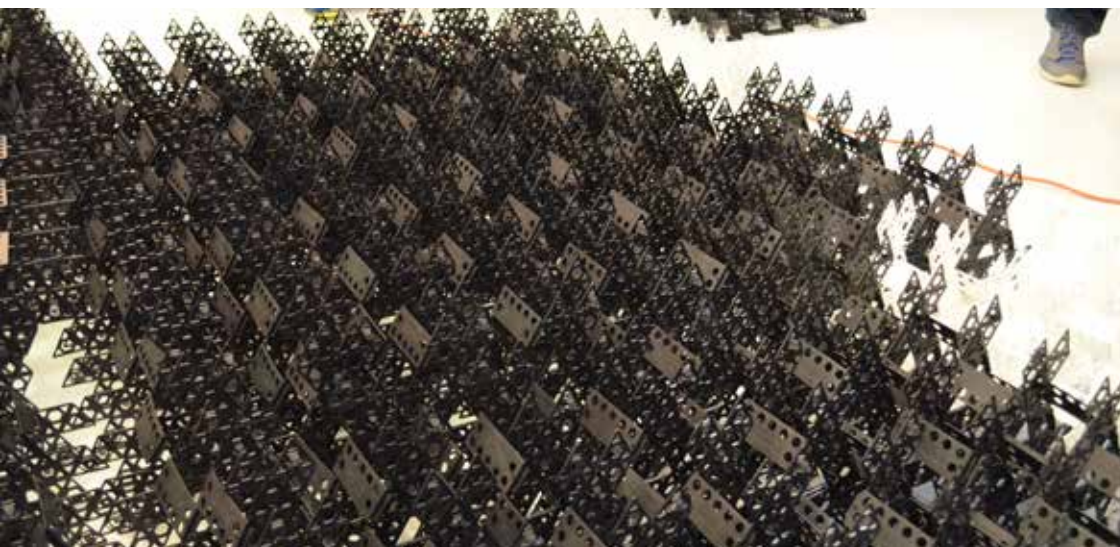
Principal
Approval
Process

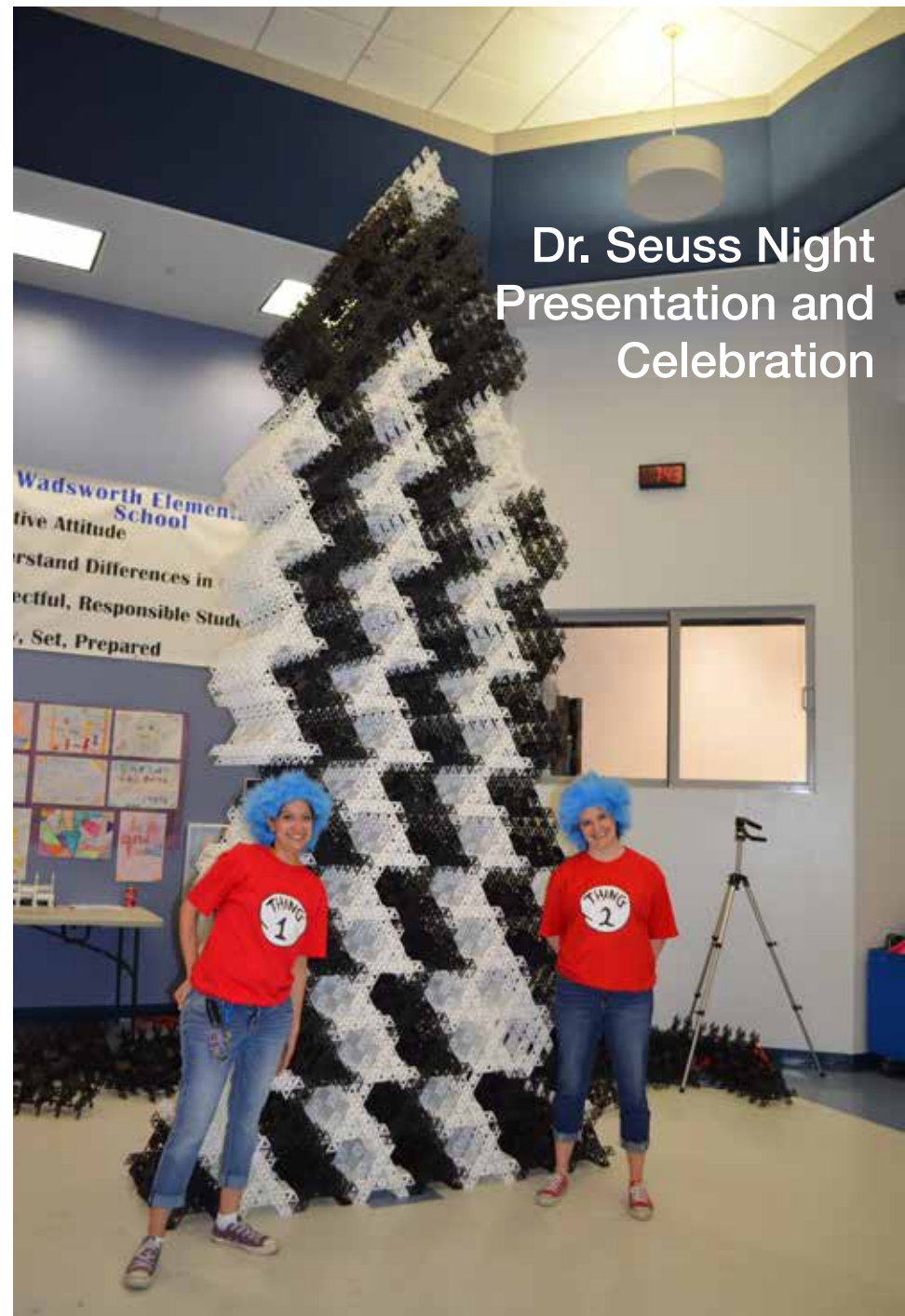


Initial Introduction



Final Product





Dr. Seuss Night
Presentation and
Celebration



A classroom kit can build a very tall
tower. How tall can you go?

Qubits are a favorite STEM tool chosen by teachers across the U.S.A. Here are a few examples.

Play Doh, LEGOs And Qubits For Creativity

"My students need 2 books about tinkering, 2 sets of Qubits, 3 assorted sets of LEGOs, and different sets/packs of Play Doh for a classroom maker space."

Ms. Ramsey

College Gate Elementary School • Alaska

Play and Learn

"My students need geometric building manipulatives such as Lego and Qubits. In addition, they need a Spirograph Deluxe Design Set."

Mrs. Spivack

PS 24 • New York

Makerspace in the Making!

"My students need an iPad, Qubits, K'NEX, books, and marbles for our new Makerspace!"

Ms. Dion

Jackson Avenue Elementary School • California

Teachers visit [DonorsChoose](https://www.donorschoose.org) to start your Classroom Donors Choose Project

Distress Over Indoor Recess!

"My students need Tiggly, Qubits, and Code-A-Pillars to keep their mind and body active during winter for indoor recess."

Mrs. Cespedes

PS 80 Thurgood Marshall Magnet • New York

STEM Innovation Through Imaginative Play

"My students need construction toys like Magna-Tiles, Qubits, Zoobs to allow them to build magnificent creations through play."

Ms. Lynch

PS 59 Beekman Hill International • New York

Makerspace Mania

"My students need Qubits, Tinkertoys, and Roylco Straws to foster an environment of creativity and building. Ingenuity is a skill strengthened through practice."

Mrs. Hellums

Kilby Laboratory School • Alabama

Mini Makers - Fuel Their Engineering Imaginations

"My students need Magformers, Brain Flakes, and Qubits to fuel their brains to think creatively and critically as they build and design, using their imagination as power."

Ms. Rogers

Allen Brook Elementary School • Vermont

Building STEM Skills Through Play-Based Learning

"My students need Mighty Molecules, Magz Bricks, Qubits and other manipulatives to encourage and develop STEM-focused skills and creativity."

Mrs. Longhouse

John A Sciale Elementary School • New York

Our Space for Collaboration

"My students need a new carpet to create a welcoming location for students to collaborate, design, and construct creations with 2 sets of Lincoln Logs, Legos, and 6 sets of Qubits."

Mrs. Smalley

J W Seabrook Elementary School • North Carolina

Future Engineers in Training through Creative Construction

"My students need a variety of creative construction tools that will encourage them to build, explore and discover - K'NEX, ZOOB, Goobi, Qubits, Tinkertoy, Space Chips and more."

Mrs. McKinnis

Sams Valley Elementary School • Oregon

Fostering Creativity and Thinking in Young Minds with STEM

"My students need LEGO blocks, TinkerToys, Qubits, K'NEX, Zoomtools, Brain Flakes, and Straw Builders to help them foster their creativity."

Mrs. Robbins

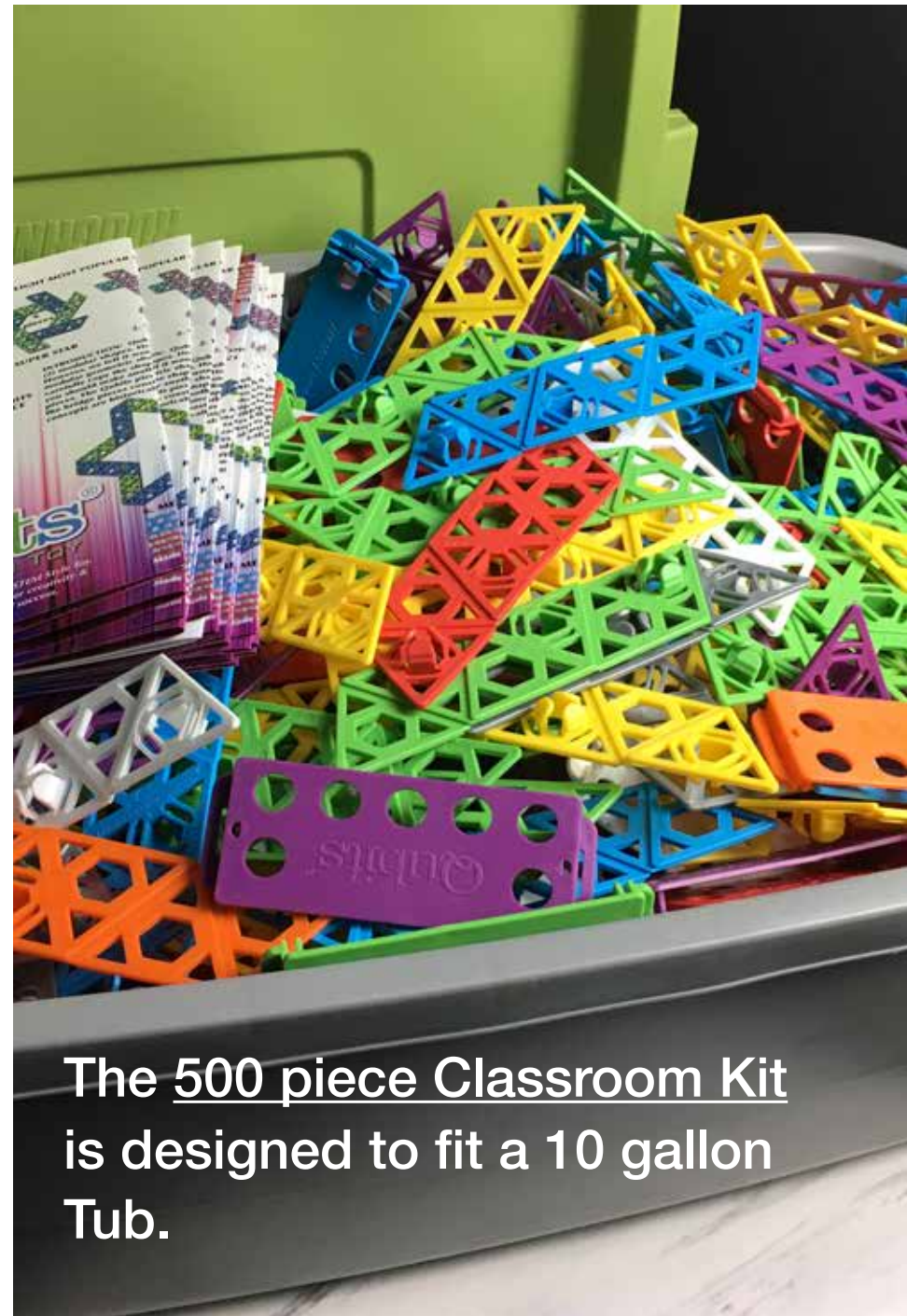
Edgewood Primary School • Indiana

Supplies for Promoting STEM

"My students need iPad minis, Qubits Construction Toy, 4M Magnet Science Kit, Earth Globe Beach Balls, and K'NEX Education - Elementary math kit to enhance their learning."

Mr. Cesaire

Gateway Environmental K-8 Learning Center • Florida

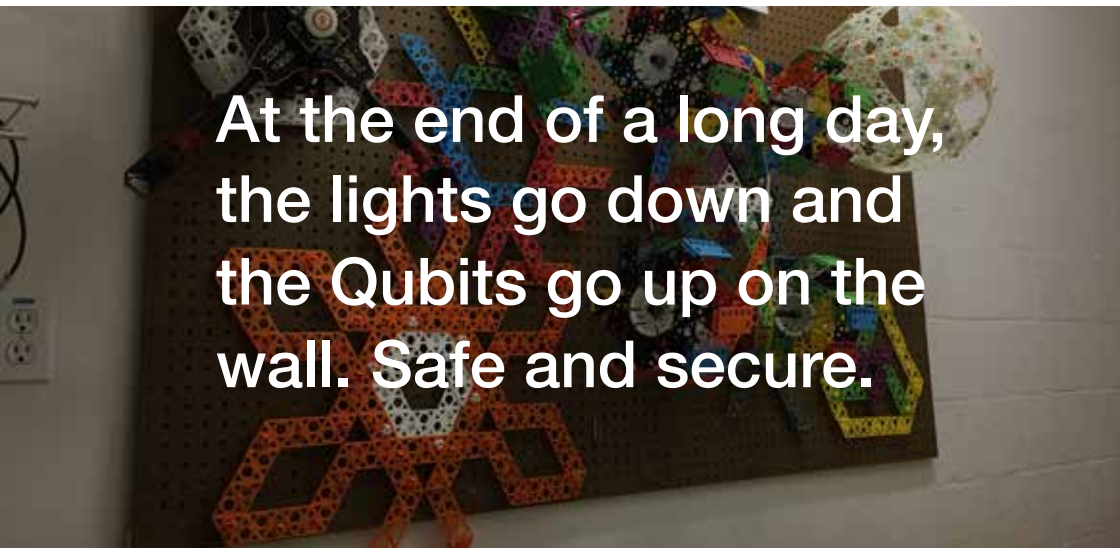
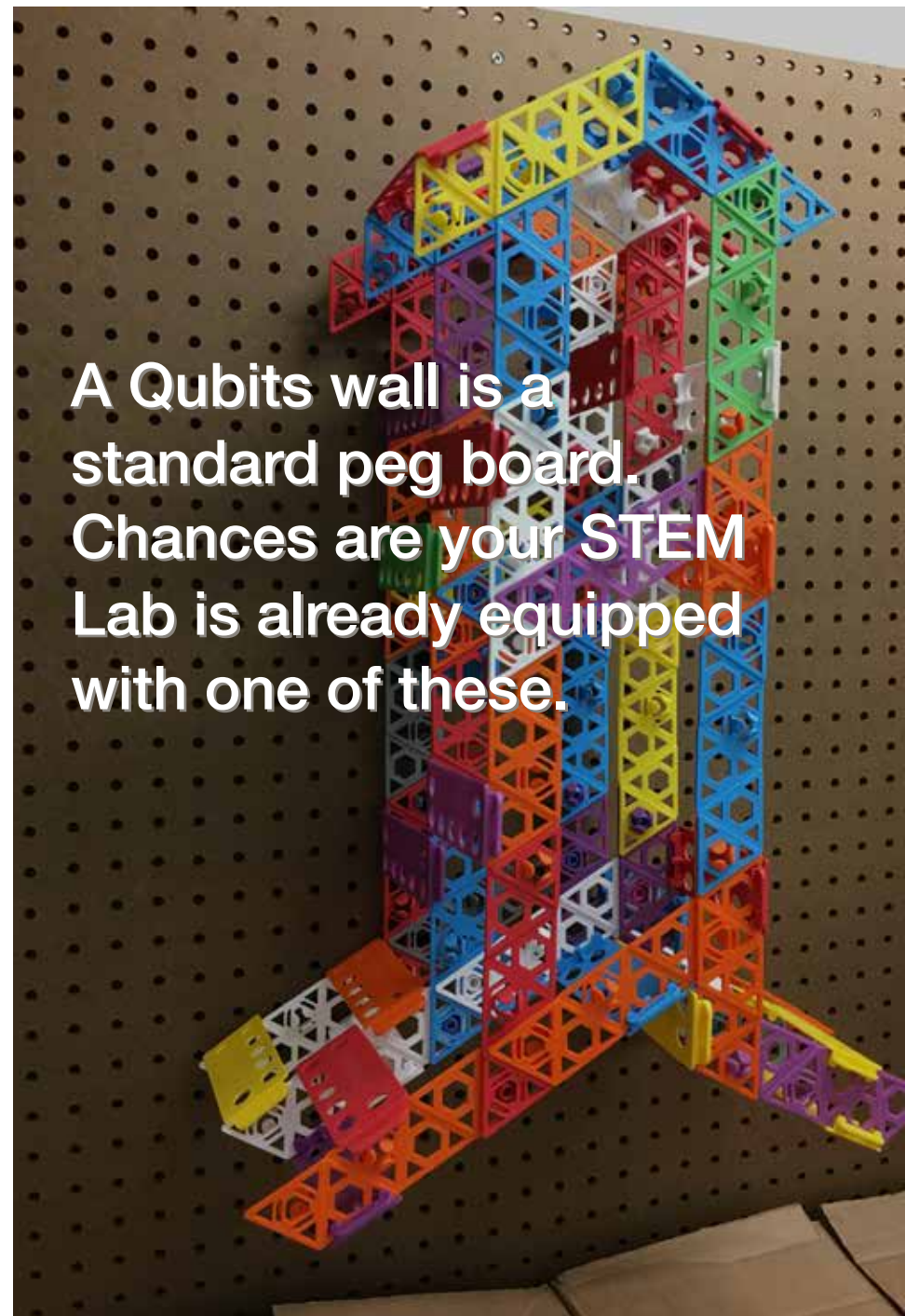


Rainbow Colors allow for Color Theory experiments.

The 500 piece Classroom Kit is designed to fit a 10 gallon Tub.







Thank you for your time reviewing this presentation. There are thousands of decisions concerned parents and dedicated teachers need to make in regards to education. Hopefully the photos presented here will help you with this task. As future projects are submitted to us, we will update this online PDF. Perhaps it will be your class project that gets included.

We didn't even cover the boat designs we have seen. There are many bridge designs that need to be explored. A trebuchet would make for an interesting design project. hint - hint

An interesting recent development for Qubits has been in the area of geometry. It turns out that Qubits has led to the discovery of several new polyhedrons. These polyhedrons don't exist in any text book. The polyhedrons are really quite beautiful and we will expand this geometric research and share it all with you as soon as possible. Stay in touch for more information about that.

Meanwhile we suggest you study the history of Archimedes. This new Qubits geometry is closely linked to the work he did thousands of years ago.

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Yes, we accept Purchase Orders from Schools and Libraries.
Click here to contact LisaBurginger@gmail.com