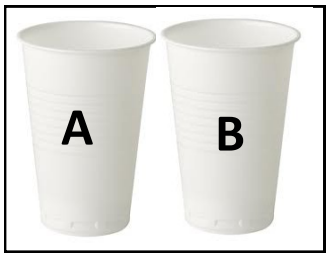
Geodesic dome worksheet

You need straws pipe cleaners two cups scissors ruler



1 2 3

In your groups

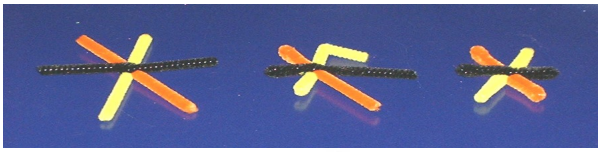
Label your cups A & B. Cut the straws in the sizes shown on the table and put into the cups , 35 blue =A 30 RED =B

make the pipe cleaners connectors by cutting 8cm lengths twisting together and folding as shown.

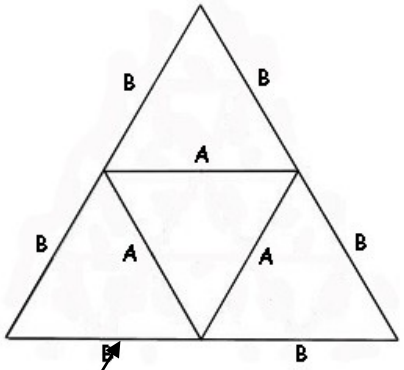
as detailed in the chart below .

alternately

6 way connectors are made like this, now work out how to do 4 and 5 way.



Strut	Length	Dome
A	6cm	35
B	5.5cm	30
4-way connectors		10
5-way connectors		6
6-way connectors		10



This diagram will help you construct the top

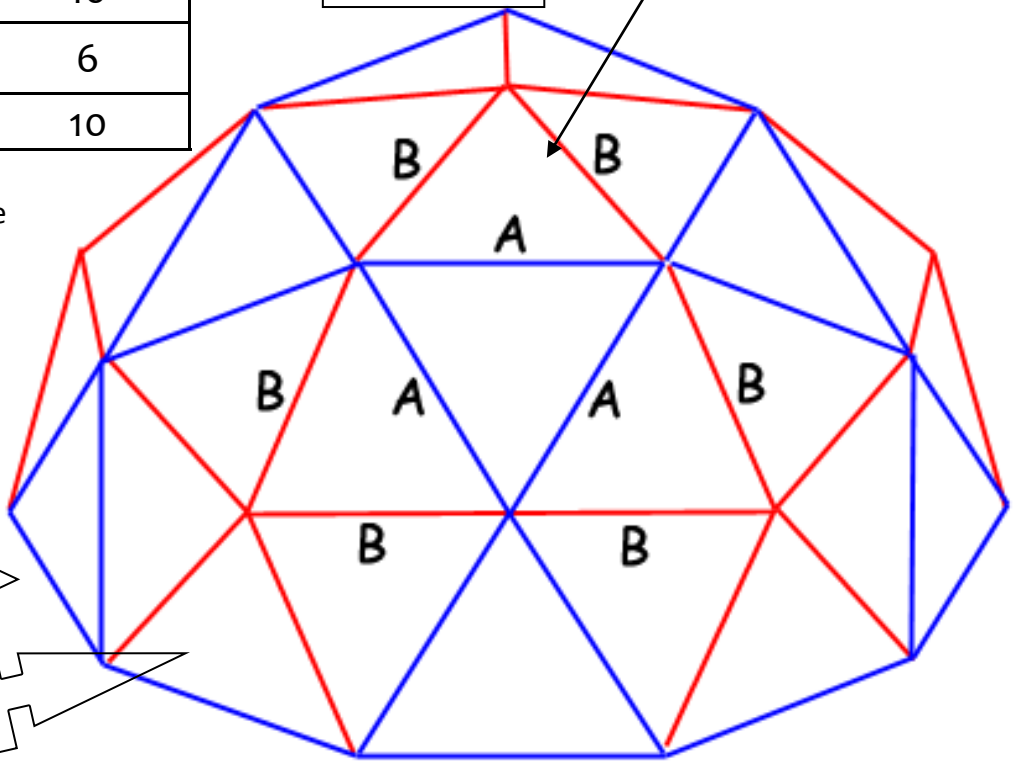
Note the 4 way connectors are for the base

4

Now construct the dome starting at the base

Make a ring using 10 of the A straws (6 cm)

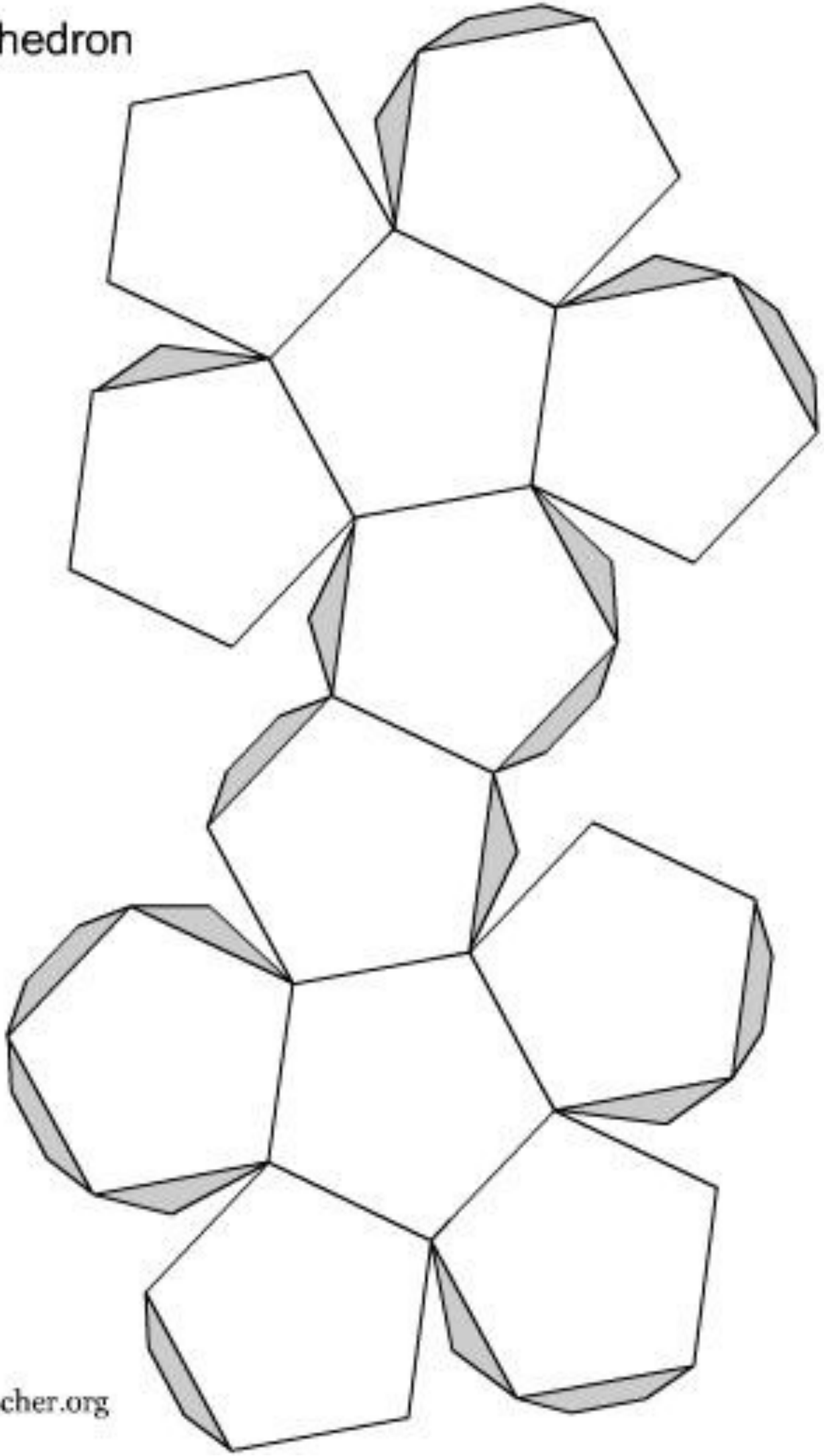
As shown



10 A or 6cm straws make up the base ring

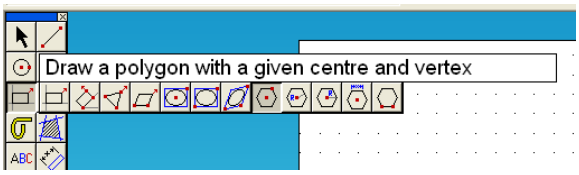
LOOK one red Triangle then a blue triangle at the base

Dodecahedron

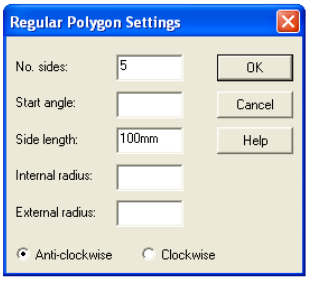


Designing your Terrarium

Using 2 d design draw your pieces for making your terrarium

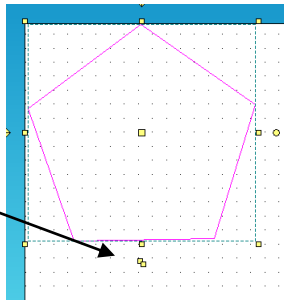


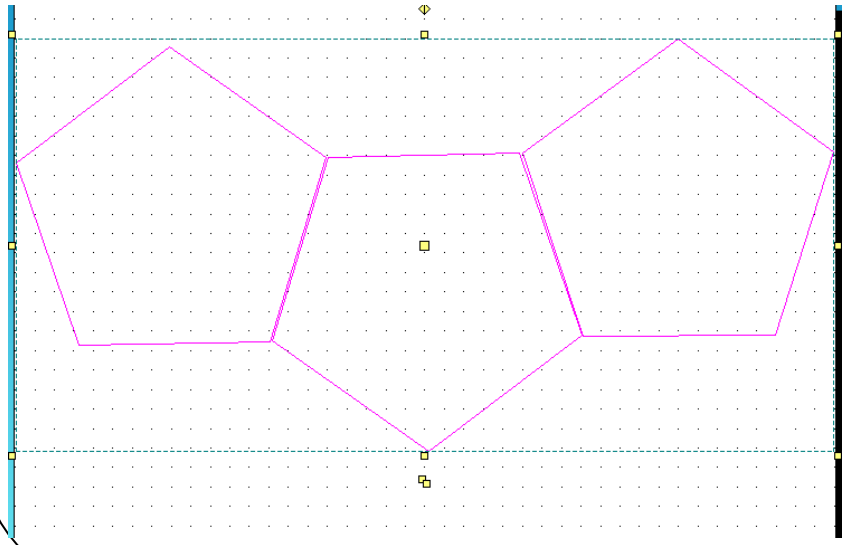
Select the shape tool and say you want 5 sides this will make a pentagon then say what length of side you want ok.



Then select using the arrow tool and press the copy icon

And tessellate as this will save materials.





Make sure you make enough shapes for the complete terrarium

Now save and export to the laser cutter.

AF1 Understanding design and technology in society	you	level	teacher
I have looked at how other designers use materials tessellations and how I can make a terrarium		6	
I have looked at the materials I have used and have shown I understand where they come from.		5	
I understand why we need to use greenhouses for agriculture.		4	
I Have looked at how architects use tessellation?		3	
AF 2 Designing			
I have implemented maths theory about shapes and angles and used it creatively.		6	
I have designed using sketching and CAD (google sketchup)		5	
I have built a successful model of a geodesic dome		4	
I have looked how designers use tessellation in my designs.		3	
AF 3 Making and reviewing			
I have tested and evaluated my product and suggested three sensible improvements		6	
I have investigated how to join acrylic.		5	
I have used CAD/CAM to make my panels		4	
I have modelled my own terrarium from card		3	

Designing skills	Clarification and communication skills	Aesthetic and sensory knowledge and understanding
Working and refining design brief Developing existing products Designing through exploring materials, Designing on paper modelling in card designing using CAD	Modelling Use of CAD Sketching on paper Use of google sketchup	Improving on prior knowledge of the built environment, Understanding of the role of architects.
Scientific and technological knowledge and understanding	Materials and processes	Influences and issues moral ,cultural historical environmental etc.
Using information from scientific testing on colour on growth to	Using acrylic Understanding CAD /CAM (laser cut-	Understanding of how the development of growth can be improved with correct condi-

Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6/7/8	Les
Starter Using printed card students make a simple dome	Starter Shading shapes sheet	starter What would ? tornado	Starter What would ? snowflake	Starter jig angle problem	Sta Wh
Main lesson activity Students use tessellations from maths to start their designs.	Main lesson activity Students sketch their designs on paper/ use google sketchup	Main lesson activity Students investigate the different adhesives and fixings for acrylic.	Main lesson activity Students use 2d design to draw out the shapes ready to import	Main lesson activity Students start to assemble terrarium focusing on jigs	Ma blir um
plenary Using experimentation which was the most successful shape combination?	plenary How can we check our measurements are correct?	plenary How can we estimate how much material we use for joining our edges?	plenary How do we ensure the drawing is correct?	plenary Has the jig angle correct?	ple Ho you
Risk assessment Low , use of scissors	Risk assessment High possible use of scalpels, cutting mats numbered scalpels and demonstration on use compulsory. basic graphic products also used.	Risk assessment High possible use of scalpels, cutting mats numbered scalpels and demonstration on use compulsory. basic graphic products also used.	Risk assessment Low normal classroom rules apply	Risk assessment High use of epoxy resin	Risk roo
Afl Assessment opportunity Visual– model Visual- tessellation	Afl Assessment opportunity Visual -sketching sheets visual –google sketchup saved in students area	Afl Assessment opportunity Visual– model	Afl Assessment opportunity Visual– CAD Physical –shapes from CAM	Afl Assessment opportunity Physical –terrarium	Afl Phy
Differentiation Students can be given more simple nets suitable for making into terrarium All complete net Most complete net to a high quality and use net. Some complete net to a good quality and use it to compliment own tessellations	Differentiation All complete 4 design ideas Most complete 6 design ideas Some complete 6 design ideas and justify.	Differentiation All make investigation Most make investigation and draw a single sensible decision Some make investigation and draw several sensible decisions	Differentiation All draw shapes Most draw shapes and check dimnensions. Some draw shapes and check dimnensions and model.	Differentiation All make jig Most make jig and measure correctly with help Some make jig and measure correctly without help	Dif All Mo Sor eva
Objective	Objective	Objective	Objective	Objective	Obj
To understand how shapes form in 3d	To understand how tessellations can be used in designing.	To investigate the properties and actions of adhesive's	To implement skills learnt with CAD.	To use mathematical theory in a practical way.	To eva