The Complete Homemade Juggling Beanbag Guide

32-Panel Beanbag Color Arrangements

Small file size version (150dpi images)

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This is part of a multi-document guide. Hyperlinks with the icon[1] open other guide documents[2], if they are saved to the same folder (**CTRL+Click** opens them in a new tab).

Visit my website to download those, and check back occasionally for revisions and corrections:

www.joshuaclifton.com/juggle

Compare the Last Edited date above on the right with the one on the web page to see if I have submitted changes.

Please contact me with your thoughts! Feedback on this project would be helpful and encouraging. You may also request custom patterns or other help with your project.

If this guide is useful to you, please **consider donating at my website** linked on the left. I am not monetizing the guide, and I am in need of income.

My website also provides blank **color arrangement diagrams** for experimenting with new arrangements in an image editor.

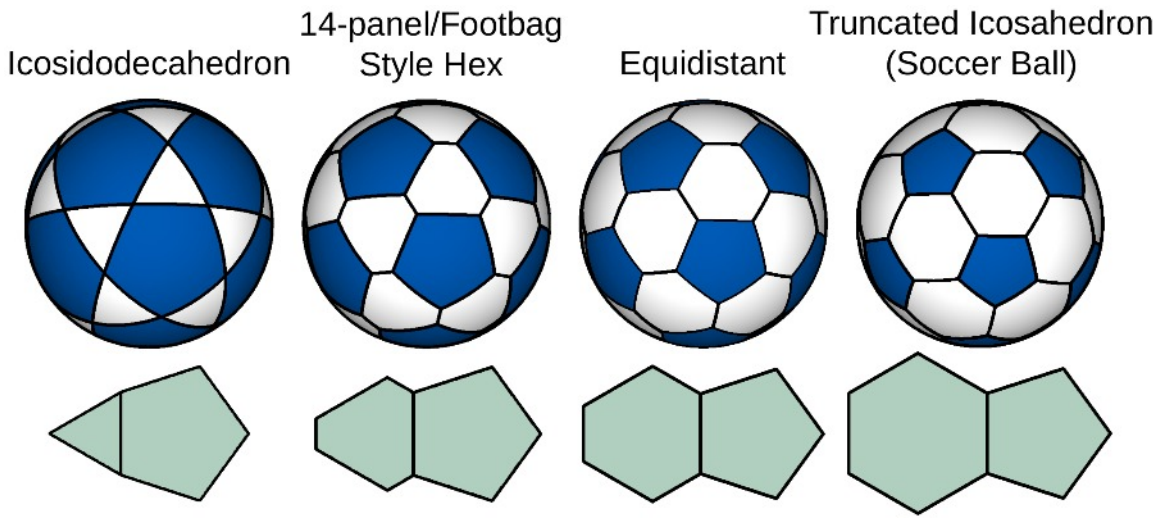
1 Icon from https://freesvg.org/vector-illustration-of-external-link-icon

2 **If the linked PDF does not open at the specified location**, keep it open, switch to the previous PDF's tab, and click the link again. **Cross-document links may not work in mobile PDF readers.** In that case you must open the document yourself and find the linked topic.

32-PANEL BEANBAG COLOR ARRANGEMENTS

Chapter Index

Design Notes



The four 32-panel designs I provide color arrangements and patterns for in this document.

This design is composed of 12 pentagons and 20 hexagons (or triangles if you choose that version). I provide patterns for all four 32-panel variations in my at the end of this chapter.

Though footbag makers prefer either the footbag hex or the triangle, my equidistant hex shape has a major advantage: it makes the two face shapes approximately the same size. This is important because it improves the look of color arrangements that do not distinguish between them such as the "Five Swirls" arrangement below. Because the swirls are composed of both pents and hexes (or triangles), they have a more uniform width and better appearance when the two panel shapes are the same size. The smaller, footbag-style hexes and the larger, equilateral hexes both produce poorer swirls, and the triangles do not really work at all.

Polar view of the arrangement

Triangles

Footbag-style hex

Equidistant

Equilateral hex

The swirl arrangements, among others, look better with the Equidistant hex that is the same size as the pent.

The footbag hex shape works better for color arrangements that form **creature and character faces**, or that **emphasize the pentagons and use the hexagons as a background**. That hex shape came from my 14-panel design. The short edge is 0.366 of the long edge instead of the 0.692 proportion of my Equidistant hex.

The icosidodecahedron, which has triangles instead of hexagons, **allows for very different-looking color arrangements than the hex variants and is very versatile**.

Printing and Drawing the Patterns, and Assembly Instructions

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At the end of this chapter I provide ready-to-print patterns. (When printing them, be sure to tell the Print Dialog to print only the page(s) you want so you don't print the entire document.) For footbags with gathered seams, I suggest trying two sizes (½″) or 25% larger than your target size.

Assembly instructions and other information on these designs are in the main chapter document titled "**32-Panel Equidistant Trunc Icosahedron Chapter**".

Color Arrangements Intro

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The color arrangements are grouped by the number of colors they contain. **The assembly layout diagrams show two methods of assembly: my two-hemisphere method, and a pent-centric, ring-by-ring method.** The alternate names in quotes for some of the arrangements are footbag makers' names for them.

Color Arrangements that Work Best with the Footbag Hex are in the first section that follows. These are arrangements that work best with a hex that is smaller than the pent, which is the usual type of hex used for footbags.

Color Arrangements for Triangles and Pents (Icosidodecahedron) are next. These are arrangements that only work, or have a unique look, on the Icosidodecahedron, which uses pents and triangles.

Color Arrangements for Hexagons and Pentagons are arrangements that work with hexagons, and many of them work better with my Equidistant hexagon, which is the same size as the pentagon. But they will also work with the footbag hex.

Following the color arrangement illustrations are photos of some of the arrangements as well as of other, more creative arrangements. Note that some of the arrangements in the photos require hexagons to look

right while others require triangles, and some work better when both panel shapes are about the same size, as my Equidistant hexes are. Most of the arrangements I diagram in the sections that follow are based on or inspired by the photos.

To aid me in the task of creating these diagrams, **I stuck colored thumbtacks into an all-white 32-panel bag** I made using my design-testing fabric. I recommend this as a way to design new arrangements or to use as a reference to aid you in correctly assembling the bags. You could also draw a truncated icosahedron or icosidodecahedron in a CAD program and color its faces, but I prefer the hands-on, thumbtack method.

I also provide printable blank color arrangement diagrams for the ball views and the assembly layouts. You can use those to experiment with color arrangements without having to make a beanbag or build a 3D model.

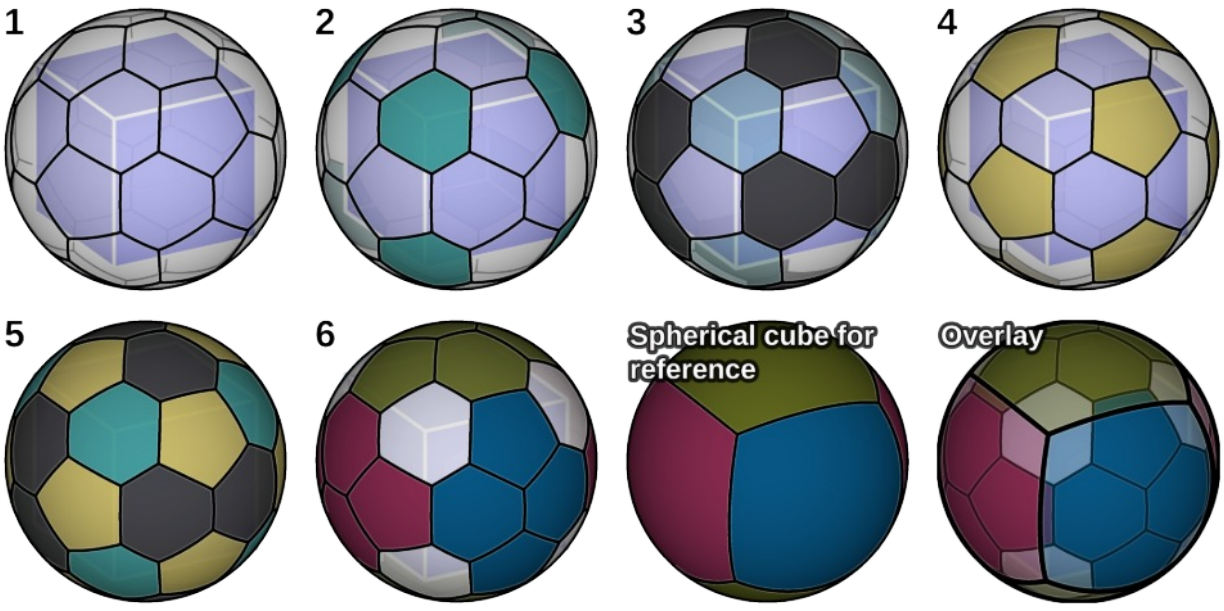
One thing to consider about this polyhedron is that there are **12 pentagonal faces**, and they are arranged in the same way as on the dodecahedron. This means that **any of the dodecahedron arrangements can be used for those faces**. This is illustrated most clearly by arrangement #54: Six-Color Patchwork Pents. That arrangement is the same as the six-color patchwork arrangement of my dodecahedron in which each color is opposite its match.

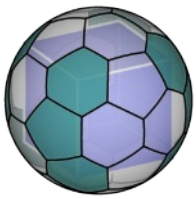
Another color arrangement consideration is that **the hex panels have a correspondence to the cube and can be arranged as the six faces and eight vertices of the cube**. This is explained and illustrated in the next subsection. The eight cube vertices also correspond to the faces of an octahedron since the two polyhedra are duals of each other, and so the corresponding **hex panels can also be arranged according to the octahedron design**. This is illustrated best by arrangements #29: Cube Corners (3-color variation) and #46: Cube Corners (5-color variation)**.**

Cube Hexes (aka "Blur") arrangement explanation

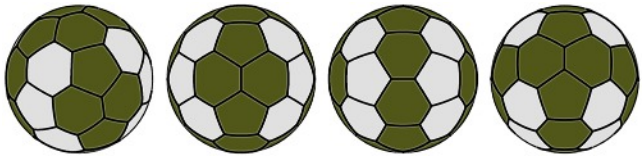
There is a correspondence between the hexagon panels of the 32-panel design and a cube's vertices and faces. The Cube Hexes arrangement (my name for it, but called "Blur" by others) is a popular arrangement and exemplifies this correspondence. Quite a few other arrangements also relate to this concept, so, after trying and failing to explain this to my sisters, I decided to illustrate it for anyone else who doesn't understand it or see its significance in creating color arrangements.

1. The first illustration below shows a reference cube inside a 32-panel ball, aligned so that its eight corners align with the centers of eight hex panels.
2. I color those eight hexes teal. I call this arrangement "Cube Corners". Those hexes also correspond to the faces of the octahedron (the cube and octahedron are duals of each other), and so can be colored according to the octahedron arrangements.
3. Each face of the cube is aligned, center to center, with a pair of hexes. I color those pairs black. Each hex pair is perpendicular to those adjacent to it and parallel to the one opposite it. I call this arrangement of six hex pairs "Cube Pairs". All hexes have now been colored.
4. I color all the pentagons a single color. Incidentally, as I explained before, they correspond to the twelve faces of the dodecahedron. If I placed a dodecahedron inside the ball, the pent panels would align with its faces. For that reason, any dodecahedron arrangement can be applied to those panels.
5. Finally, I combine the three partial arrangements to get the arrangement I call "Cube Hexes".
6. Illustration #6 shows a related arrangement I call "Cube Patches", but which is called "Six Eggs" by others. The eight teal hexes are now white, and each pair of black hexes is combined with the two gold pents on either side of it to form six single-color patches.





The Claw Marks arrangement is formed by connecting pairs of corner hexes by the pent panel in the middle of each pair to create four roughly parallel stripes resembling slashes made by claws.



Color Arrangements that Work Best with the Footbag Hex

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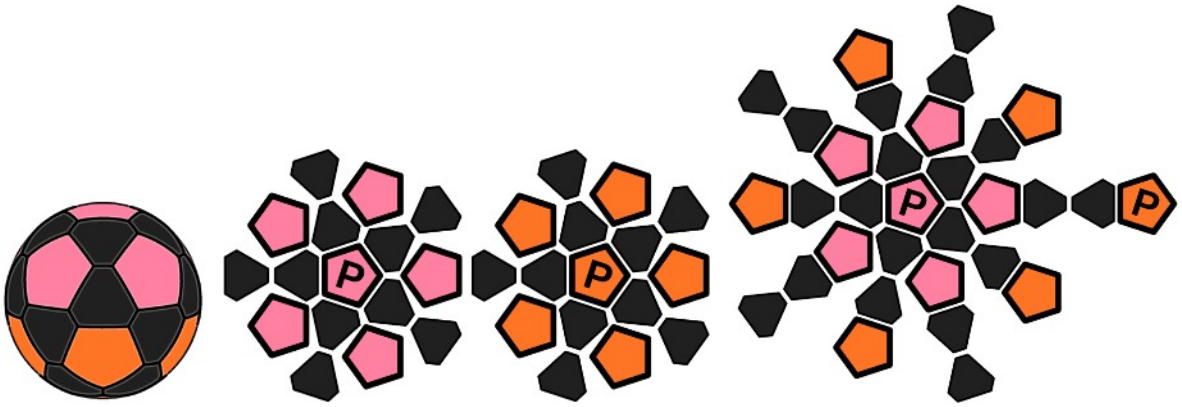
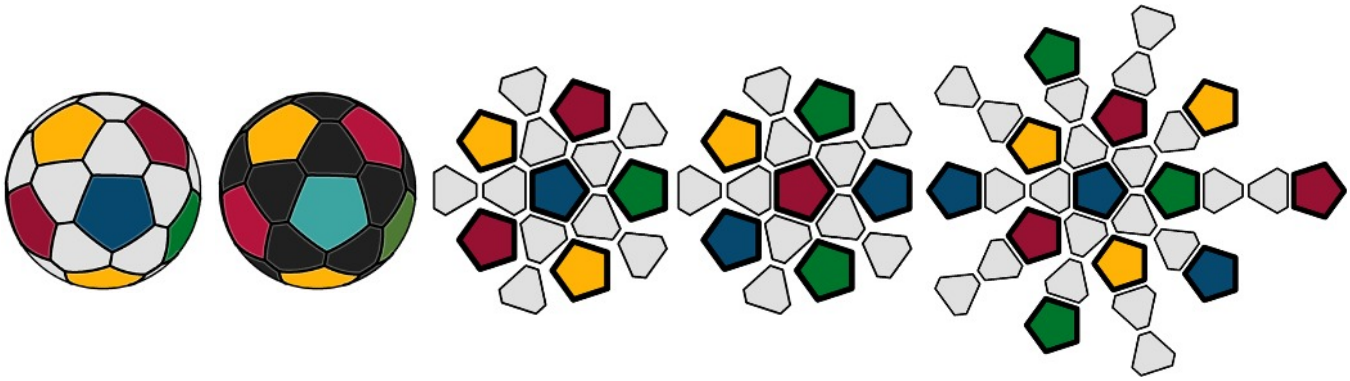
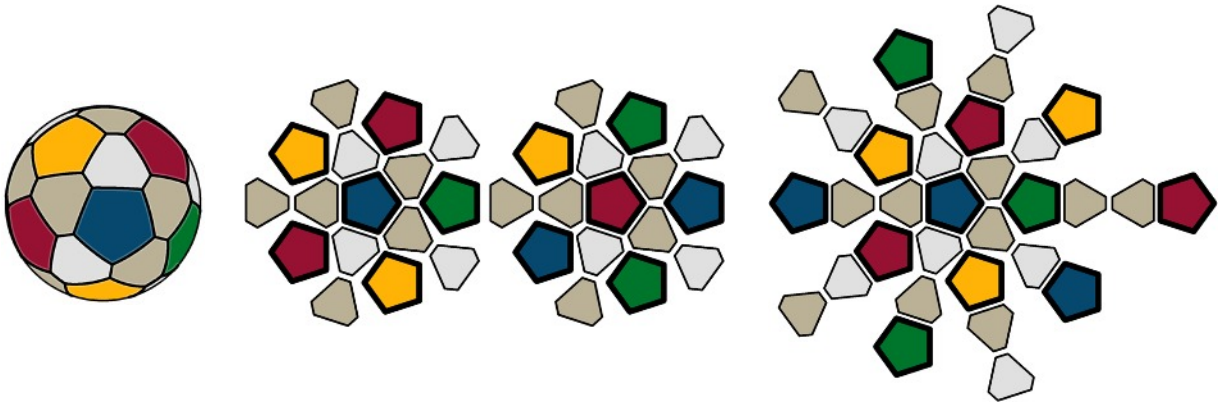
These arrangements work best with a hex that is smaller than the pent, which is the usual type of hex used for footbags (as opposed to my equidistant hexagon that is the same size as the pentagon). It works well for creating creature and character faces, and its large pents and small hexes make it effective for arrangements that **emphasize the pents and use the hexes as a background** as in the first five arrangement below **(the numbered arrangements are duplicated from the main Hex Arrangements section)**. As with the other 32-panel variations, any dodecahedron arrangement can be applied to the pentagon panels.



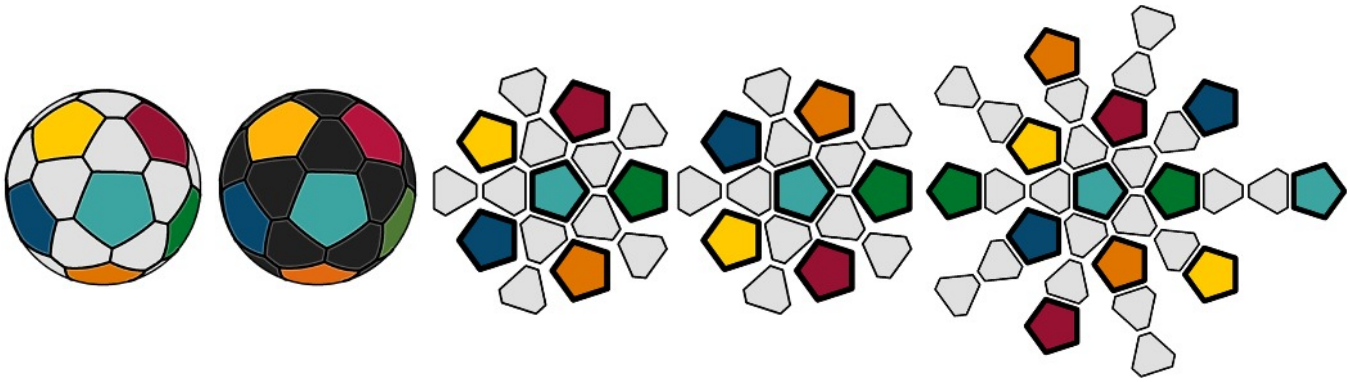
Pent Hemispheres. The pentagons follow the Hemispheres arrangement of the dodecahedron, and the hexagons are a single, contrasting color. There is a total of 6 pents of each hemisphere color. On the right is a similar arrangement (using different colors) that produces alternating pent rings from pole to pole by swapping the colors of the two polar pents (marked “P” in the diagrams).



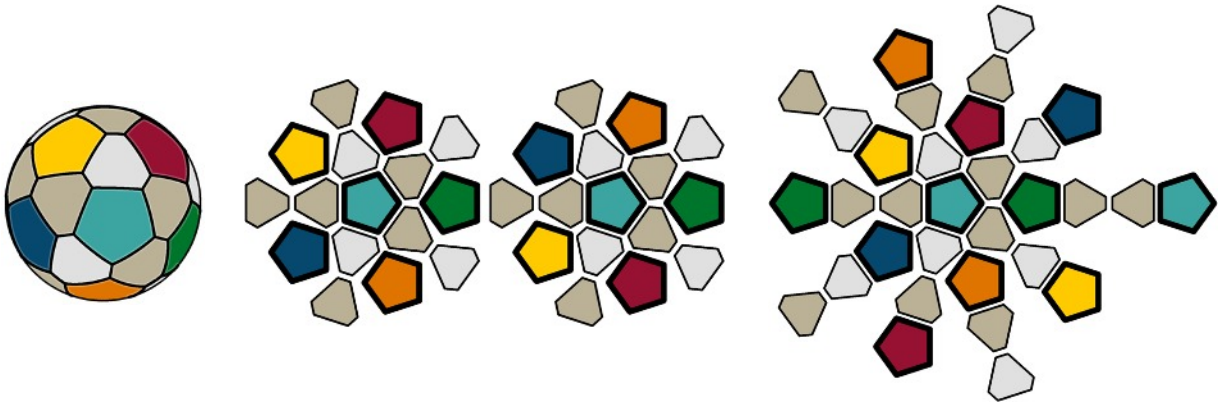
#45: Four-Color Patchwork Pents. The pentagons follow the 4-color patchwork (or four-color theorem) arrangement of the dodecahedron. The four colors are arranged so that no pentagon has a neighbor of the same color. The hexes are all a single, neutral color. I show both a light and dark color for the hexes because both look great. There is a total of 3 pents of each of the four main colors.



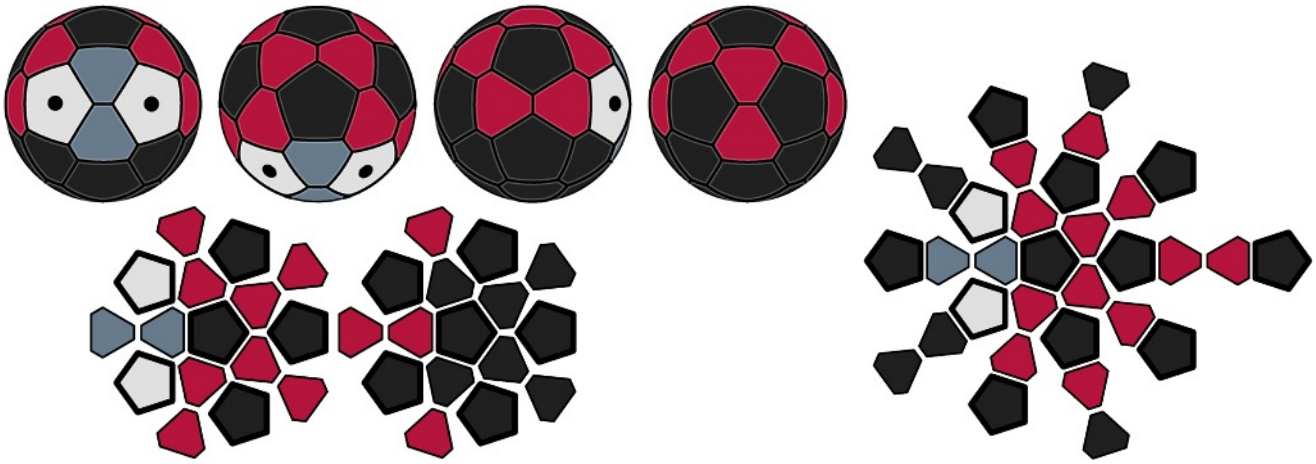
#49: Four-Color Patchwork Pents with Cube Hexes. Same as the above arrangement except for the hexes. One hex color (beige) is on 12 panels arranged as six pairs, each of which is perpendicular to those adjacent to it and parallel to the one opposite it, corresponding to the six faces of the cube. The other hex color (white) is on the 8 remaining hexes, corresponding to the eight corners of the cube. There is a total of 3 pents of each of the four main colors, 12 hexes of the paired cube face color (beige), and 8 hexes of the corner color (white).



#54: Six-Color Patchwork Pents. Each of the six main colors are on opposite pairs of pents. The hexes are all a single, neutral color. I show both a light and dark color for the hexes because both look great.

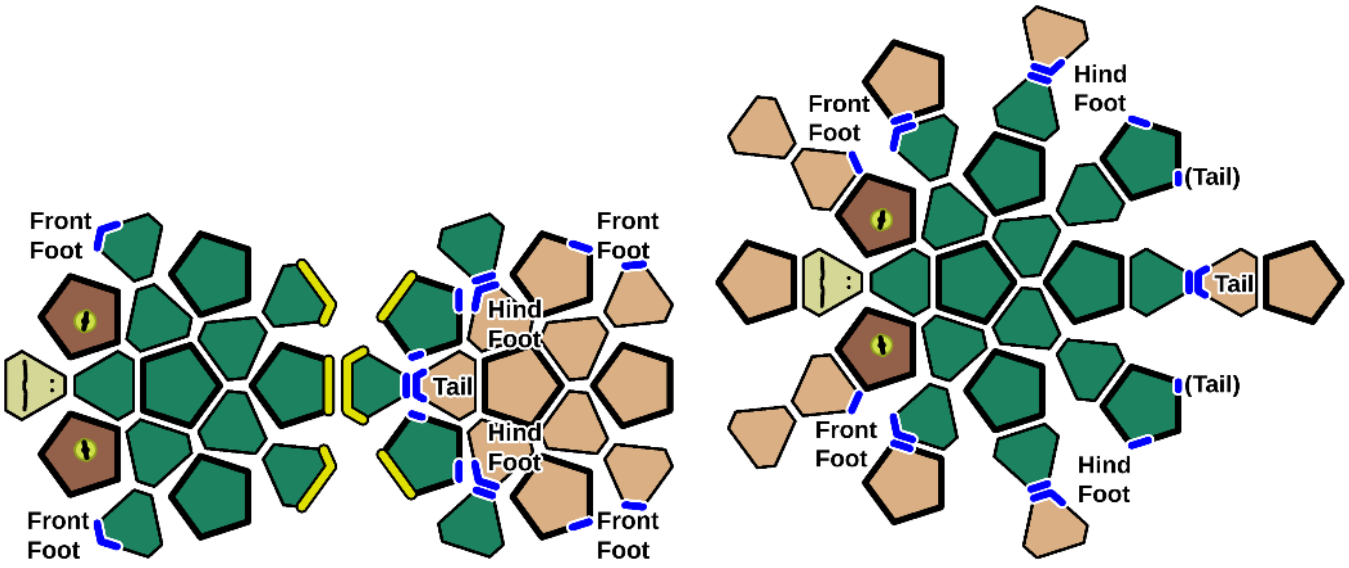


#59: Six-Color Patchwork Pents with Cube Hexes. Same as the above arrangement, except for the hexes. One hex color (beige) is on 12 panels arranged as six pairs, each of which is perpendicular to those adjacent to it and parallel to the one opposite it, corresponding to the six faces of the cube. The other hex color (white) is on the 8 remaining panels, corresponding to the eight corners of the cube. There is a total of 2 pents of each of the six main colors, 12 hexes of the paired cube face color (beige), and 8 hexes of the corner color (white).



Big-Eyed Ladybug and other characters. This is a cute arrangement I have seen in a couple places on the web[3]. To make it really work, you need to add not only the pupils to the eyes, but antennae above the nose bridge as shown on the left. The antennae are narrow strips of something stiff and durable sewn into the seam.

I used this idea to create the "Turtle Ball" shown on the right. Below are the assembly diagrams. I wrote an essay on this design that includes more photos at the end of the "32-Panel Equidistant Trunc Icosahedron Chapter" document.



Assembly diagrams for the Turtle Ball. Dual-hemisphere method on the left, pent-centric, ring by ring method on the right. The blue highlighted portions of the seams show where I sewed the feet and tail into them. The yellow highlights are where I suggest leaving the seams open to turn the bag out, and to fill the bag.

The photos below show some cartoon and video game characters from https://www.haniabag.com/shop/32-panels/32-panel-footbag-custom/.

3 The Ladybug photo is from http://modified.in/footbag/viewtopic.php?f=11&t=22702 and the same design is sold by HaniaBAG: https://www.haniabag.com/shop/32-panels/32-panel-footbag-custom/

32-Panel Beanbag Color Arrangements

Color Arrangements for Triangles and Pents (Icosidodecahedron)

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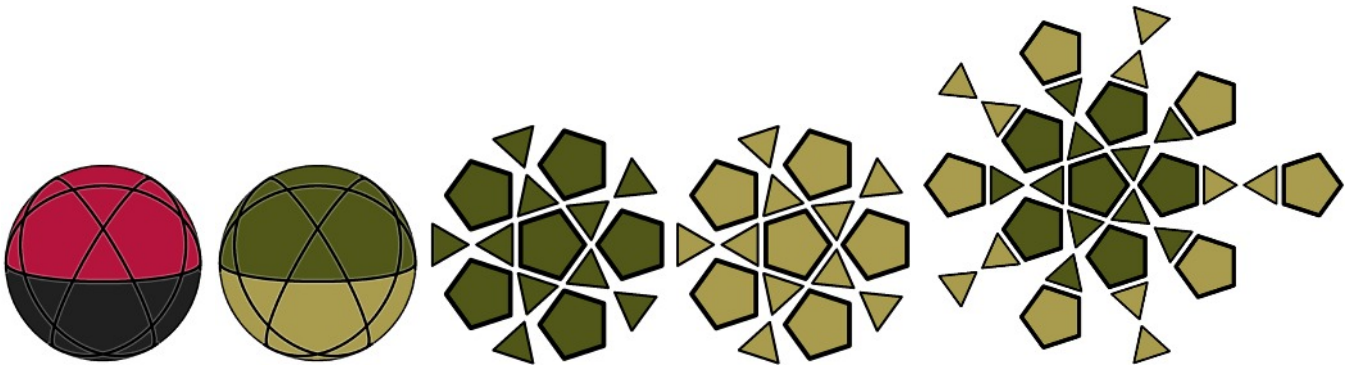
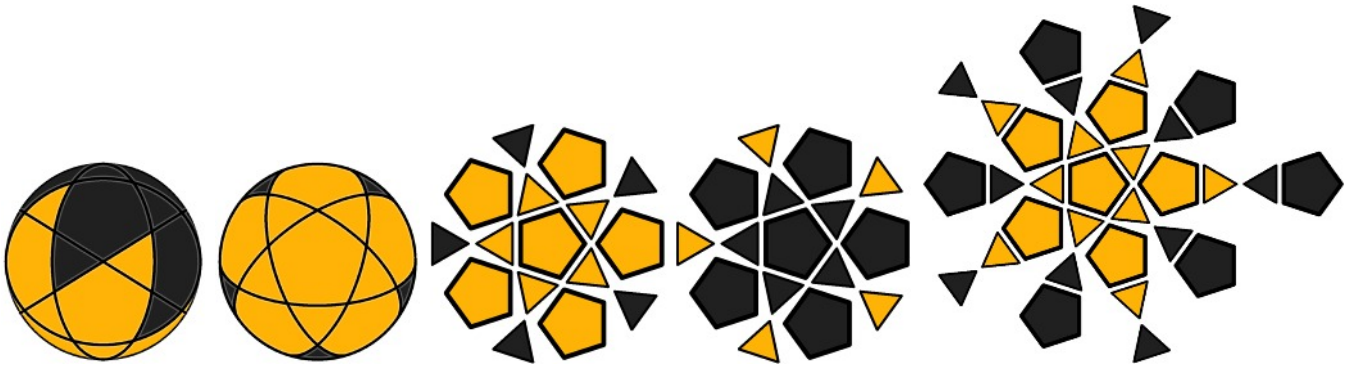
These color arrangements work particularly well (or sometimes solely) with triangles instead of hexagons. A few are from my dodecahedron arrangements. I have also included a few arrangements from the hexagon color arrangements that also work well for this design. There may be more, so take a look through those with an imaginative eye. As with the other 32-panel variations, any dodecahedron arrangement can be applied to the pentagon panels.

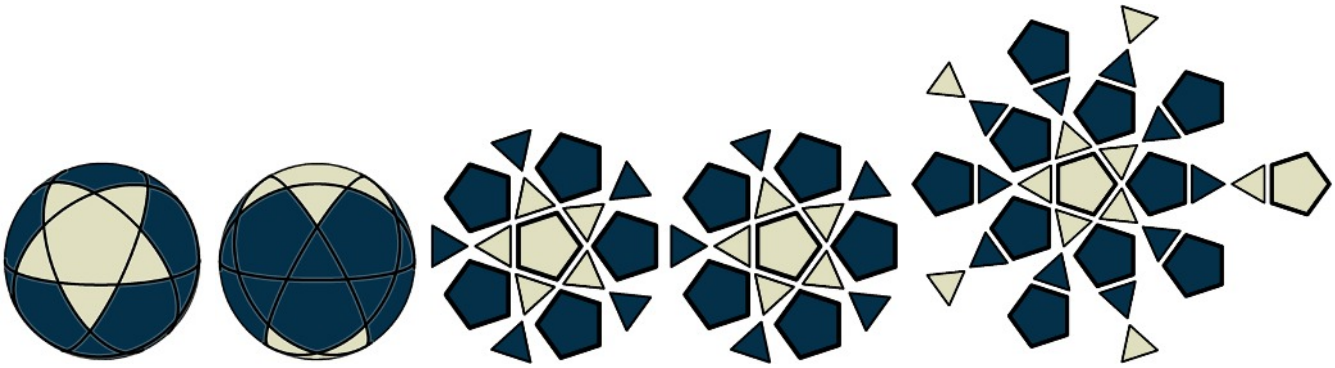
2 colors



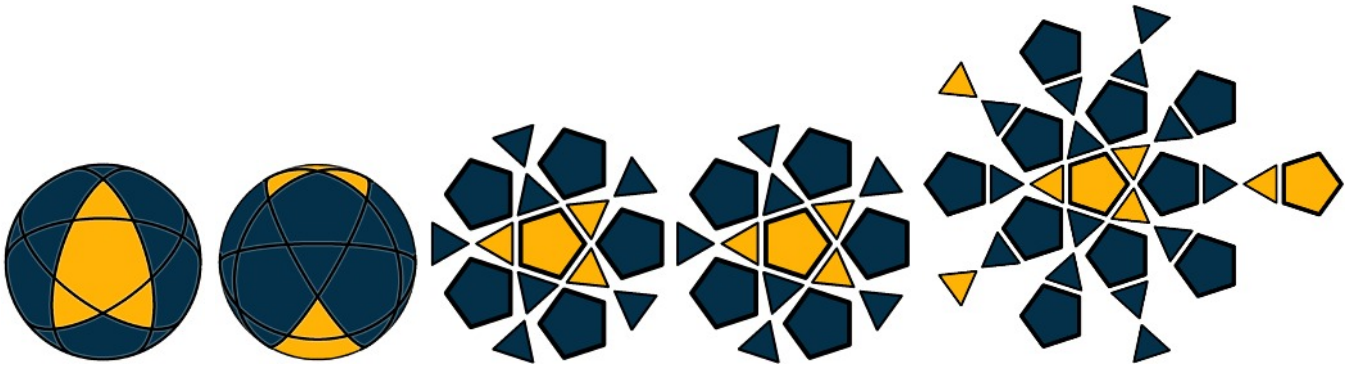
#1: Perfect Hemispheres. This design has perfectly circumscribing seams, and so it can form perfect hemispheres unlike the other variations. I couldn't decide whether I preferred the bold look of the red and black, or the army camo/turtle look of the earthy dark and pale greens.



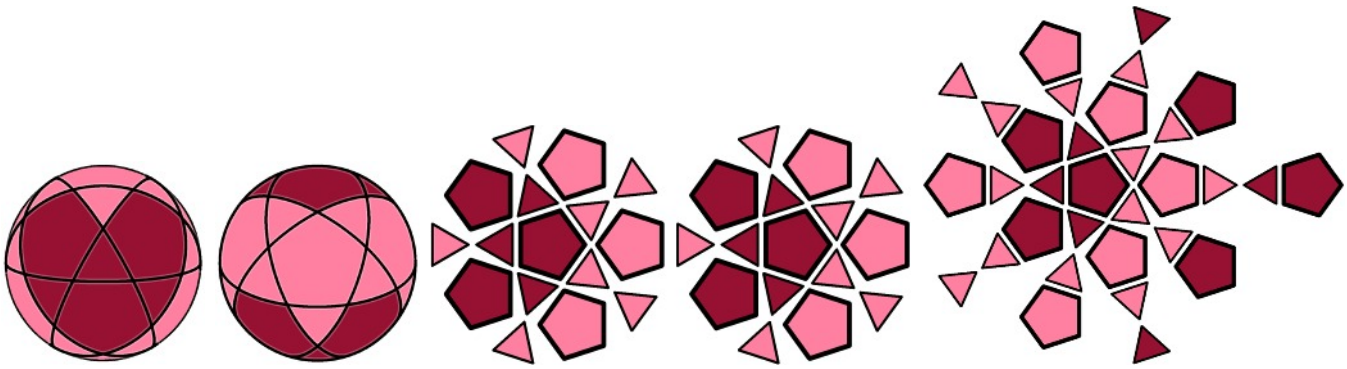
#2: Fanged Hemispheres/Embracing Stars (I couldn't decide which name I preferred). This was inspired by my "Sozen's Comet" arrangement (in the 5-color category), but I didn't think of it until April, 2021, five months after publishing this guide.



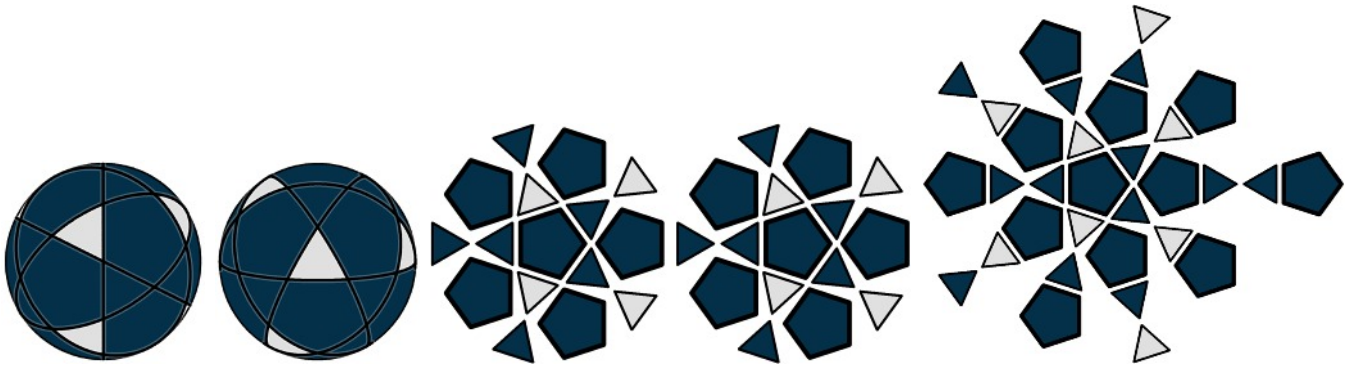
#3: Star Ball. Same as the Pent-centric Belt arrangement from the Equidistant hex version of this design, but it looks particularly beautiful with the triangles and central pent forming a star shape. There is a total of 2 pents and 10 triangles of the star color, and 10 pents and 10 triangles of the background color. As an alternative, you can use a different pair of colors on each hemisphere. My example on the right represents the sun in a daytime sky and a star in a night sky.



#4: Rocketship Symbol. My own design. I intended it to be the Starfleet insignia from Star Trek, but I forgot that that has asymmetric points on the bottom. This looks more like a classic rocketship. There are two rocketships opposite each other on this ball as shown in the second illustration. There is a way to place three of these figures on the ball, all pointing the same direction and not touching each other, but I think the two opposing figures look better.



#5: Heart Ball. Another of my own designs. I suddenly saw the heart shape in the seams of my design testing ball while I was experimenting with the Rocketship design. There are two opposing hearts in this design, oriented in opposite directions. There is a total of 6 pents and 6 triangles of the heart color, and 6 pents and 14 triangles of the background color.



#6: Cube Corners. Color A on 8 triangle panels corresponding to the eight corners of a cube (or the eight faces of the octahedron) and a contrasting color B filling the remaining 24 panels (12 of each shape). There are three-color and five-color variations of this arrangement that use multiple colors for the eight triangles. Click the links or look up the “Cube Corners” arrangements in the main, Equidistant color arrangement section for diagrams.

3 colors

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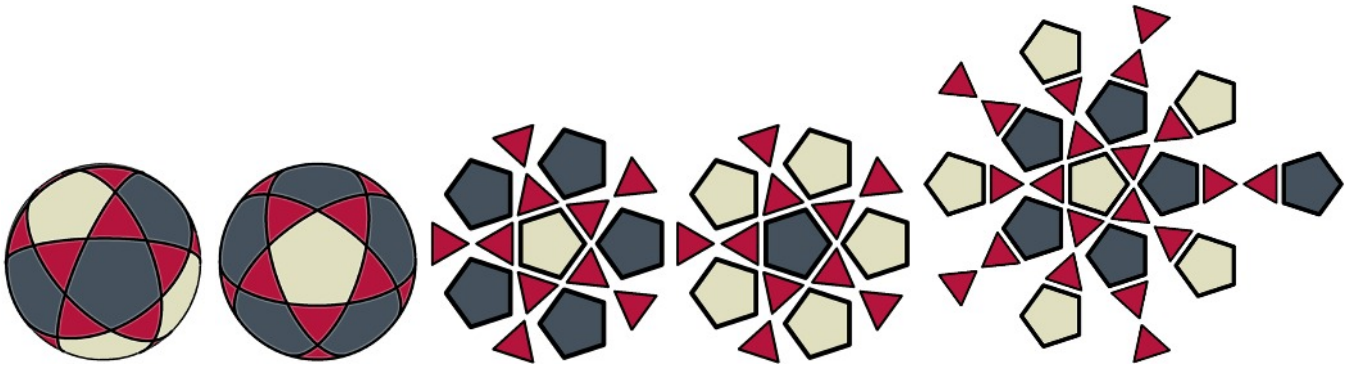
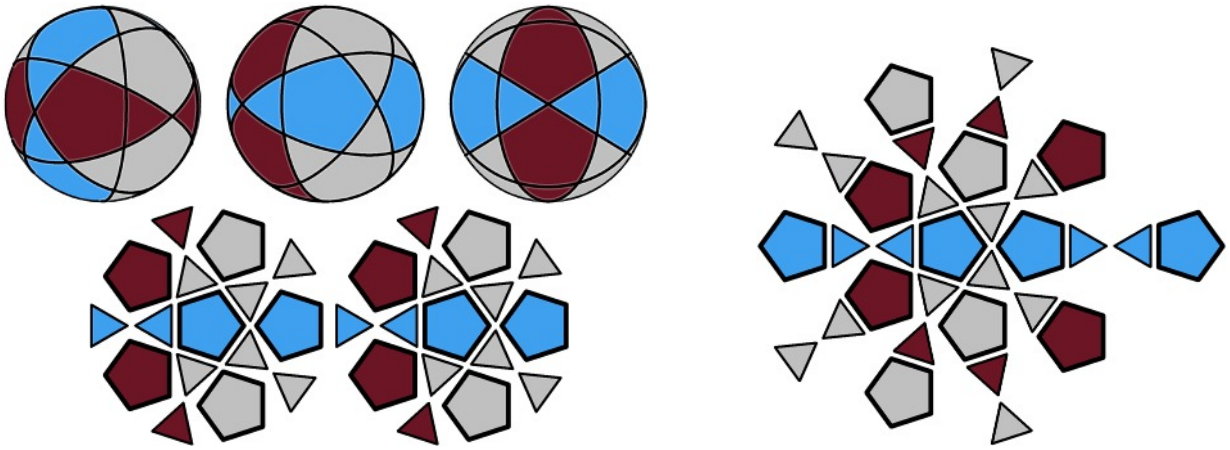
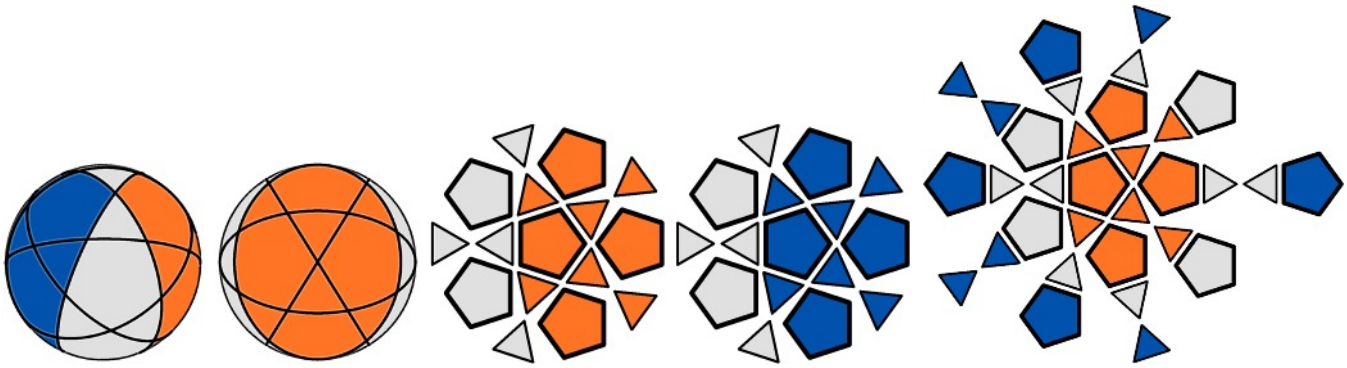


#7: Pent Rings. The pentagons follow the dodecahedron’s Alternating Concentric Rings arrangement, and the triangles are a contrasting third color. Each pole pent is a different color and is surrounded by 5 pents of the contrasting color. I took this design and specific colors directly from one of the photos in the Color Arrangements section of the Equidistant version. I did that with many of my arrangements. The stitchers who made the bags chose their colors well and so I often use the same ones rather than trying to find a different but equally attractive selection. On the right is another striking color selection I tried.

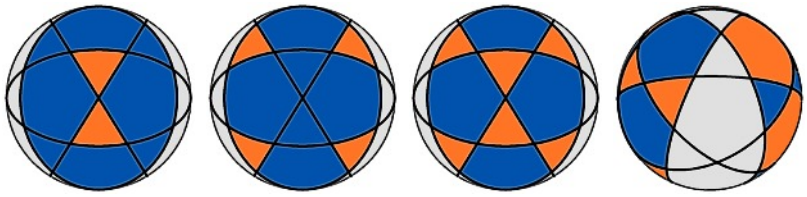


#8: Cat's Eye Marble. I copied this arrangement from the photo below (URL in the footnote). The name is my own. When I looked at it with an interpretive eye to decide on a name, a cat's eye marble came first to mind. There is a total of 4 pents and 4 triangles of each stripe color, and 4 pents and 12 triangles of the background color.

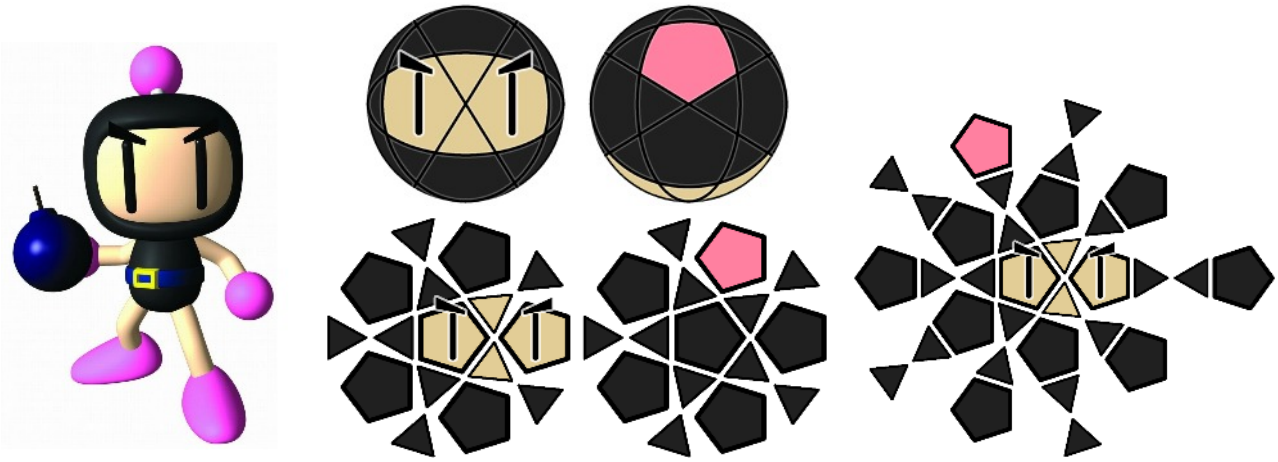
4



#9: Orange Peel Ball. Related to the Cat's Eye Marble, this arrangement is similar to my three-color Dual-Width Stripes arrangement for the 6-panel Orange Peel Ball. It can even be fancied up by changing the color of the triangles within the wide stripes:



4 http://www.footbagcentral.com/I%5E2-32-Panel-Footbag-Hacky-Sack



Bomberman image from https://bomberman.fandom.com/wiki/Black_Bomberman?file=Black_2.jpg. Diagram features drawn by me.

#10: Bomberman (or Ninja, etc.). While drawing the Cube Patches arrangement, I realized that the shape formed by two pents and two triangles can be used to create the visor of a helmet, or a ninja mask.

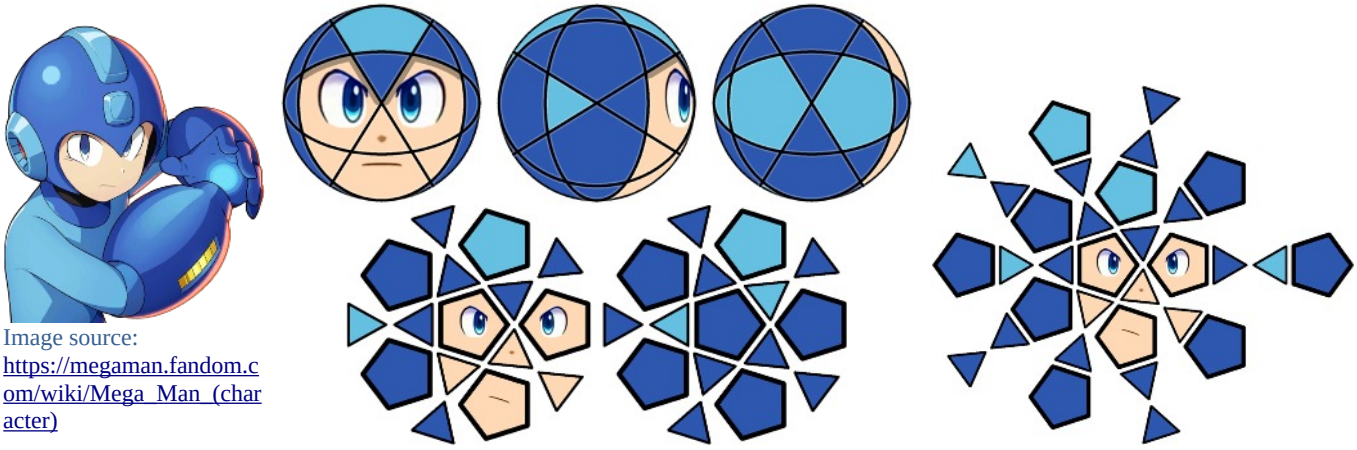


Image source: https://megaman.fandom.com/wiki/Mega_Man_(character)

Facial features extracted from “Buster Weapon” wallpaper at https://catwithmonocle.com/news/2018/05/29/custom-megaman-11-wallpapers/#fancyboxID-2

#11: Mega Man. The visor concept can be modified to approximate Mega Man’s helmet. The face opening is the same shape as the heart from my Heart Ball arrangement.

4 colors

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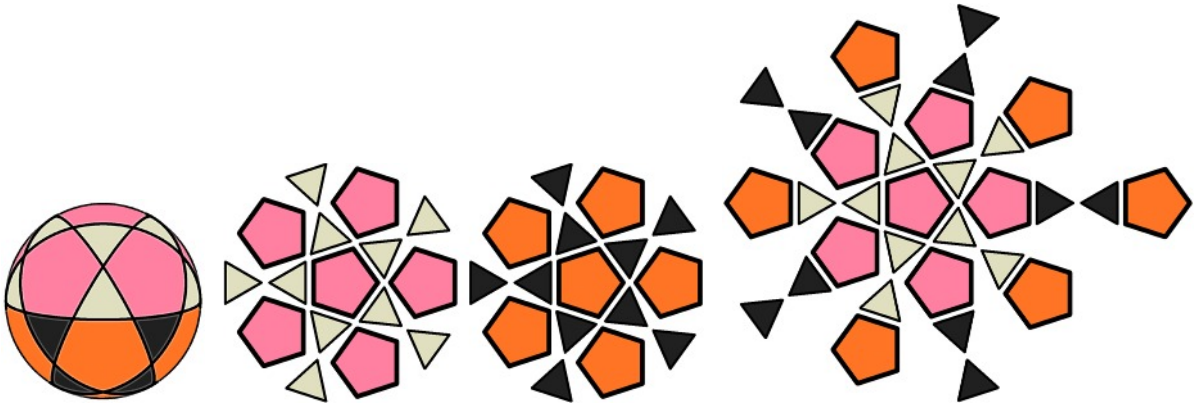
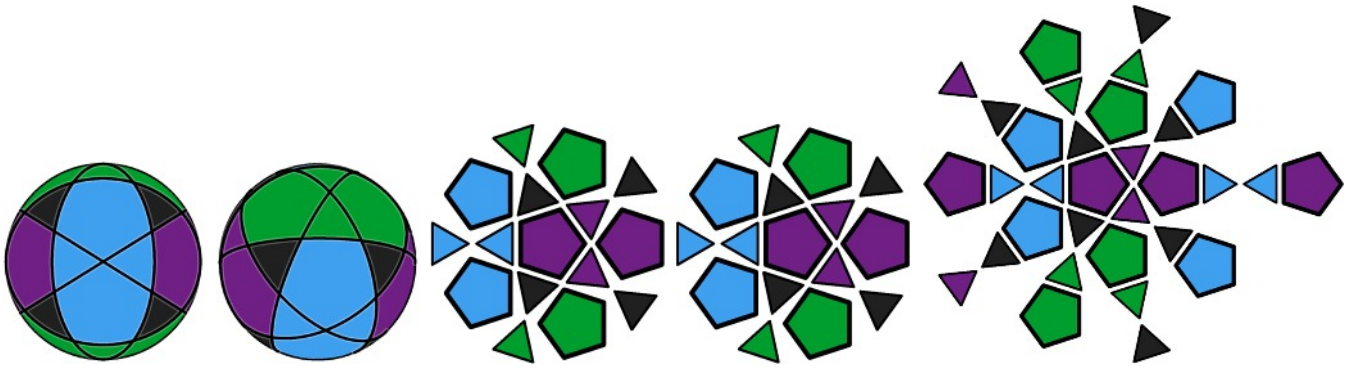
#12: Biker/Skier. Based on the Bomberman arrangement. I converted the visor into a pair of cool shades or ski goggles and added a bandanna (which could be colored differently to form hair). The pent below the goggles can make a good goatee, and the beige panels could be colored to form a scarf.

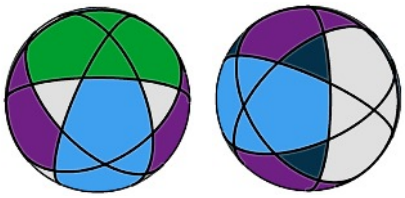


#13: Bi-Color Hemispheres. Each hemisphere has two unique, contrasting colors – one on the pents and the other on the triangles.



#14: Cube Patches. Same as the Cube Patches arrangement from Equidistant hex version of this design, but the triangles change the shape of the patches. Each of the three main colors is on opposite patches, each composed of 2 pents and 2 triangles. Each patch is perpendicular to those adjacent to it and parallel to the one opposite it. They correspond to the faces of the cube. The fourth color is on the 8 triangle panels between the patches, corresponding to the corners of the cube.

The two additional examples on the right show how using white for the eight triangles makes the patches stand out more, and using white for one of the pairs of patches results in the other two pairs forming a ring around the ball.



5 colors

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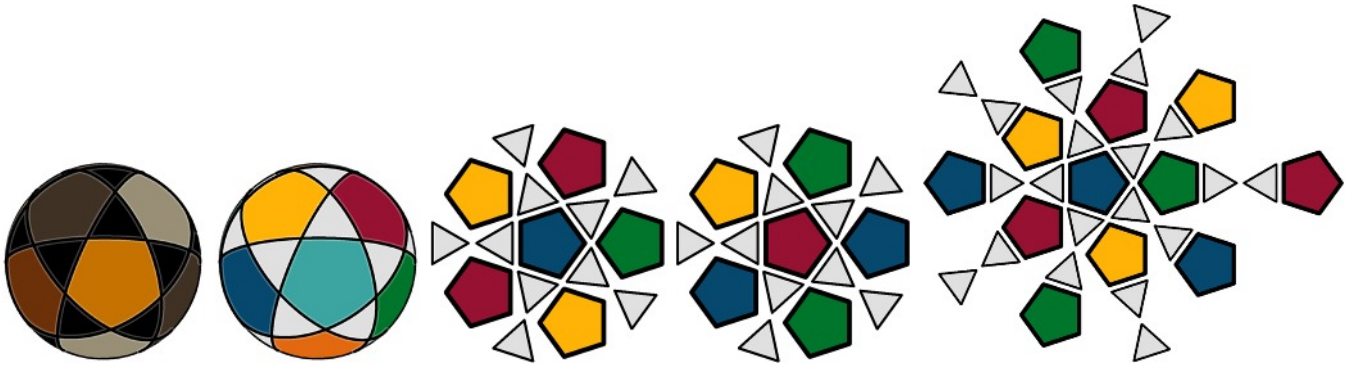
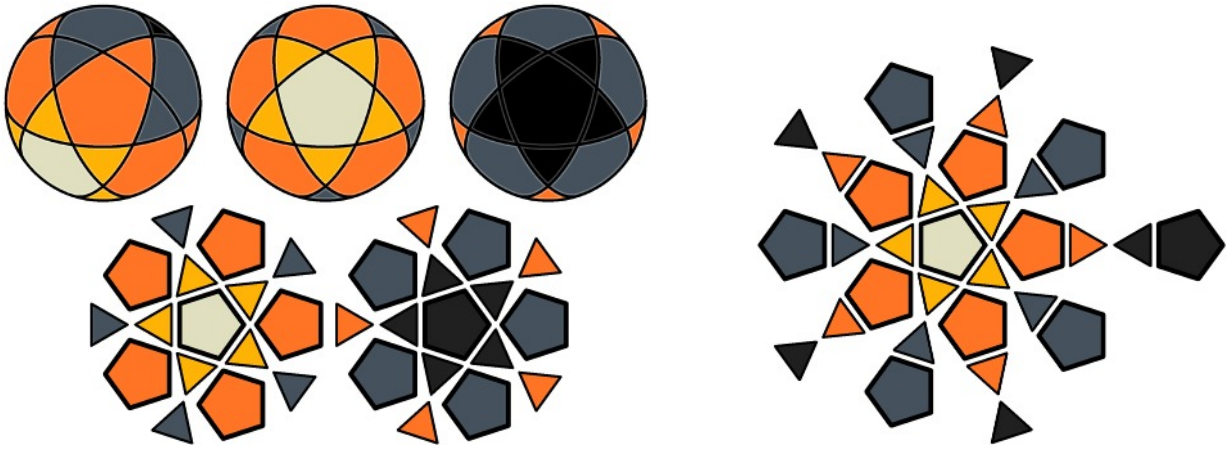


#15: Four-Color Patchwork Pents. The pentagons follow the dodecahedron's Four-Color Patchwork arrangement and the triangles are all a single, neutral color. The Halloween version uses the same colors as my dodecahedron, but I also wanted to show the bright colors from my Equidistant design arrangements. There are 3 pents of each color and they are distributed so that no pent has a neighbor of the same color.



#16: Sozen's Comet. Another of my own original designs. I am proud of this one. It started with experimentations with the pent + triangle shape and ways to use it to create claws or flames. From there I imagined a rocket engine, and then when I took out my icosidodecahedron beanbag to see how my imagined design would look, I suddenly had the comet idea.

The comet arrangement works to some degree with the 14-panel hexes as shown on the right, but it doesn't look nearly as good, and there are likely some people who will laugh at it because the pent + hex shape resembles a penis.

6 colors

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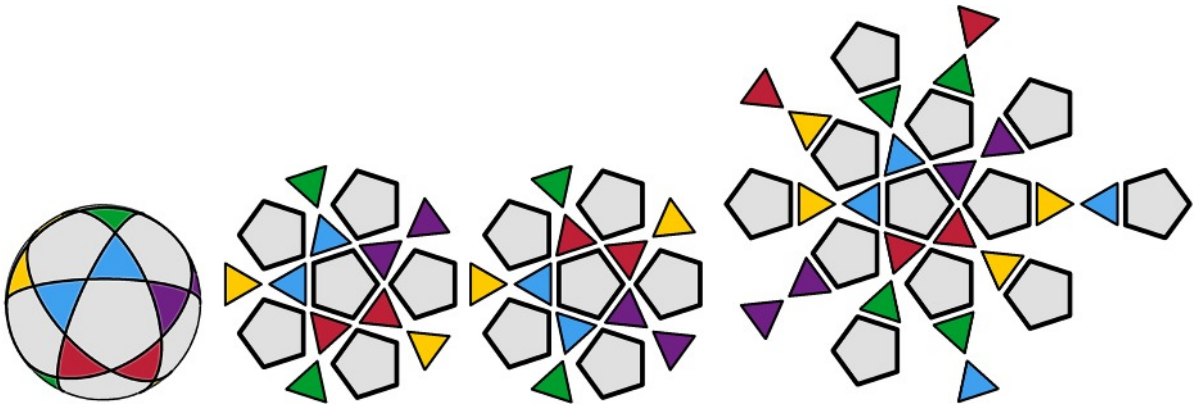
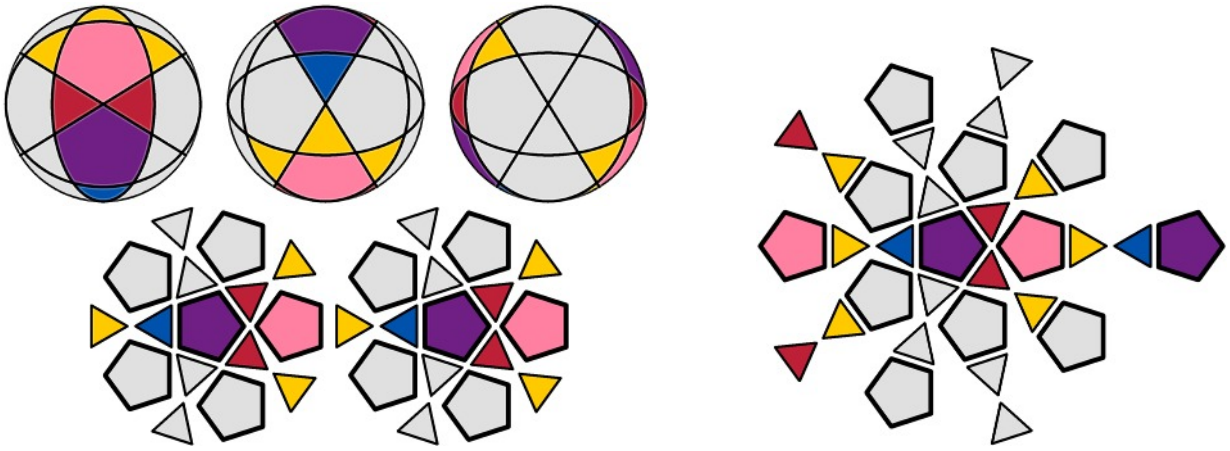


#17: Triangle Pairs. Each of the five main colors is on two pairs of triangles that are opposite each other. I got this arrangement from the photo on the right from Footbag Central[5] (the lower right of the three).



#18: Olympic Torch (or maybe a woman in a skirt). This is another idea from Footbag Central (their photo is on the left). There is no name or description of this design given. I initially saw it as a colorful Olympic torch symbol, but then I realized it might be a blond-haired woman wearing a V-neck dress with a narrow skirt. The two opposing torches/women can be arranged top to bottom as shown, or top to top. I think the top to bottom looks better. On the right is what this arrangement looks like with a dark background, which also looks great.

5 http://www.footbagcentral.com/I%5E2-32-Panel-Footbag-Hacky-Sack

7 colors

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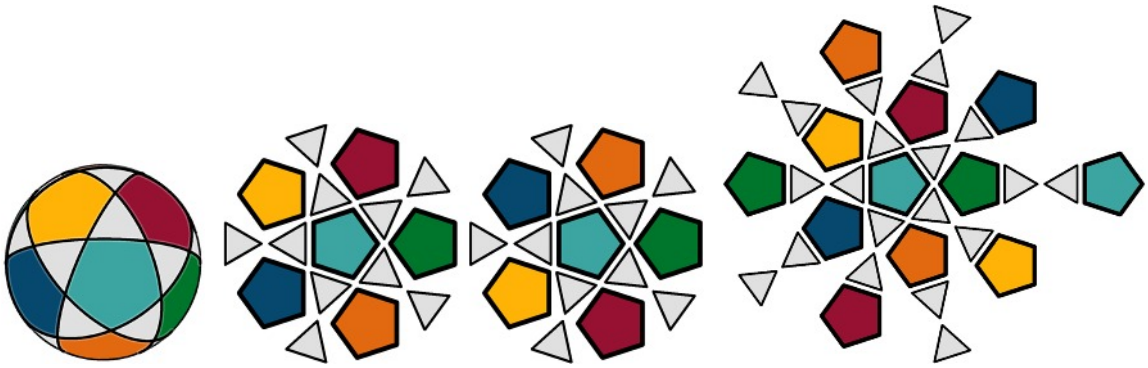

#19: Six-Color Patchwork Pents. The pentagons follow the dodecahedron's Six-Color Patchwork arrangement and the triangles are all a single, neutral color. There are 2 pents of each color and each color is opposite its match.

Color Arrangements for Hexagons and Pentagons

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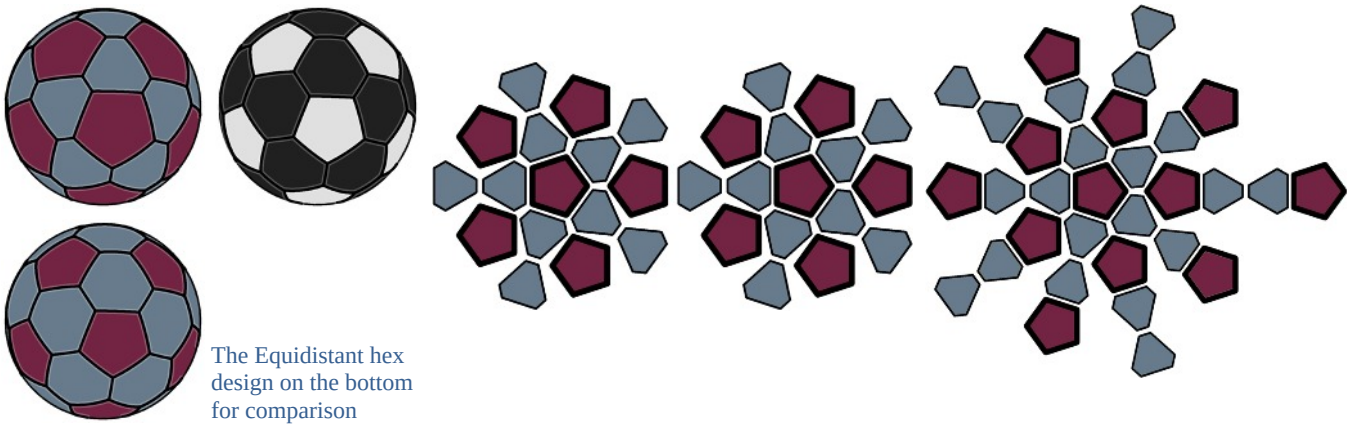
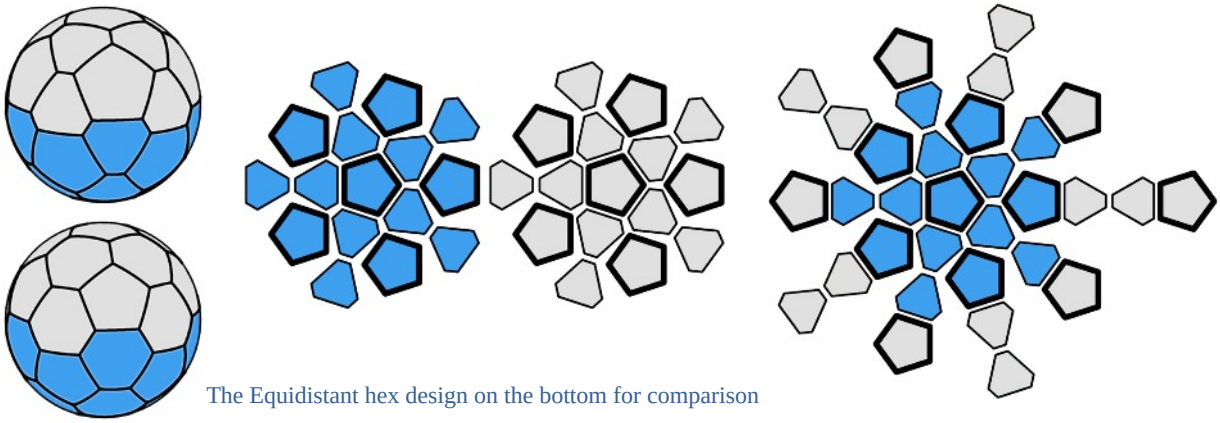
These are color arrangements that work with hexagons, and many of them work better with my Equidistant hexagon, which is the same size as the pentagon. But they will also work with the footbag hex. **For each arrangement I show two sets of ball illustrations: on the top are balls with the footbag hex and on the bottom are balls using the Equidistant hex for comparison.**

2 colors



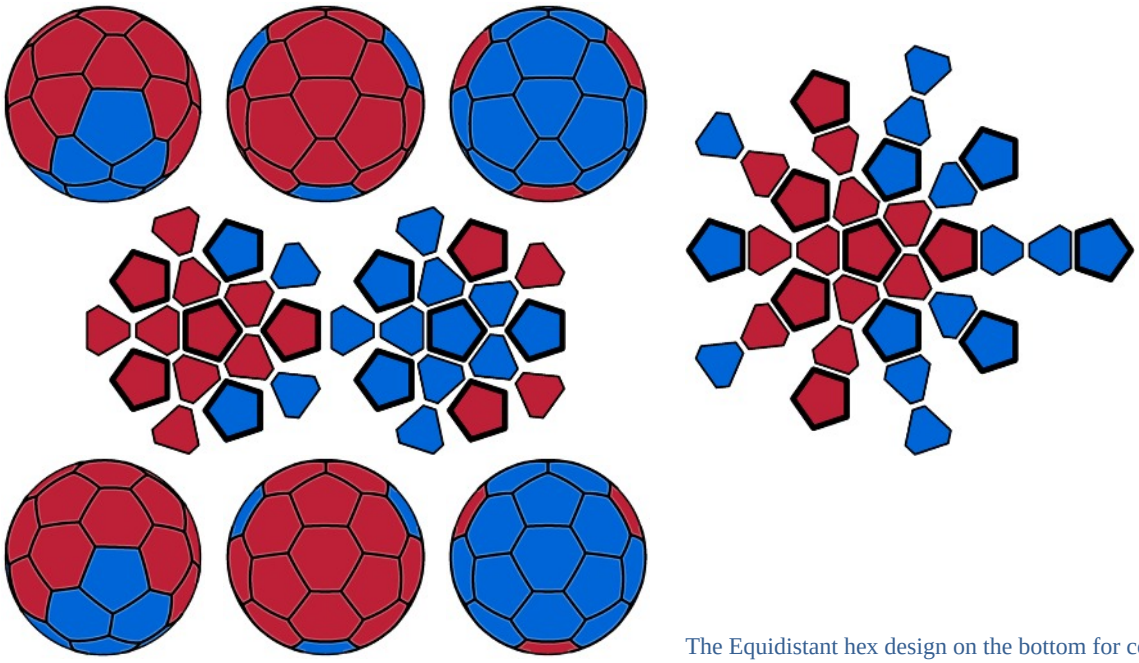
The Equidistant hex design on the bottom for comparison

#1: Soccer Ball. The 20 hexes one color and the 12 pents another. My ball illustrations show two different variations.



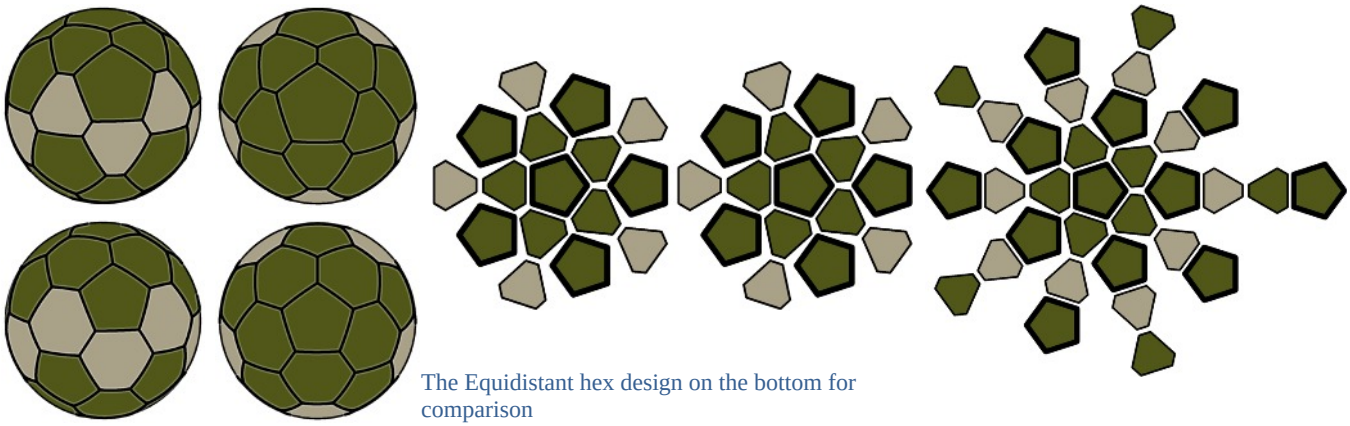
The Equidistant hex design on the bottom for comparison

#2: Hemispheres/"Paradox". Each uniquely-colored hemisphere is composed of a central pentagon surrounded by a ring of 5 hexes and then by a ring of 5 hexes alternating with 5 pents. There is a total of 6 pents and 10 hexes of each color. On the right is my original color scheme.



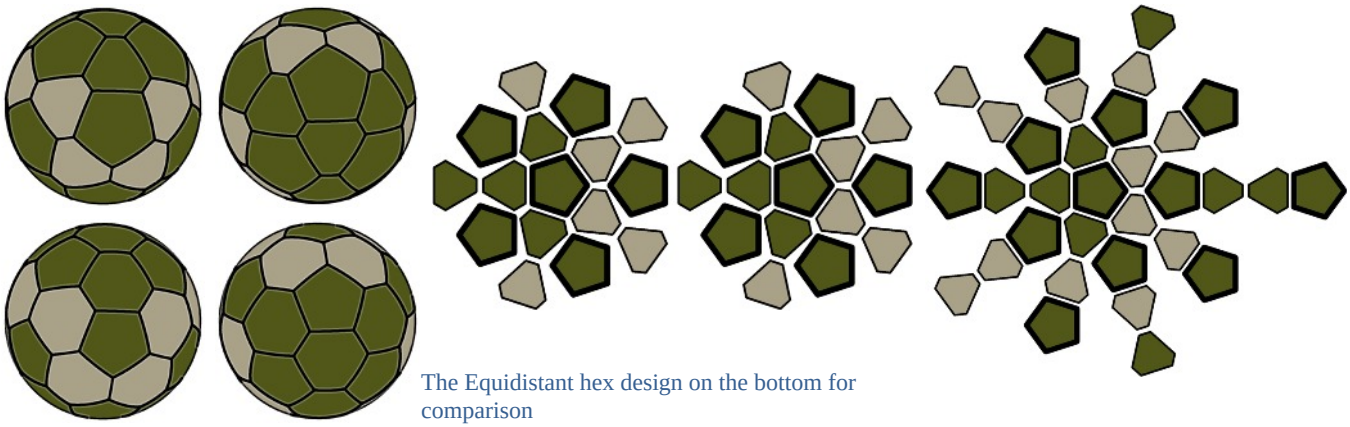
The Equidistant hex design on the bottom for comparison

#3: Tri-Wing Hemispheres/"Flip-Flop". Each color on 10 hexes and 6 pents forming a tri-wing shape. A simplified version of the 4-color Tri-Wing Hemispheres arrangement.



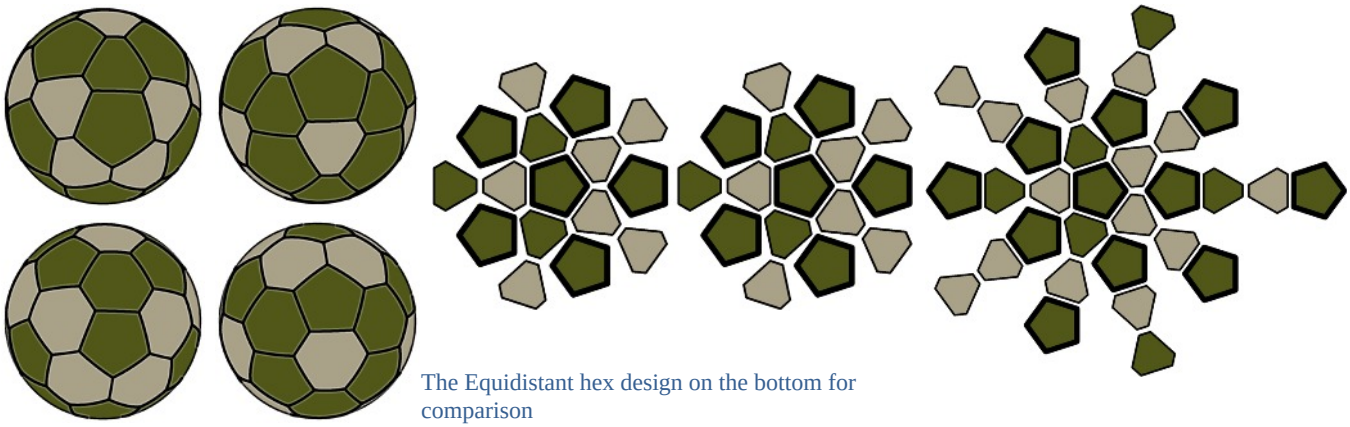
The Equidistant hex design on the bottom for comparison

#4: Undulating Ring. Similar to the hemispheres arrangement but the hemispheres are now both the same color and the outer five hexes from each hemisphere are assigned the second color. Each hemisphere or cap now consists of a pent surrounded by five hexes, and then by five pents. There is a total of 12 pents (all of them) and 10 hexes of the cap color, and 10 hexes of the ring color.



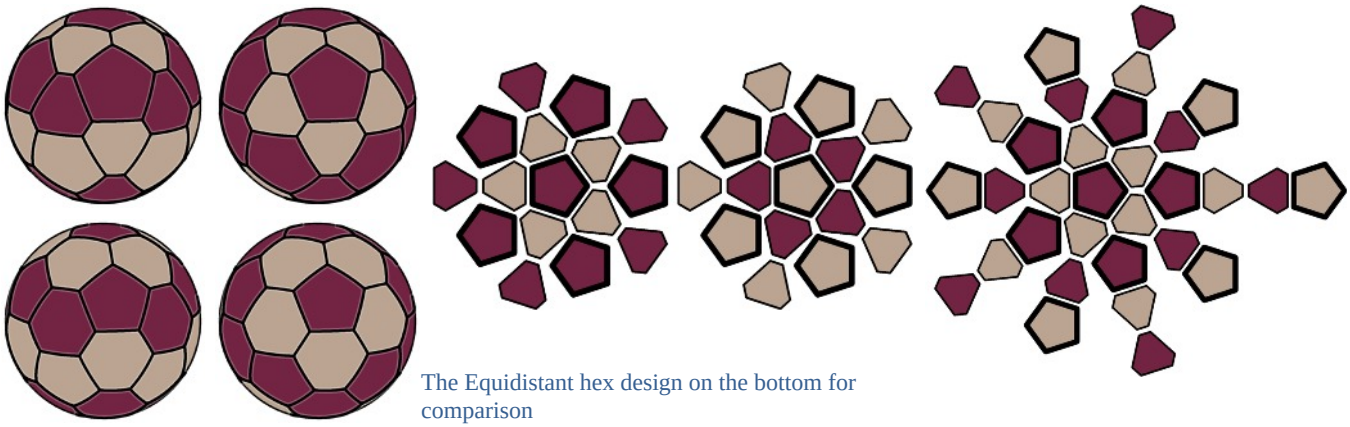
The Equidistant hex design on the bottom for comparison

#5: Sine Wave Ring/Tri-Wing Caps/"Shredzilla". Same concept as the undulating ring, but hex-centric instead of pent-centric. This arrangement creates roughly triangular caps with an extension, or wing, at each corner. There is a total of 12 pents (all of them) and 8 hexes of the cap color, and 12 hexes of the ring color.



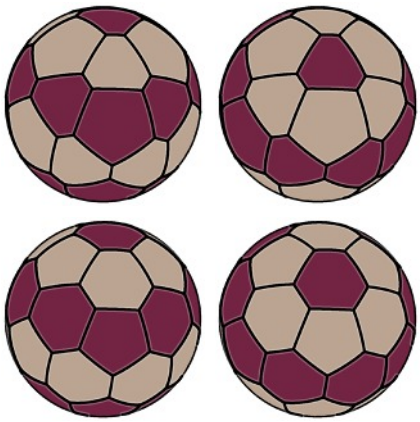
The Equidistant hex design on the bottom for comparison

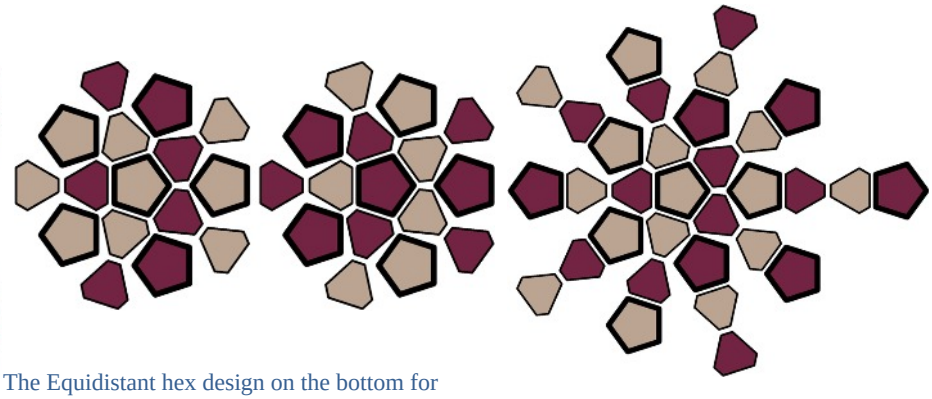
#6: Sine Wave Ring/Tri-Wing Caps with Hubs. Same as the above arrangement but the center hex panel of each Tri-Wing Cap is assigned the same color as the Sine Wave Ring.



The Equidistant hex design on the bottom for comparison

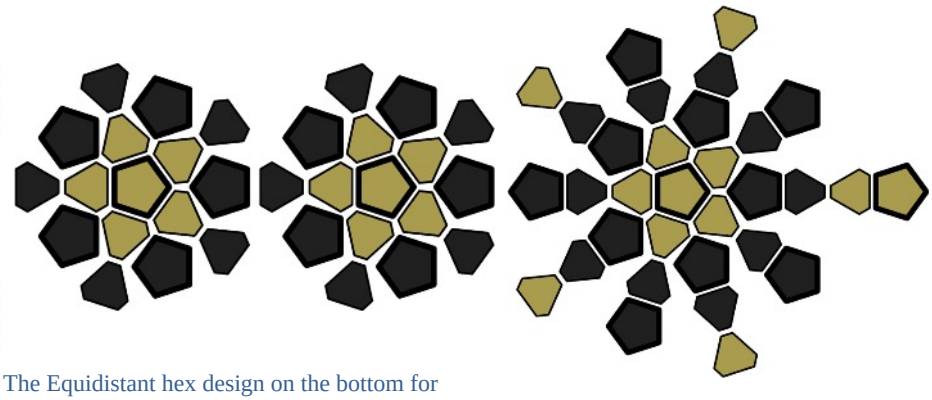
#7a: Alternating Pent-centric Rings. Two colors alternate starting on a pent panel, then on the five panels surrounding it, then on the ten panels surrounding those, and then back to the opposite pole. This pent-centric version has rounder-looking rings around the hubs, but the two widest rings around the middle undulate more. There is a total of 6 pents and 10 hexes of each color.





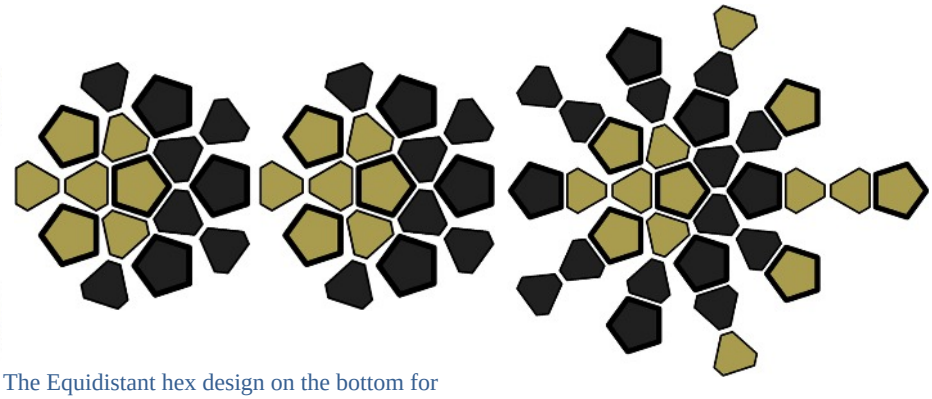
The Equidistant hex design on the bottom for comparison

#7b: Alternating Hex-centric Rings. Two colors alternate starting on a hex panel, then on the six panels surrounding it, then on the nine panels surrounding those, and then back to the opposite pole. This hex-centric version has somewhat triangular rings around the hubs, but the two widest rings around the middle undulate less. There is a total of 6 pents and 10 hexes of each color.



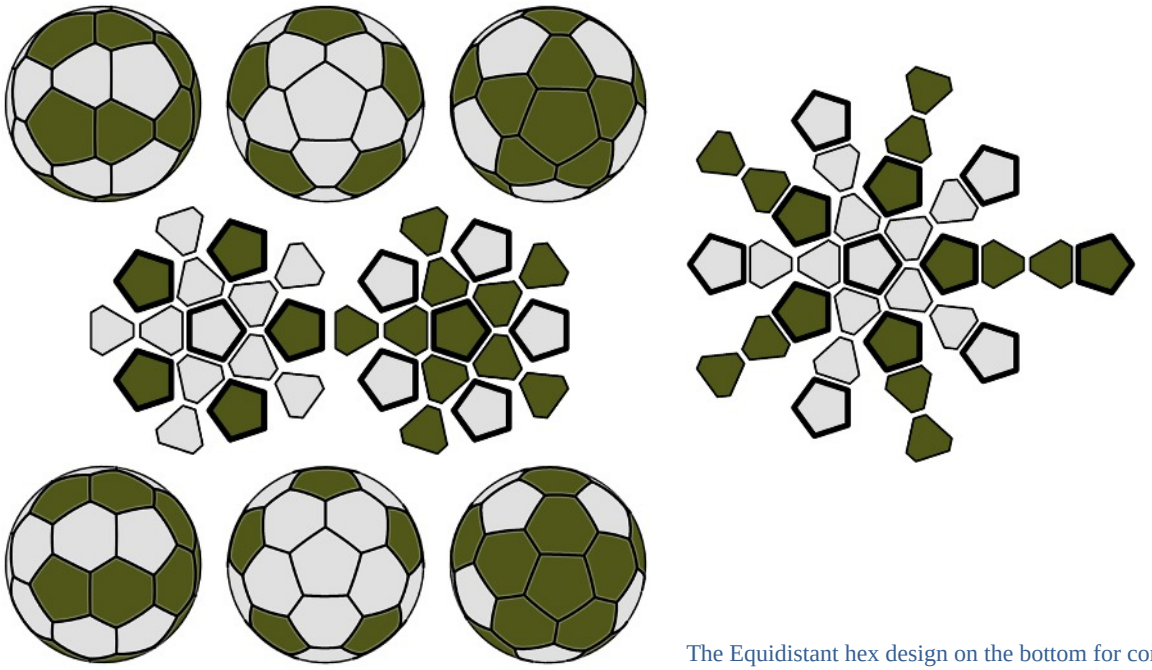
The Equidistant hex design on the bottom for comparison

#8a: Pent-centric Belt. Color A on two opposite caps composed of a pent surrounded by five hexes. Color B on the twenty panels between them. This pent-centric version has rounder-looking caps. There is a total of 2 pents and 10 hexes of the cap color, and 10 pents and 10 hexes of the belt color.



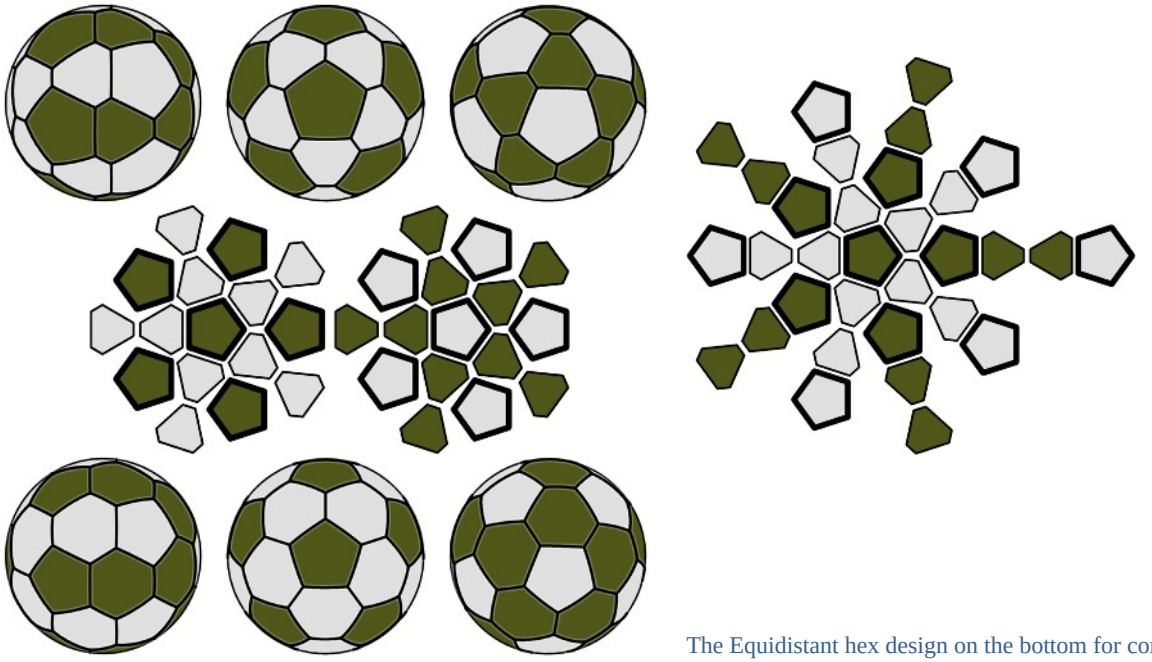
The Equidistant hex design on the bottom for comparison

#8b: Hex-centric Belt. Color A on two opposite caps composed of a hex surrounded by six panels (three of each shape). Color B on the eighteen panels between them. This hex-centric version has somewhat triangular caps. There is a total of 6 pents and 8 hexes of the cap color, and 6 pents and 12 hexes of the belt color.



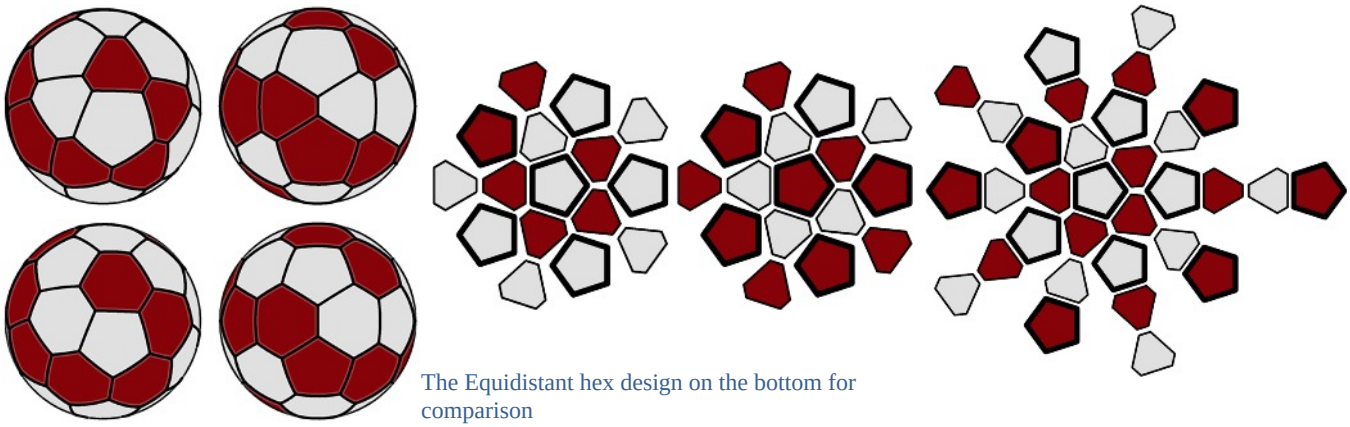
The Equidistant hex design on the bottom for comparison

#9: Folded Hands/"Bipolar". Related to the Pent-centric Belt, this arrangement takes the caps composed of a pent surrounded by five hexes, the “palm”, and extends those hexes into five “fingers” using the hex and pent connected to them in a straight line. Two contrasting hands opposite each other interlock their fingers around the ball between the palms. There are 6 pents and 10 hexes of each color.



The Equidistant hex design on the bottom for comparison

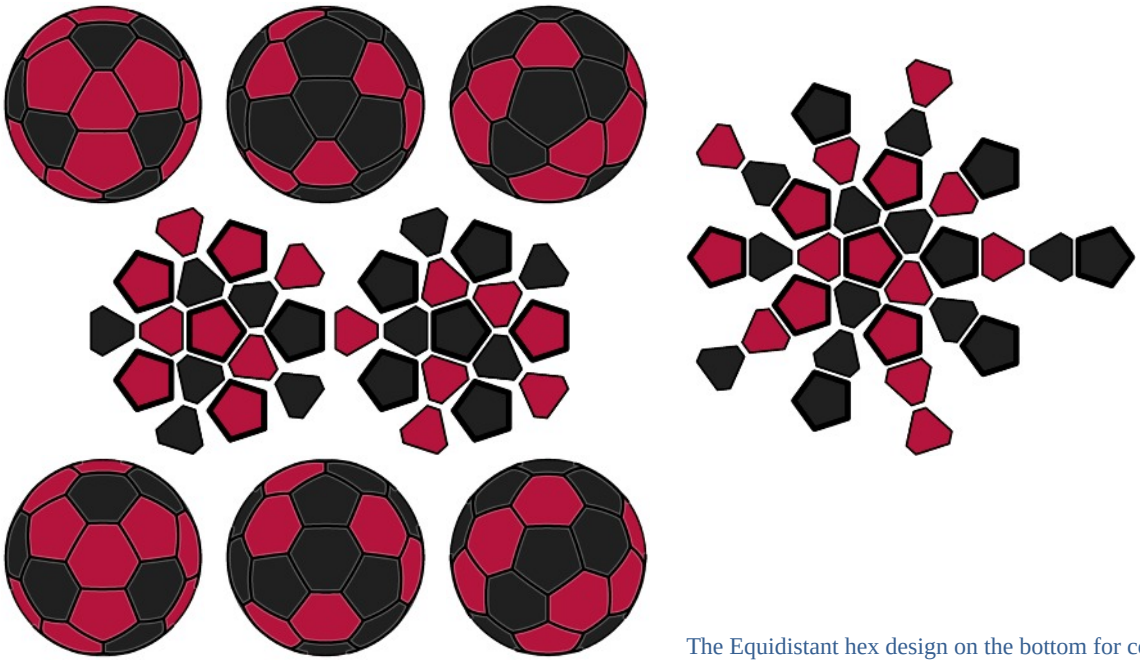
#10: Folded Hands with Hubs. Same as the Folded Hands, but the central pent of each palm is assigned the color of the opposite hand. There are 6 pents and 10 hexes of each color.



The Equidistant hex design on the bottom for comparison

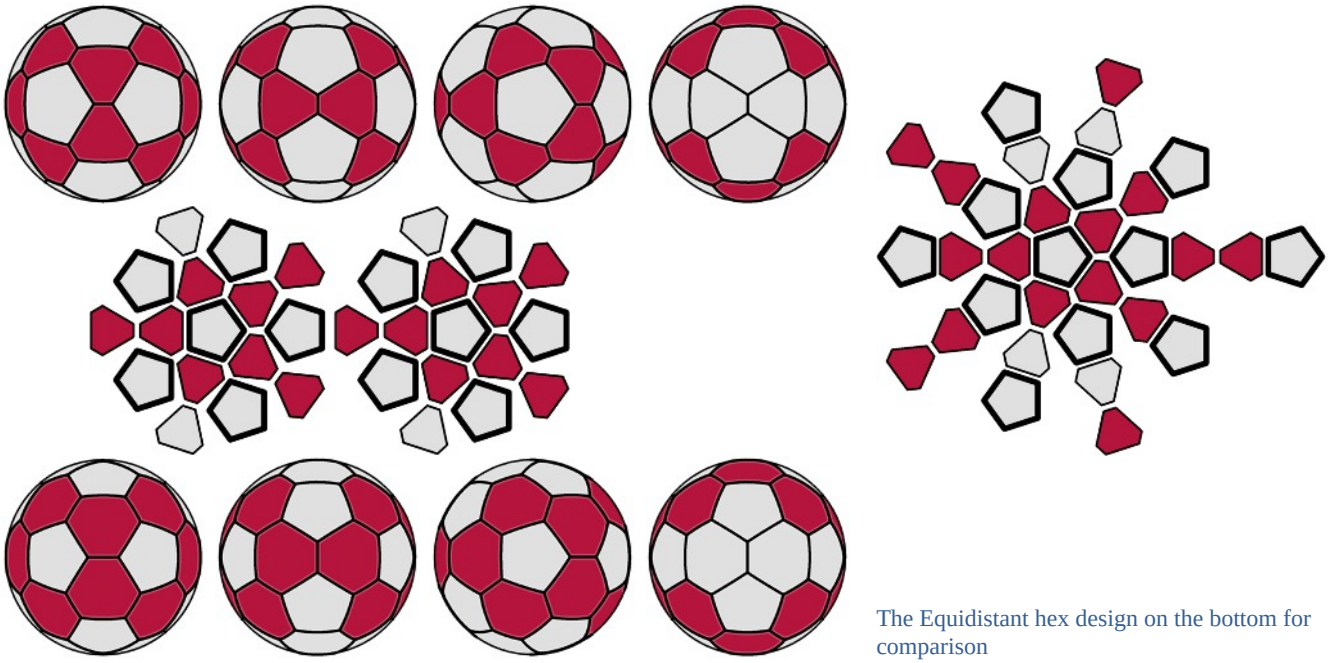
#11: Double Helix/"Spiral". Two colors spiral together around the ball. Each spiral ends with a different panel shape from which it started. This arrangement is chiral (its mirror image is not the same). Laying the panels out as shown above with the fronts facing up will yield the clockwise helices shown in the illustrations while laying them out with the backs facing up will flip the arrangement to its mirror image, reversing their direction. There is a total of 6 pents and 10 hexes of each color.

Because each spiral has 16 panels, you can use a repeating sequence of 2, 4, or 8 colors on them. Here are examples of using a color pattern on one spiral and a single background color on the other:



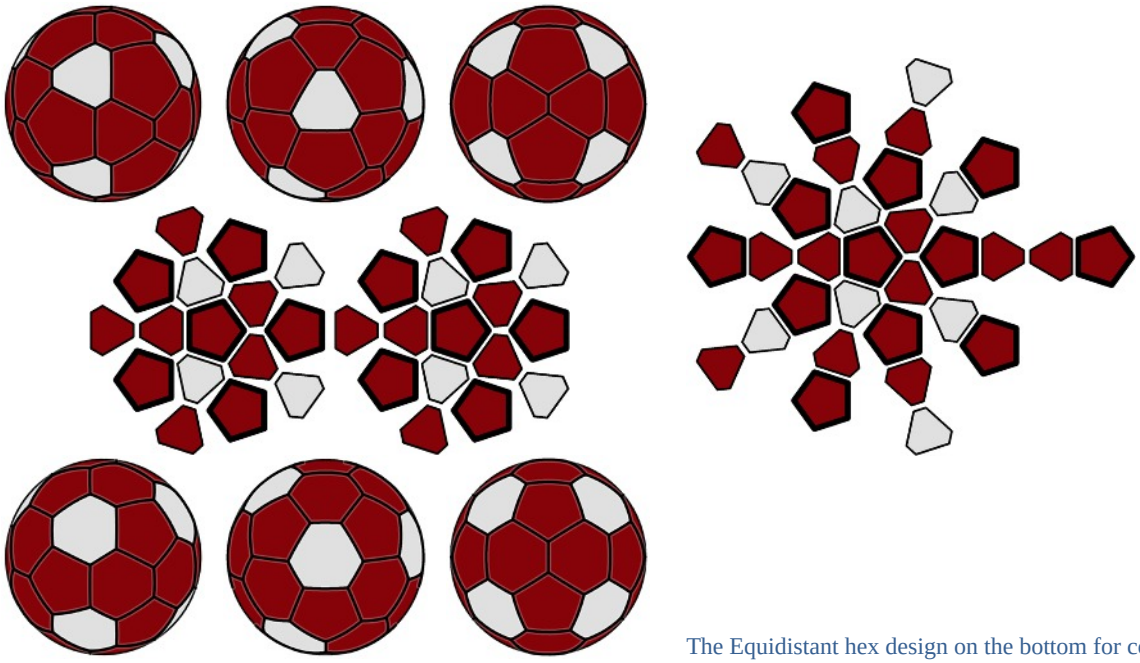
The Equidistant hex design on the bottom for comparison

#12: Opposing Triple Swirls/"Spinner". A hex hub panel of color A on one side of the ball has three swirls of the same color radiating from its long edges, each consisting of 2 pents and 3 hexes. A hex hub of color B on the other side has the same three swirls of its color radiating from it. This arrangement is chiral (its mirror image is not the same). Laying the panels out as shown above with the fronts facing up will yield the clockwise swirls shown in the illustrations while laying them out with the backs facing up will flip the arrangement to its mirror image, reversing the swirl direction. There is a total of 6 pents and 10 hexes of each color. There is a total of 6 pents and 10 hexes of each color.



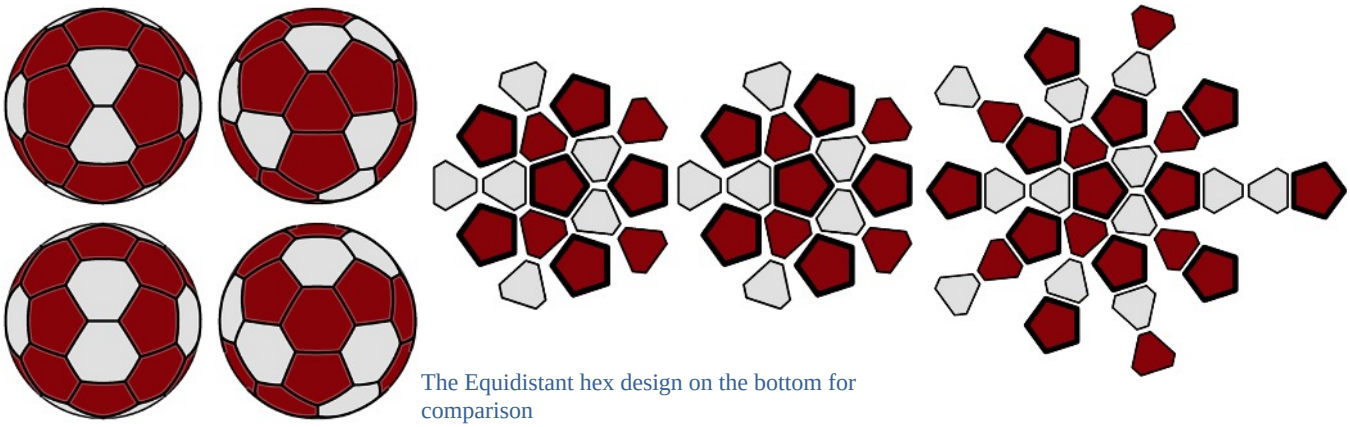
The Equidistant hex design on the bottom for comparison

#13: Back-to-Back. I see this arrangement as two eye masks, each opposite the other. I based this on an arrangement called “Quark” on https://umbrellabags.wordpress.com/. The Quark arrangement is too unbalanced for my taste.



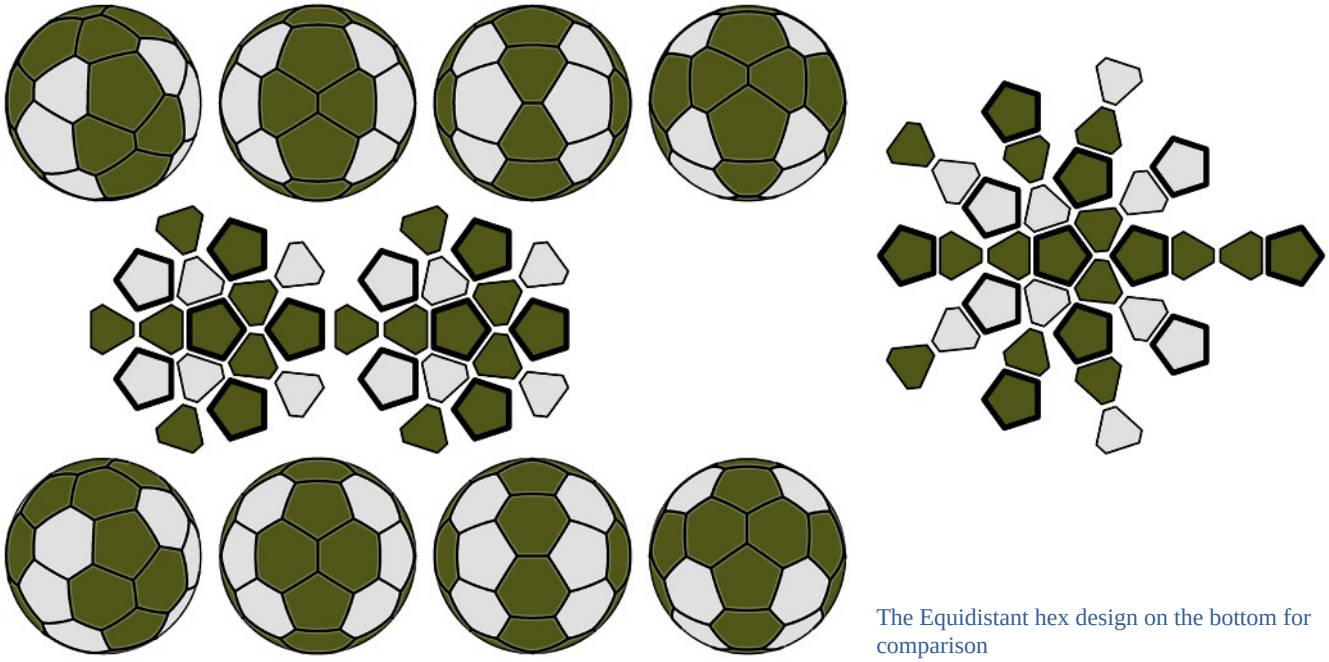
The Equidistant hex design on the bottom for comparison

#14: Cube Corners. Color A on 8 hex panels corresponding to the eight corners of a cube (or the eight faces of an octahedron) and a contrasting color B fills the remaining 24 panels (12 of each shape).



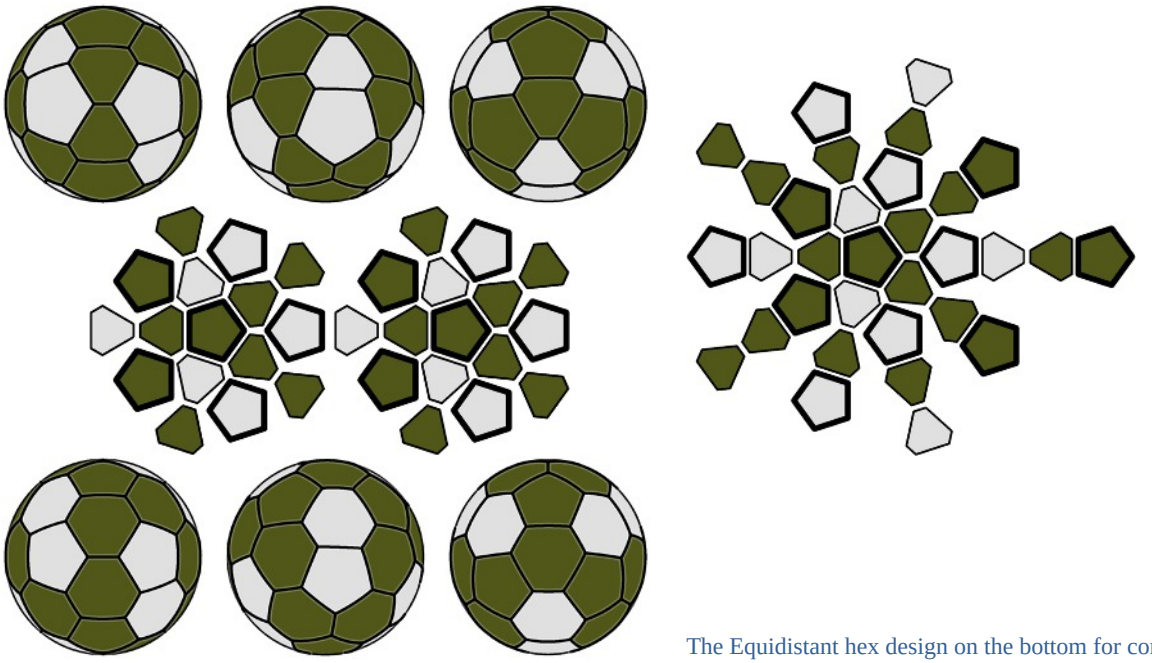
The Equidistant hex design on the bottom for comparison

#15: Cube Pairs. Color A on 12 hex panels arranged as six pairs corresponding to the faces of a cube, and a contrasting color B on the remaining 20 panels (12 pents, 8 hexes). Each pair of hexes is perpendicular to those adjacent to it and parallel to the one opposite it.



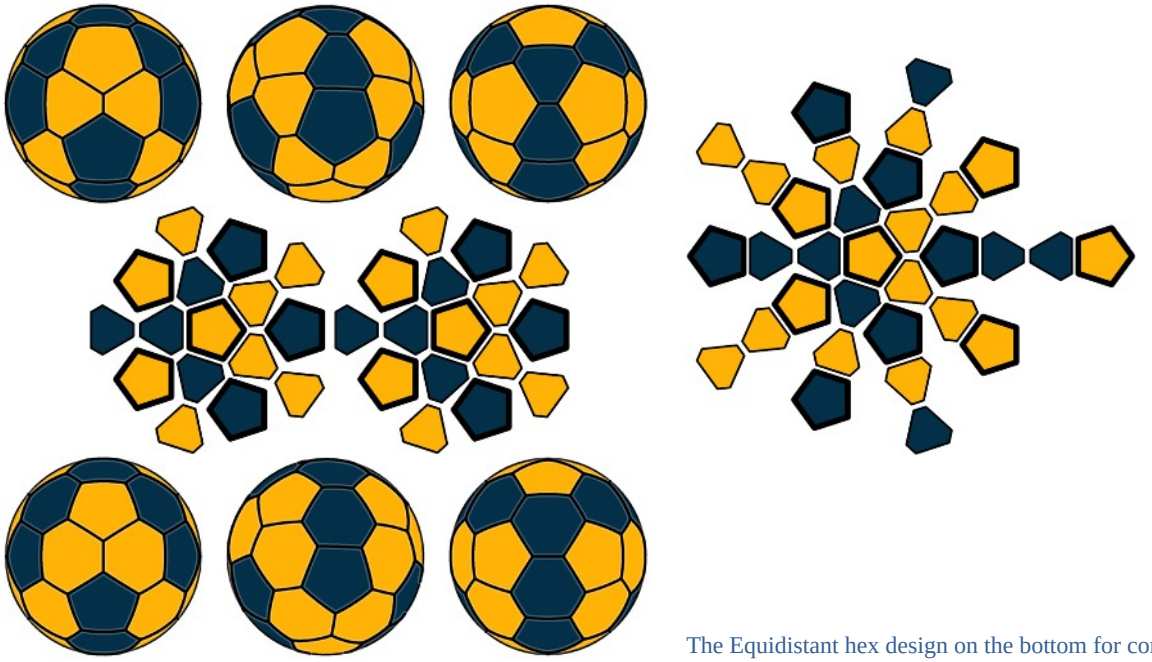
The Equidistant hex design on the bottom for comparison

#16: Claw Marks. Four, roughly parallel, curving stripes against a contrasting background color resembling slashes made by claws. Each stripe is composed of a pent in the middle with a hex on opposite sides (the eight hexes in this arrangement are the same as those in the Cube Corners arrangement – the claw marks are formed by joining pairs of corners together with a pent). The background color is on the remaining twenty panels. There is a total of 4 pents and 8 hexes of the stripe color, and 8 pents and 12 hexes of the background color.



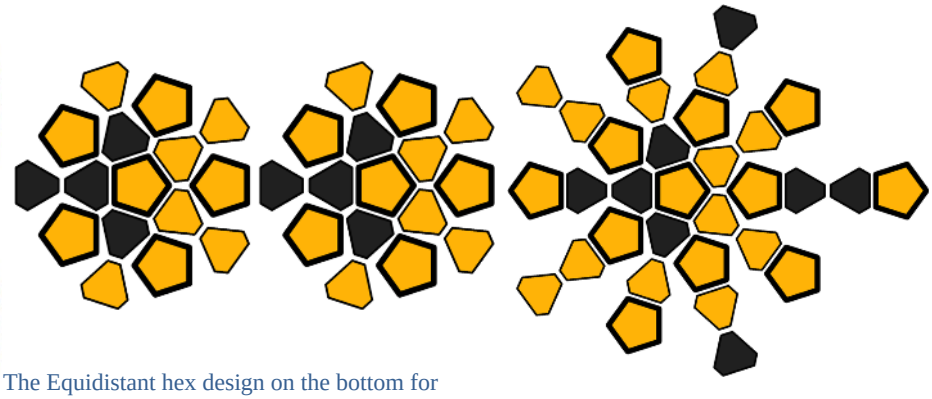
The Equidistant hex design on the bottom for comparison

#17: Staggered Pairs. Six parallel pairs consisting of a pent and a hex are distributed evenly around the ball against a contrasting background. The layout has two opposite poles which are hex panels, and each polar hex has a stripe connecting to each of its short edges as shown in the third illustration. The background color is on the remaining twenty panels. There is a total of 6 pents and 6 hexes of the stripe color, and 6 pents and 14 hexes of the background color.



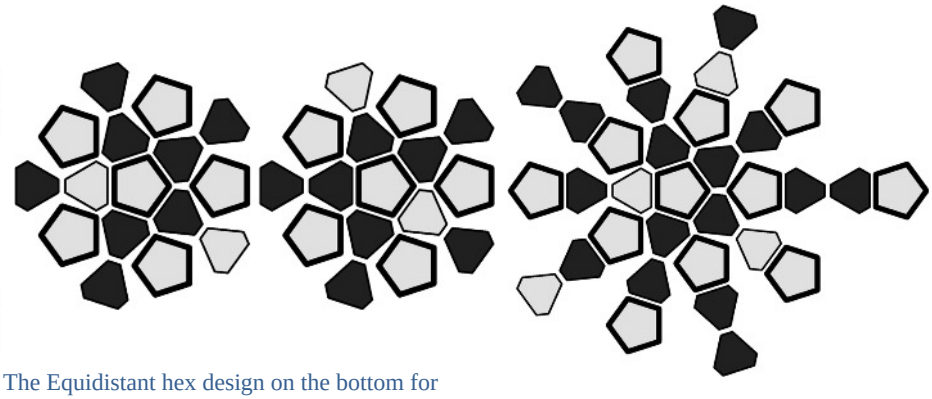
The Equidistant hex design on the bottom for comparison

#18: Zig-Zag. Nearly the same as the Staggered Pairs arrangement, but each triplet of pairs is joined together by the hex at each pole, forming a pair of tri-wing shapes opposite each other. This results in the contrasting panels forming a zig-zag path around the ball. There is a total of 6 pents and 12 hexes of the zig-zag color, and 6 pents and 8 hexes of the other color.



The Equidistant hex design on the bottom for comparison

#19: Radioactive. The international ionizing radiation trefoil symbol is approximated on opposite sides of the ball using a hex and the 3 hexes connected to it. The remaining 12 pents and 12 hexes are a single, contrasting color.



The Equidistant hex design on the bottom for comparison

#20: Shuriken/"Atomic"/"Radioactive". Similar to the Radioactive arrangement above, but the pents connected to the central hexes are used instead, forming a shape like a three-pointed shuriken (throwing star). This configuration allows four of the figures to be placed around the ball without touching each other. There is a total of 12 pents (all of them) and 4 hexes of the shuriken color, and 16 hexes of the background color.

3 colors

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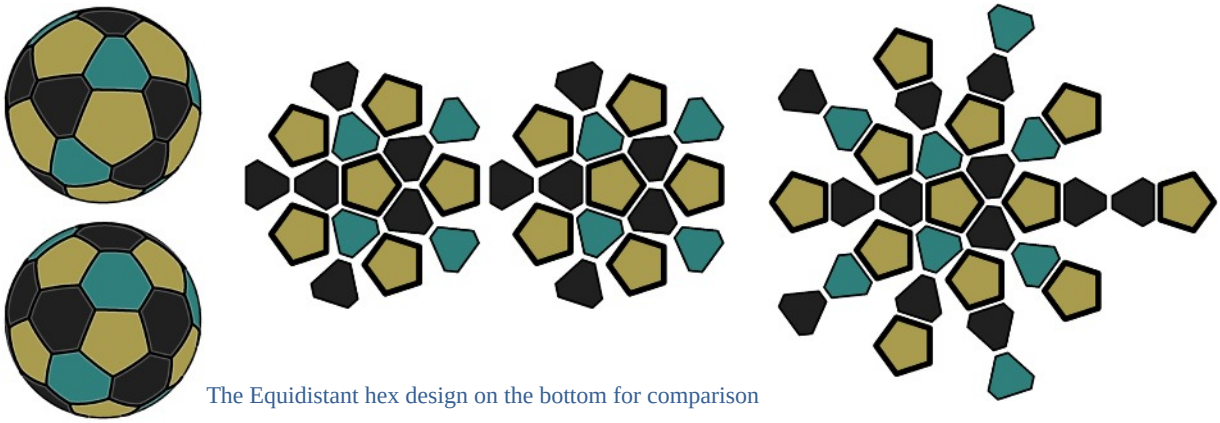
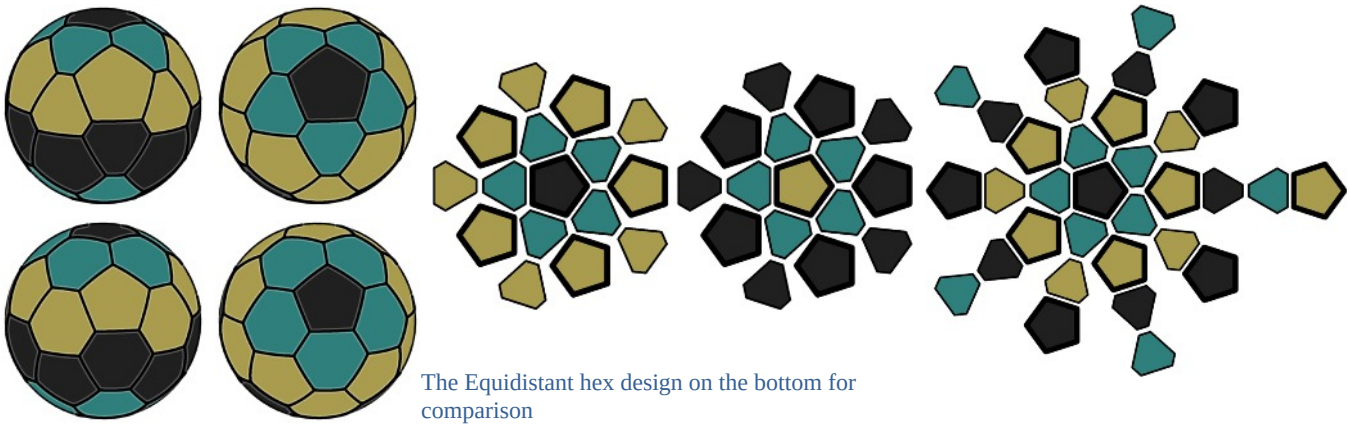


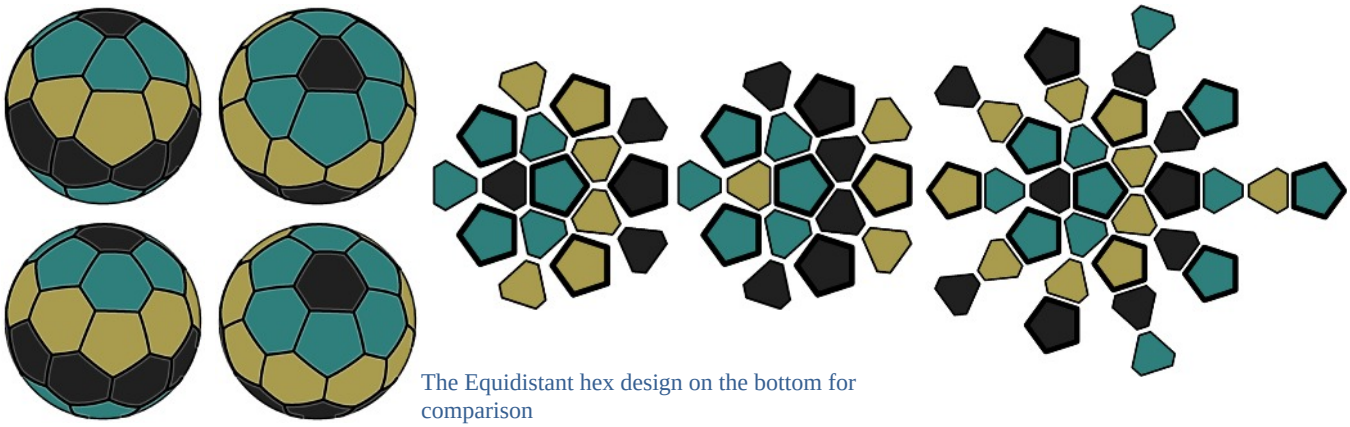
The Equidistant hex design on the bottom for comparison

#21: Cube Hexes/"Blur". This popular arrangement, known as “Blur” by others, demonstrates the truncated icosahedron’s relationship to the cube and dodecahedron. Color A (black in this case) is on 12 hex panels arranged as six pairs, each of which is perpendicular to those adjacent to it and parallel to the one opposite it, corresponding to the six faces of the cube. Color B (teal) is on the 8 remaining hex panels, corresponding to the eight corners of the cube. Color C (gold-beige) is on the 12 pents, corresponding to the twelve faces of the dodecahedron. An interesting and attractive arrangement.



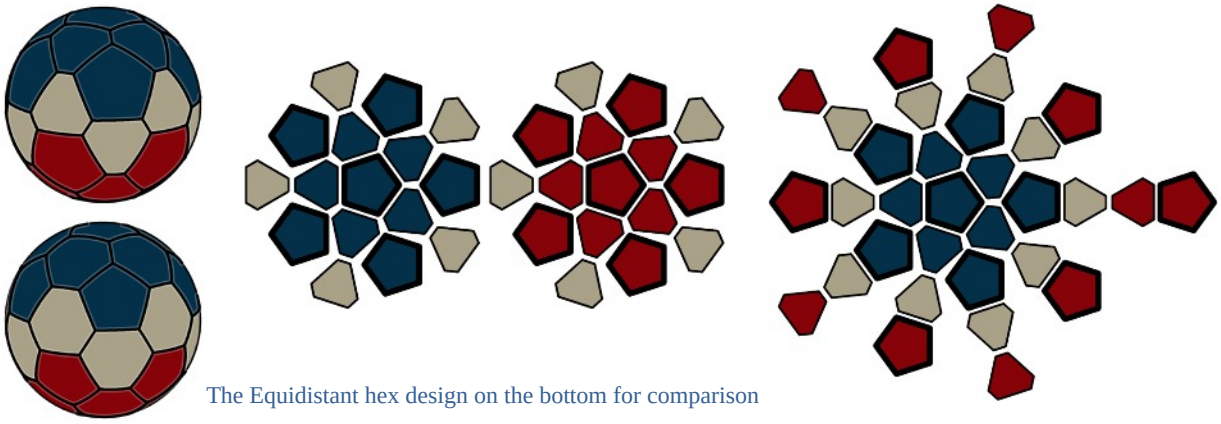
The Equidistant hex design on the bottom for comparison

#22a: Three-Color Pent-centric Rings/"Flower". Same as the Alternating Pent-centric Rings arrangement, but with a repeating sequence of three colors. This pent-centric version has rounder-looking rings around the hubs, but the two widest rings around the middle undulate more. Totals – 1st and 4th ring: 6 pents, 5 hexes; 2nd and 5th ring: 10 hexes; 3rd and 6th ring: 6 pents, 5 hexes.



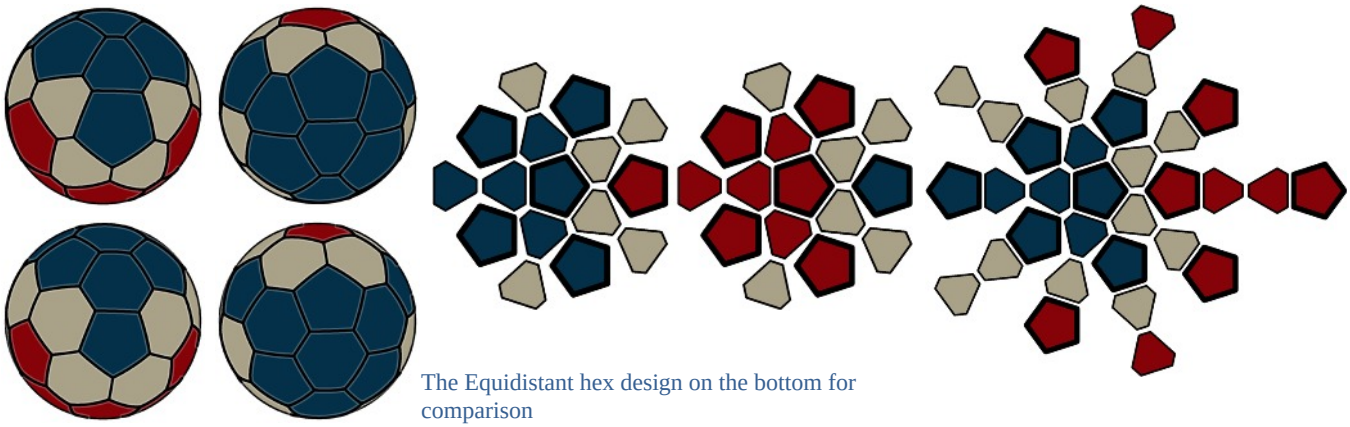
The Equidistant hex design on the bottom for comparison

#22b: Three-Color Hex-centric Rings. Same as the Alternating Hex-centric Rings arrangement, but with a repeating sequence of three colors. This hex-centric version has somewhat triangular rings around the hubs, but the two widest rings around the middle undulate less. Totals – 1st and 4th ring: 3 pents, 7 hexes; 2nd and 5th ring: 6 pents, 6 hexes; 3rd and 6th ring: 3 pents, 7 hexes.



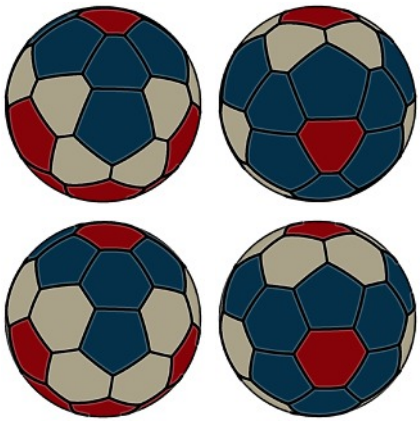
The Equidistant hex design on the bottom for comparison

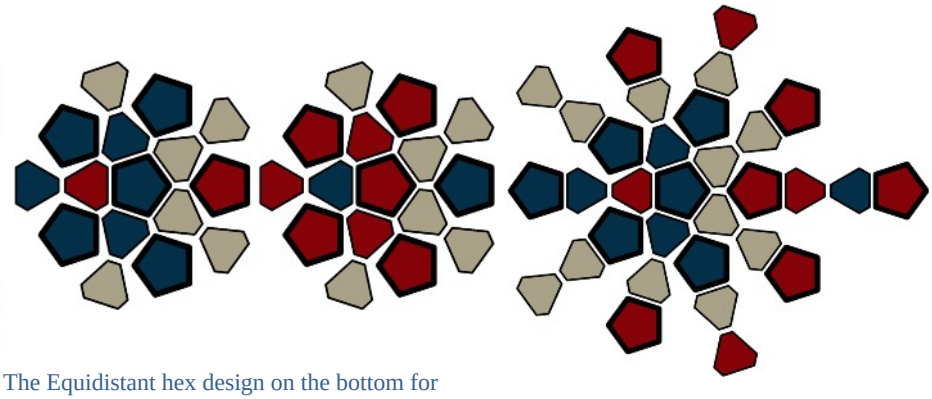
#23: Undulating Ring (3-color variation). Same as the 2-color Undulating Ring arrangement but each hemisphere or cap is a unique color. Totals – caps: 6 pents, 5 hexes each; ring: 10 hexes.



The Equidistant hex design on the bottom for comparison

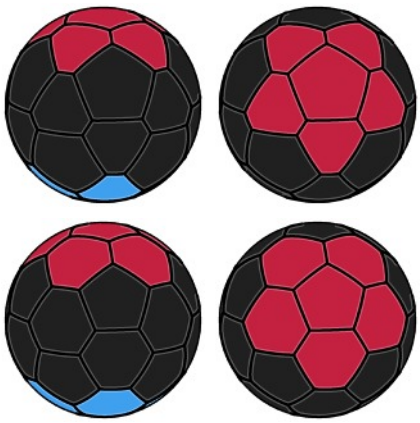
#24: Sine Wave Ring/Tri-Wing Caps (3-color variation)/"Shredzilla". Same as the 2-color Sine Wave Ring arrangement but with each tri-wing cap a unique color. Totals – caps: 6 pents, 4 hexes each; ring: 12 hexes.

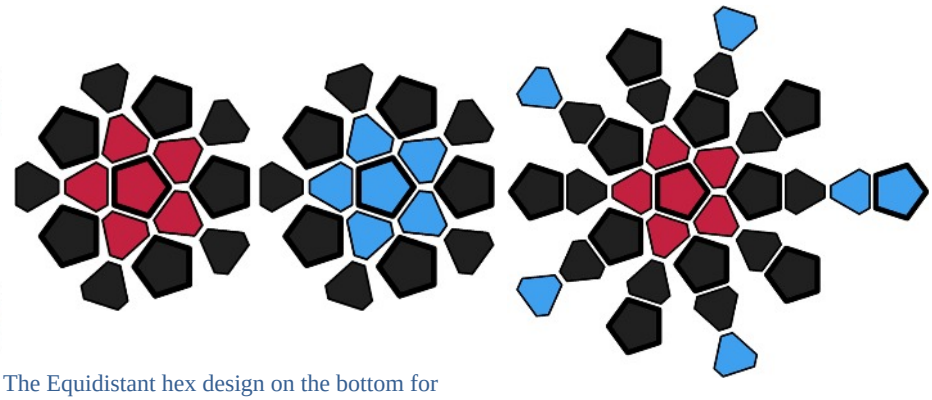




The Equidistant hex design on the bottom for comparison

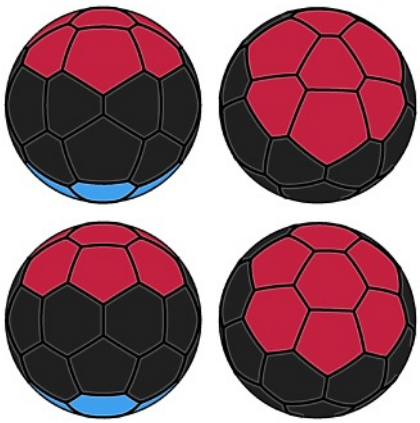
#25: Sine Wave Ring/Tri-Wing Caps with Hubs. Same as the above arrangement but the central hex panel of each cap is assigned the color of the opposite cap for a more stripey look. Totals – caps: 6 pents, 4 hexes each; ring: 12 hexes.

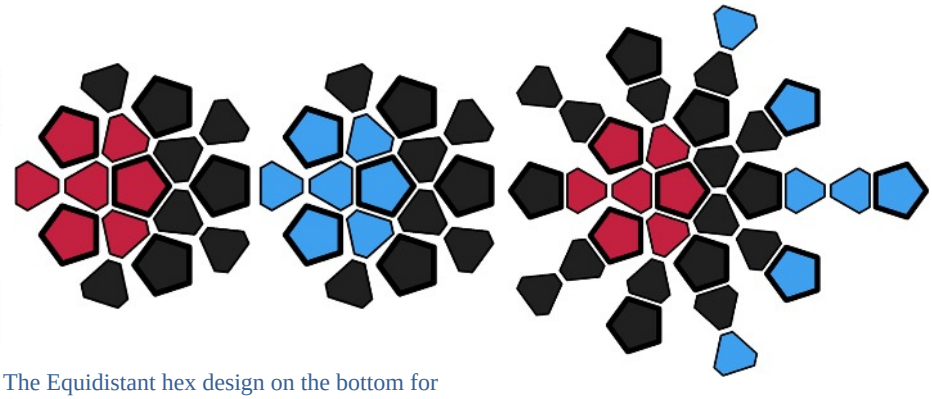




The Equidistant hex design on the bottom for comparison

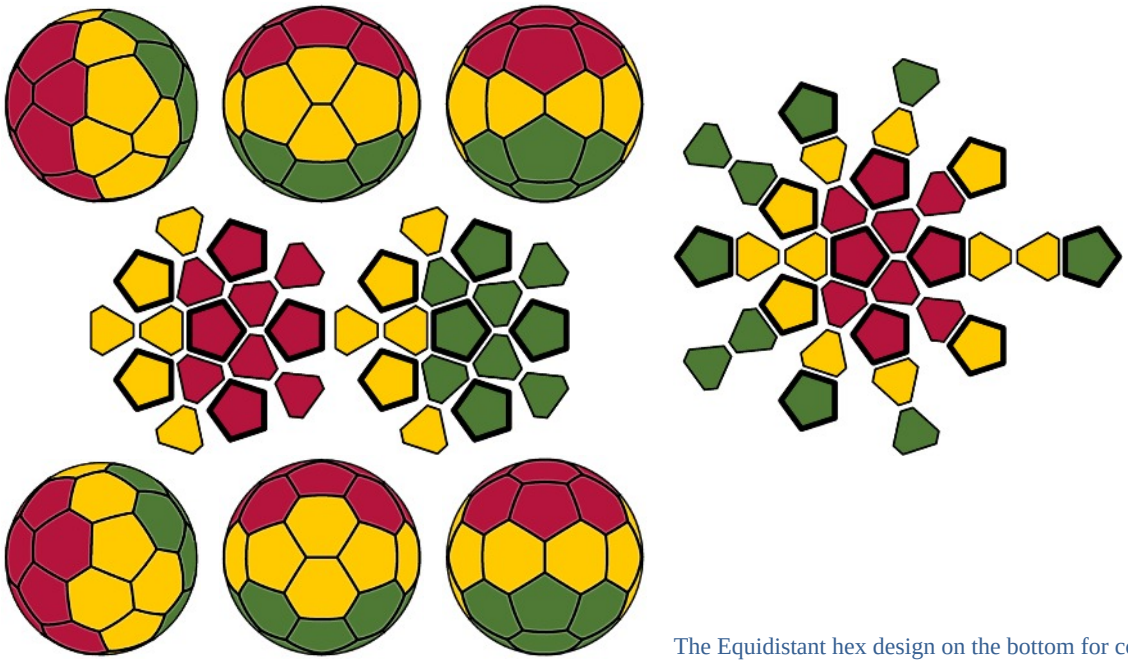
#26a: Pent-centric Belt with Dual Caps. Same as the 2-color Pent-centric Belt arrangement but each cap is a unique color. This pent-centric version has rounder-looking caps. There is a total of 1 pent and 5 hexes of each cap color, and 10 pents and 10 hexes of the belt color. On the right is a color scheme with a plain white belt, emphasizing the caps.





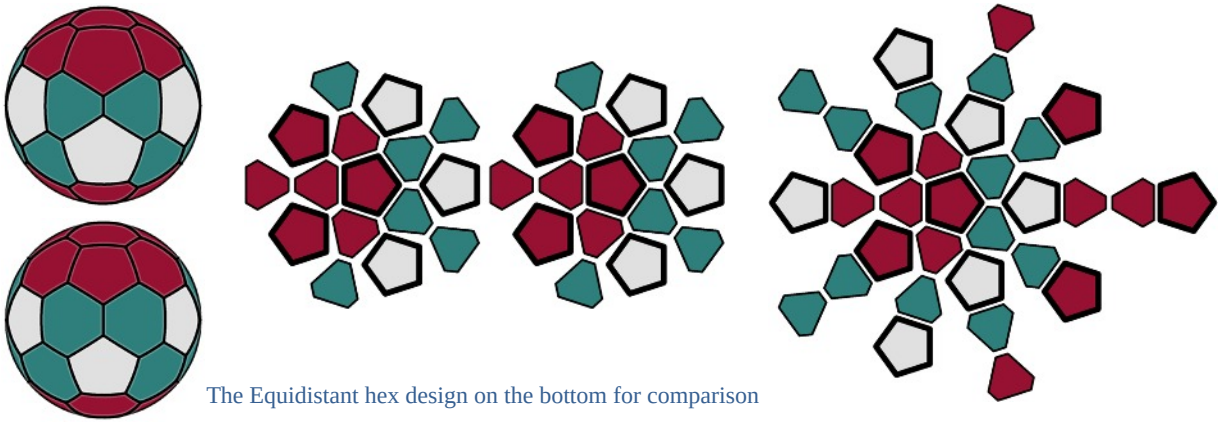
The Equidistant hex design on the bottom for comparison

#26b: Hex-centric Belt with Dual Caps/"3 Stripes". Same as the 2-color Hex-centric Belt arrangement but each cap is a unique color. This hex-centric version has somewhat triangular caps. There is a total of 3 pents and 4 hexes of each cap color, and 6 pents and 12 hexes of the belt. On the right is a footbag with this arrangement.



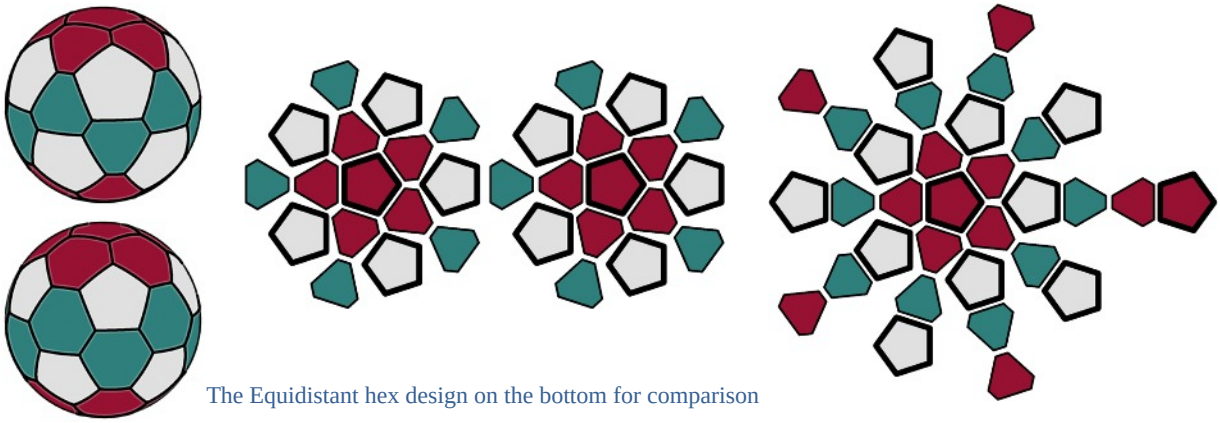
The Equidistant hex design on the bottom for comparison

#27: Triple Scoop. Similar to the Belt arrangements, but the caps are composed of ten panels and are roughly rectangular, and the belt around the middle has two narrow areas opposite each other and two wide areas opposite each other. To me this arrangement resembles three scoops of ice cream squished together.



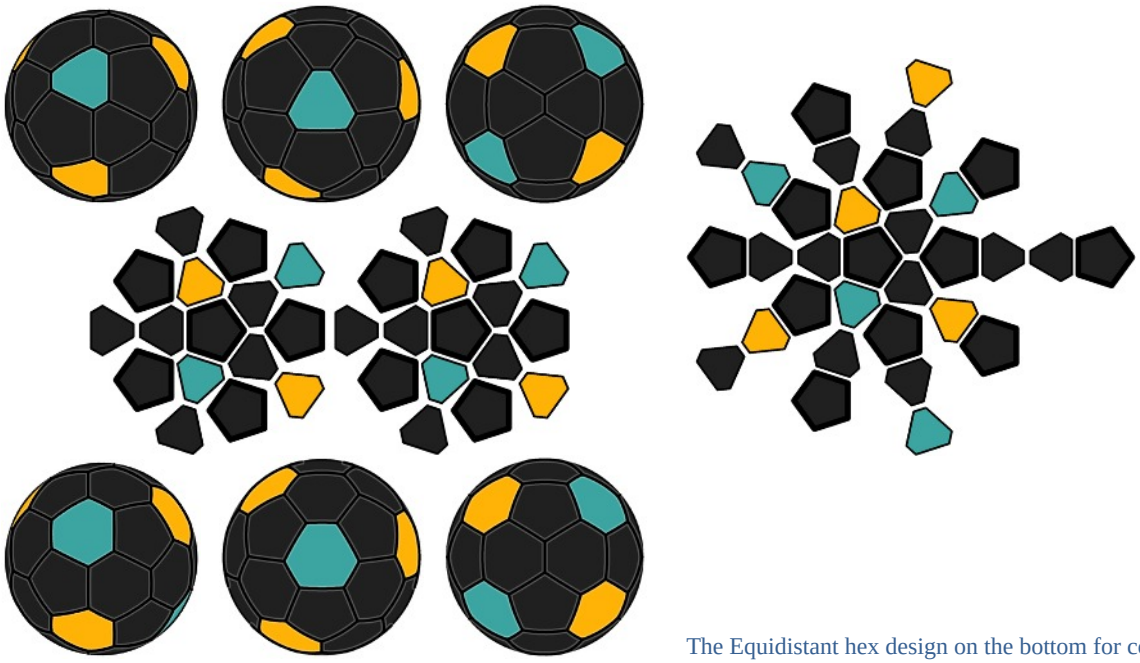
The Equidistant hex design on the bottom for comparison

#28a: Checkered Hex-centric Belt. Same as the 2-color Hex-centric Belt arrangement but the belt now has two colors, one on the pents and the other on the hexes. This hex-centric version has somewhat triangular caps and a single, undulating ring of pents in the belt. There is a total of 6 pents and 8 hexes of the cap color, 6 pents of one belt color, and 12 hexes of the other belt color.



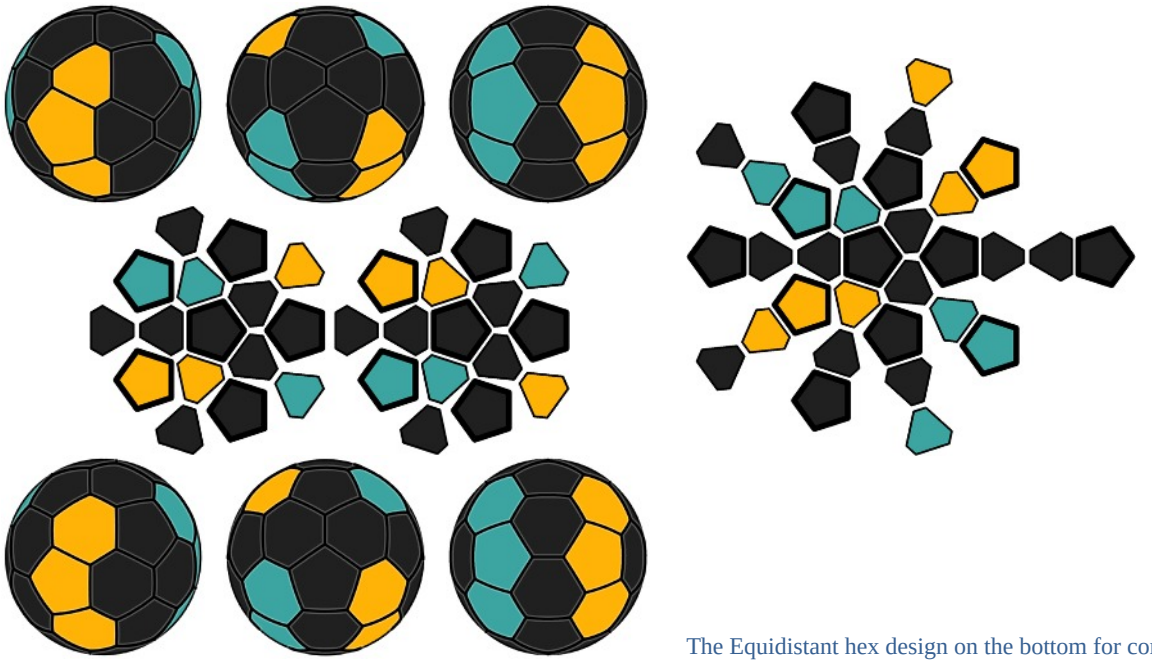
The Equidistant hex design on the bottom for comparison

#28b: Checkered Pent-centric Belt/"Star"/"Sun burst". Same as the 2-color Pent-centric Belt arrangement but the belt now has two colors, one on the pents and the other on the hexes. This pent-centric version has rounder caps and a double, checkered ring of pents in the belt. There is a total of 2 pents and 10 hexes of the cap color, 10 pents of one belt color, and 10 hexes of the other belt color.



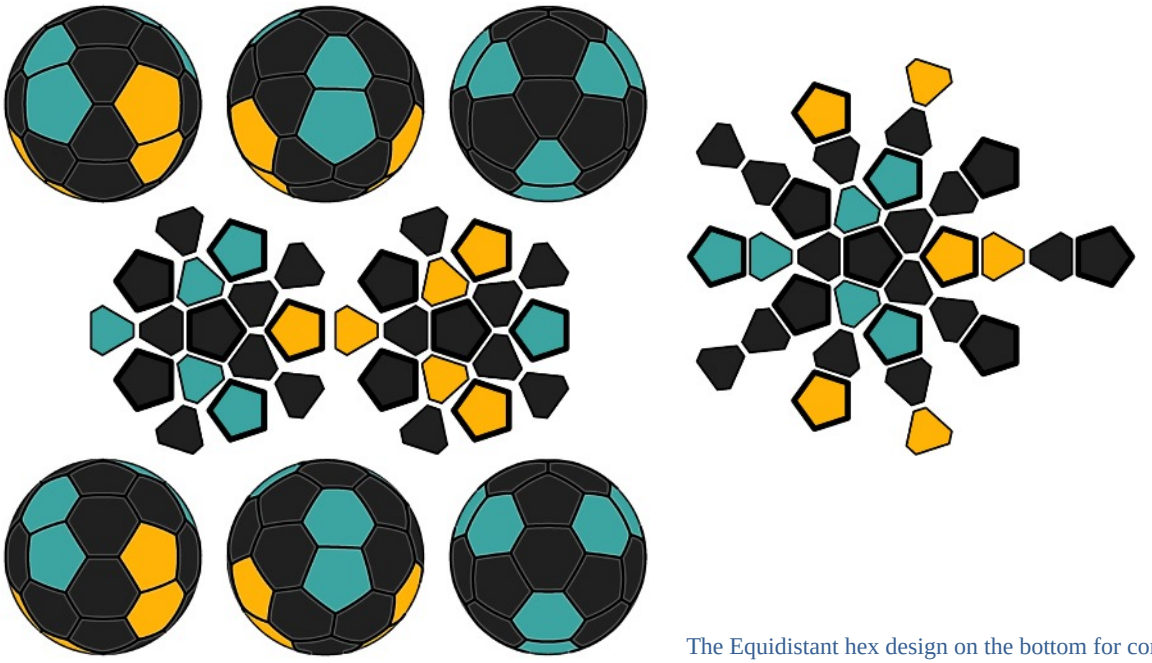
The Equidistant hex design on the bottom for comparison

#29: Cube Corners (3-color variation). Same as the 2-color Cube Corners arrangement but the 8 hex panels now alternate between two colors like the octahedron's checker arrangement. There are 24 background panels (12 of each shape).



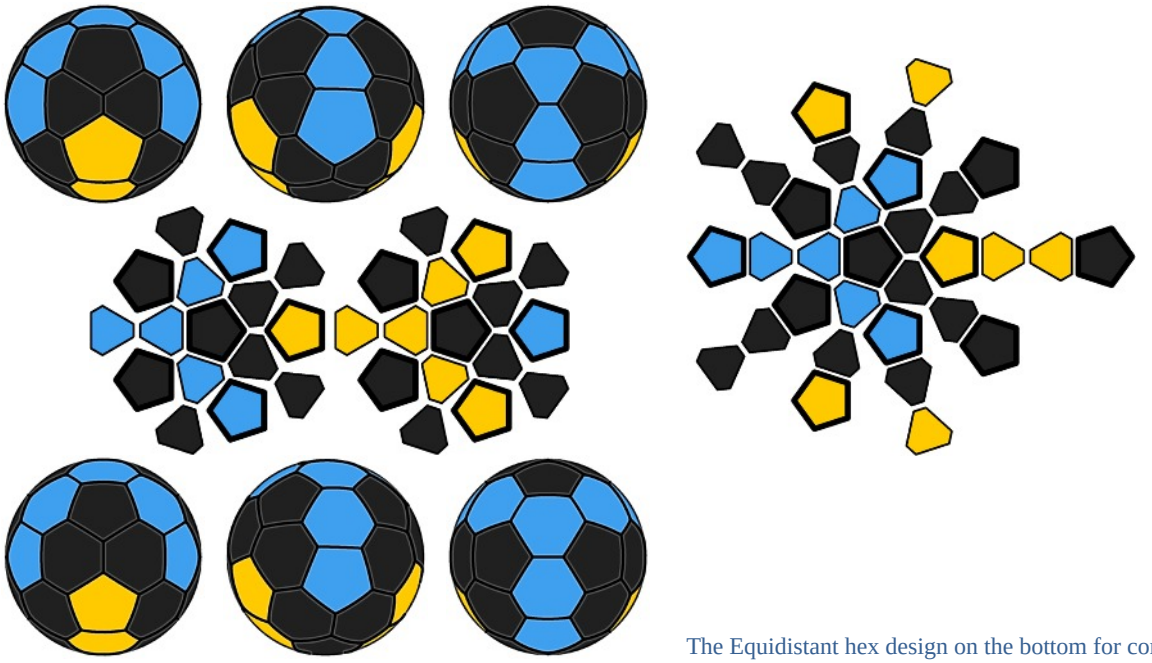
The Equidistant hex design on the bottom for comparison

#30: Claw Marks (3-color variation). Same as the 2-color Claw Marks arrangement but with alternating claw mark colors. There is a total of 2 pents and 4 hexes of each stripe color, and 8 pents and 12 hexes of the background color.



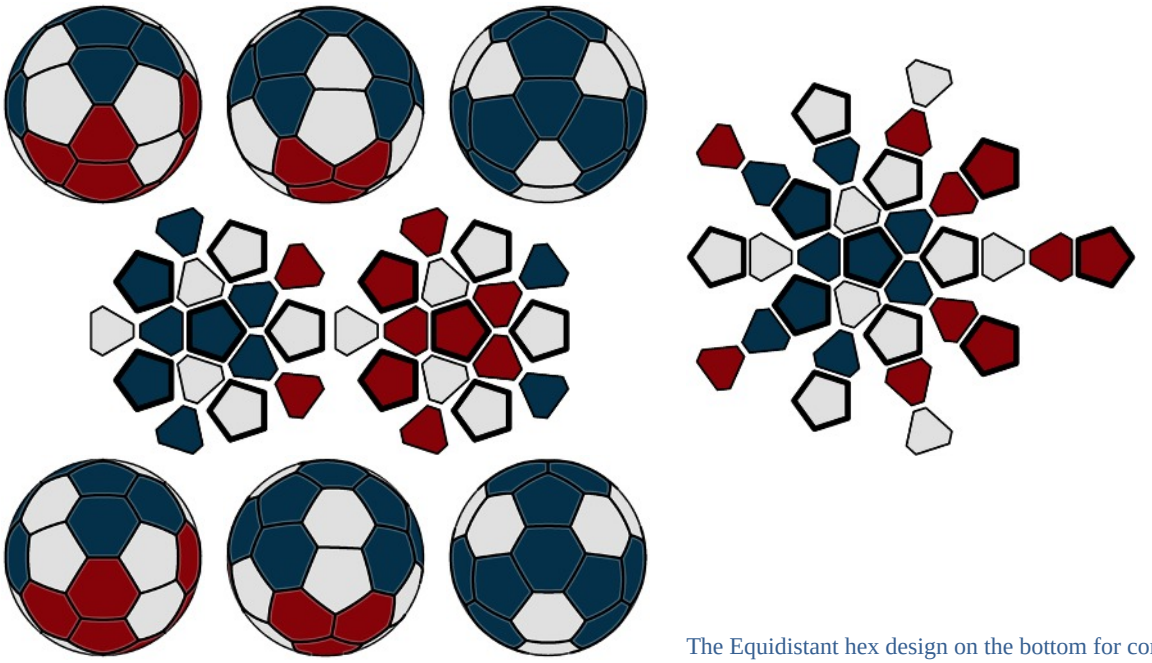
The Equidistant hex design on the bottom for comparison

#31: Staggered Pairs (3-color variation A). Same as the 2-color Staggered Pairs arrangement but each trio of stripes (those connecting to the same hub) are a different color. There is a total of 3 pents and 3 hexes of each stripe color, and 6 pents and 14 hexes of the background color.



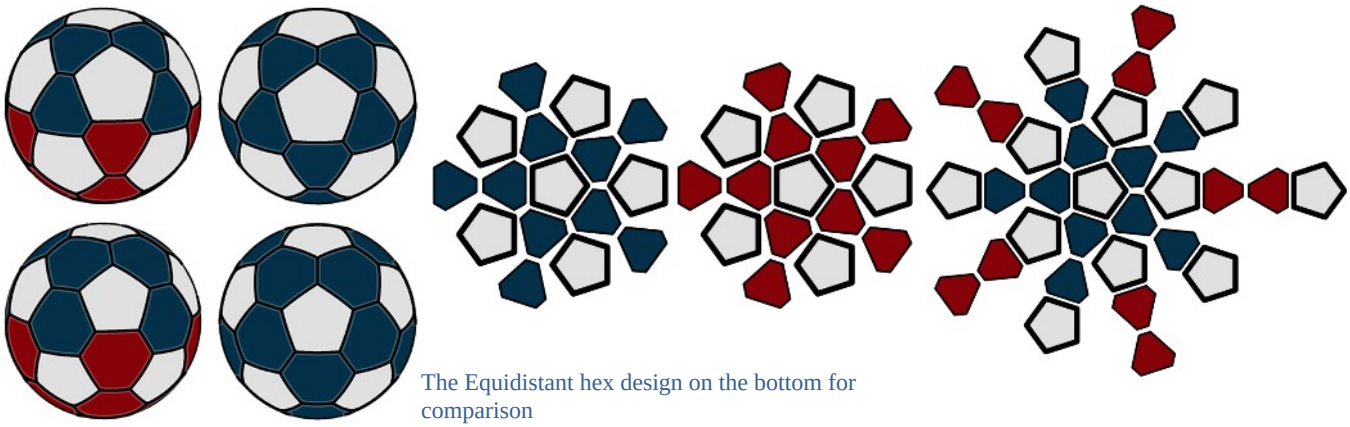
The Equidistant hex design on the bottom for comparison

#32: Zig-Zag (3-color variation). Nearly the same as the Staggered Pairs arrangement above and based on the 2-color Zig-Zag arrangement. In this variation each tri-wing shape on either side of the zig zag is a unique color. There is a total of 6 pents and 12 hexes of the zig-zag color, and 3 pents and 4 hexes of each of the other colors.



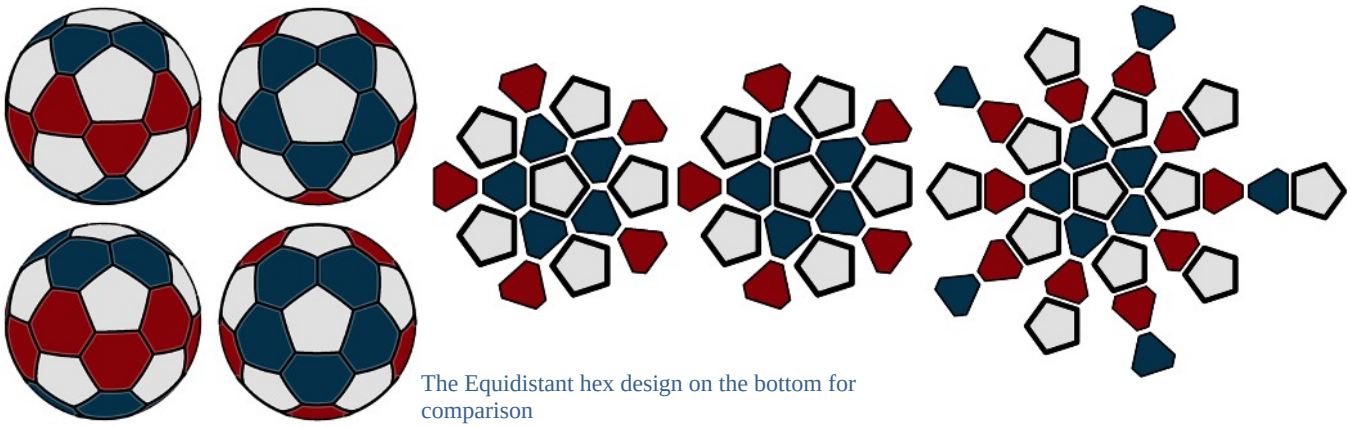
The Equidistant hex design on the bottom for comparison

#33: Staggered Pairs (3-color variation B). Same as the 2-color Staggered Pairs arrangement but each background hemisphere is a different color. The hemispheres are composed of three wings, each of which consists of a pentagon connecting to the hub hex, and two hexes on the opposite two edges as shown in the third illustration. There is a total of 6 pents and 6 hexes of the stripe color, and 3 pents and 7 hexes of each background color.



The Equidistant hex design on the bottom for comparison

#34: Hemispheres with Stars. Same as the 2-color Hemispheres arrangement but the pentagons are all assigned a third, contrasting color. It makes a great USA stars & stripes look with the colors I used.



The Equidistant hex design on the bottom for comparison

#35: Belt with Stars. Same as the 2-color Pent-centric Belt arrangement but the pentagons are all assigned a third, contrasting color. Another potential USA patriotic arrangement.

4 colors

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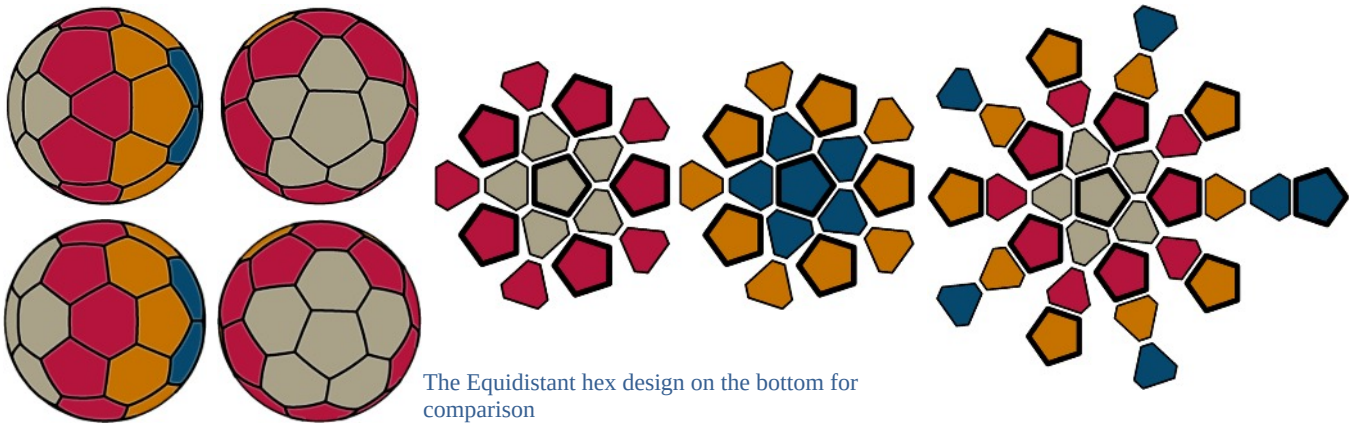
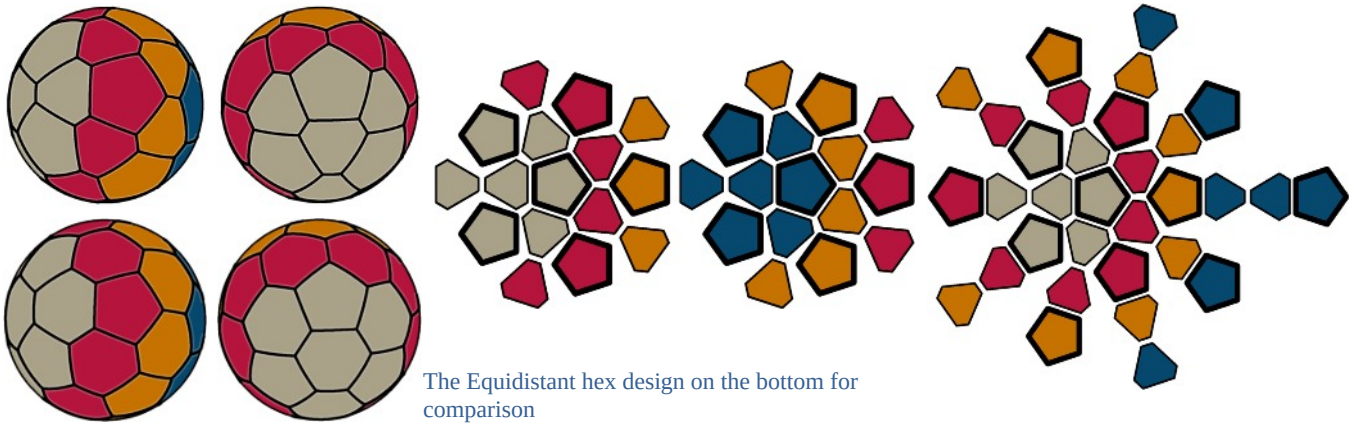


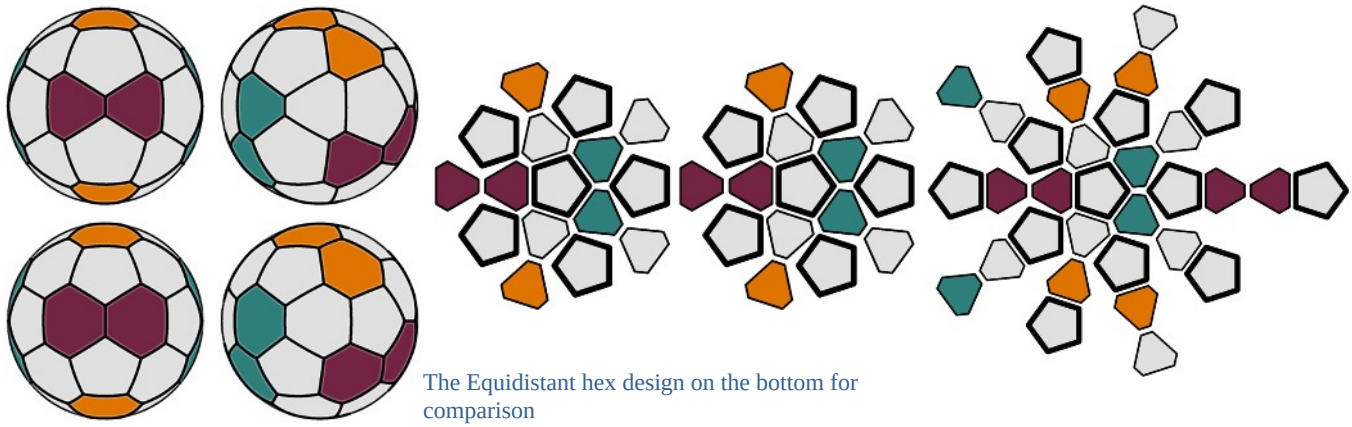
The Equidistant hex design on the bottom for comparison

#36a: Stars and Pent-centric Rings. A star-shaped patch on opposite sides of the ball composed of a pent with a hex on each edge, and a ring of alternating pents and hexes around each star. Each star and each ring is a unique color. This arrangement came from a footbag stitcher I found on the web, but I no longer have the URL.



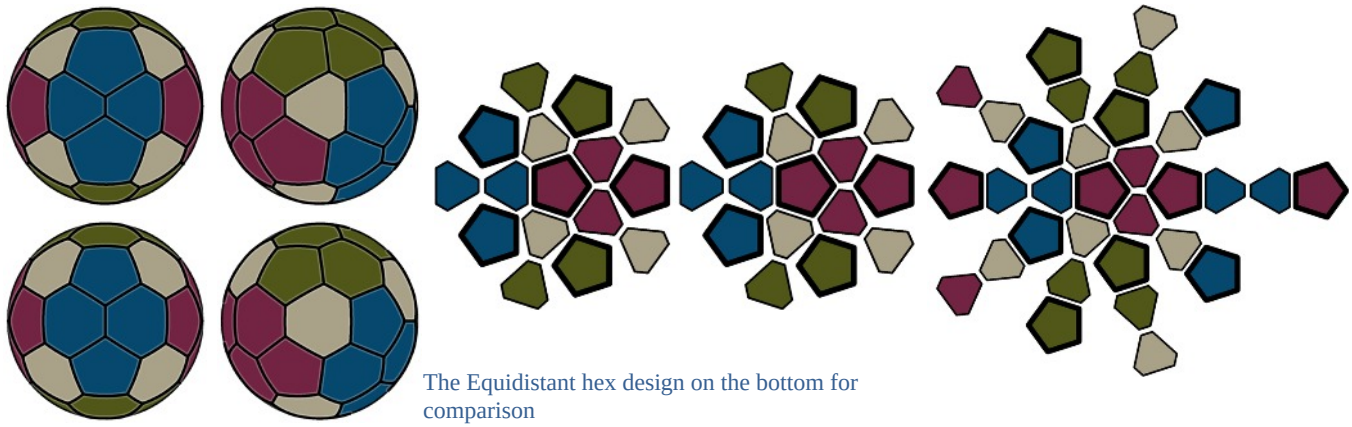
The Equidistant hex design on the bottom for comparison

#36b: Shields and Hex-centric Rings. A triangular, shield-like patch on opposite sides of the ball composed of a hex surrounded by 3 hexes and 3 pents, and a ring of pents and hexes around each patch. Each shield and each ring is a unique color.



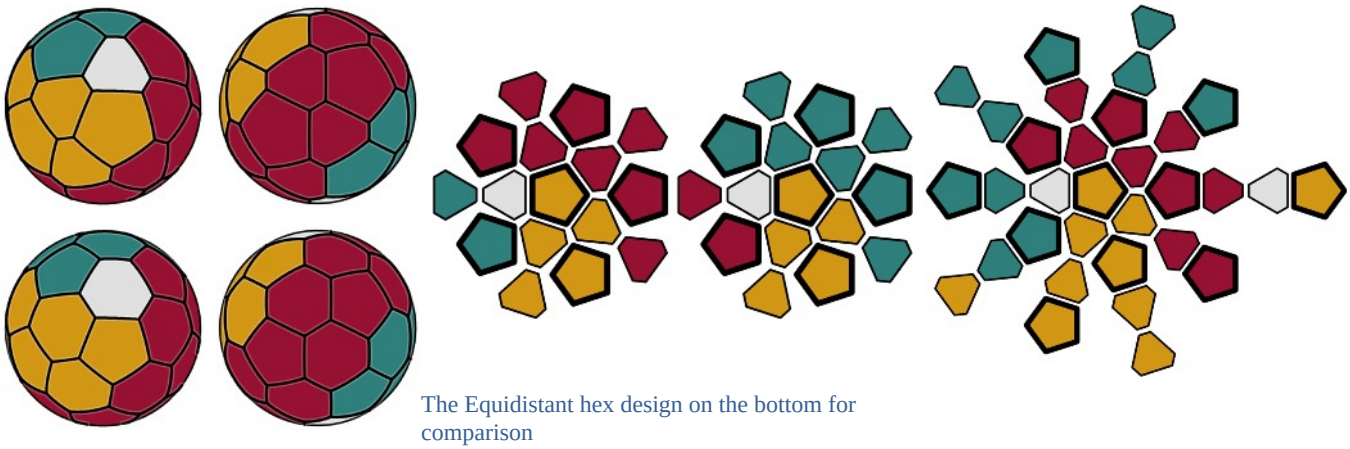
The Equidistant hex design on the bottom for comparison

#37: Cube Pairs (4-color variation). Same as the 2-color Cube Pairs arrangement but with each opposing pair of stripes a different color. Each color will be on 4 hex panels and, as before, the contrasting background color will be on the remaining 20 panels (12 pents, 8 hexes).



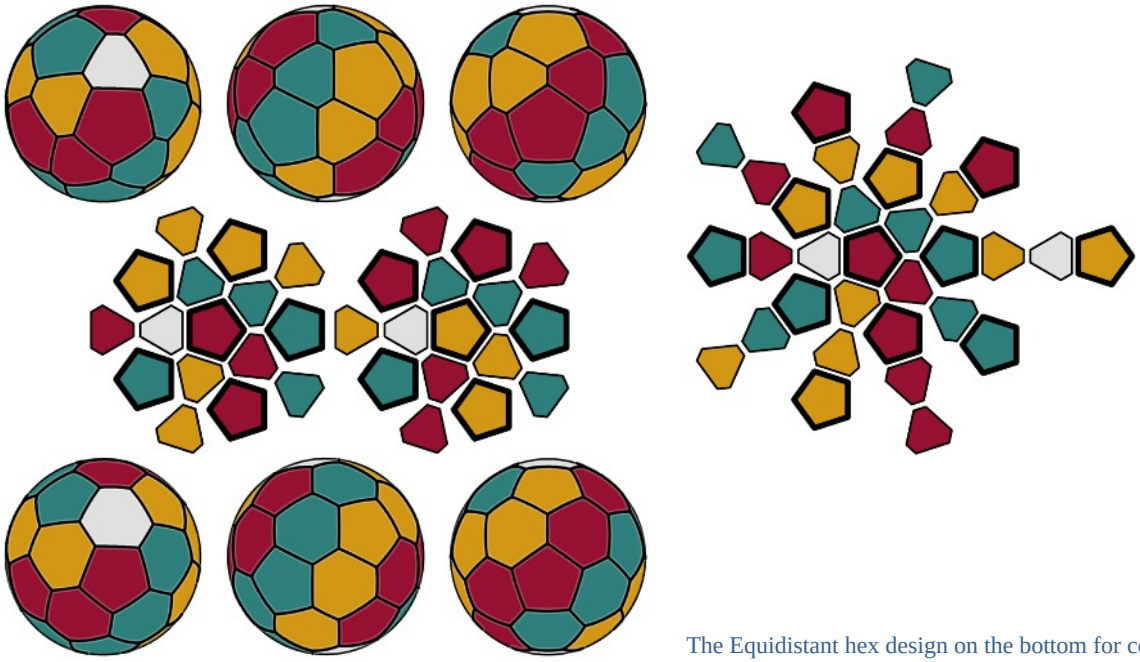
The Equidistant hex design on the bottom for comparison

#38: Cube Patches/"Six Egg". Related to the Cube Corners arrangement. Each of the 3 main colors is on opposite patches of four panels, each composed of two hexes and two pents. Each patch is perpendicular to those adjacent to it and parallel to the one opposite it, and they correspond to the faces of the cube. The fourth color is on the eight hex panels between the patches, corresponding to the corners of the cube. Totals: 4 pents and 4 hexes of each patch color; 8 hexes of the corner color.



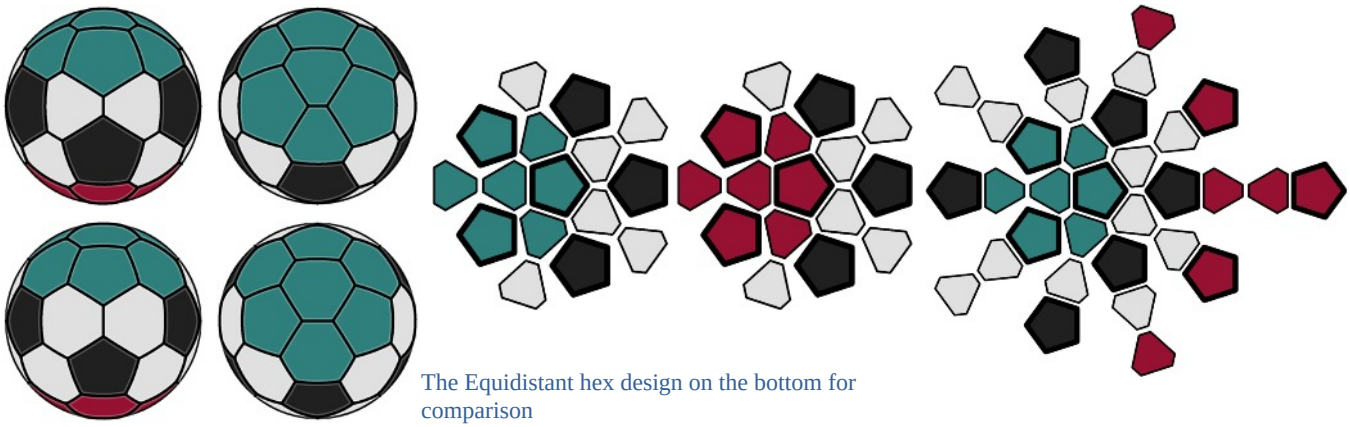
The Equidistant hex design on the bottom for comparison

#39: Triple Swirl/"Tri-Color". Colors A, B, and C are each on a spiraling patch of 15 panels, and a neutral color D is on two opposite hex panels forming the hubs. This arrangement is chiral (its mirror image is not the same). Laying the panels out as shown above with the fronts facing up will yield the clockwise swirls shown in the illustrations while laying them out with the backs facing up will reverse their direction. Totals: 4 pents and 6 hexes of each swirl color; 2 hexes of the hub color.



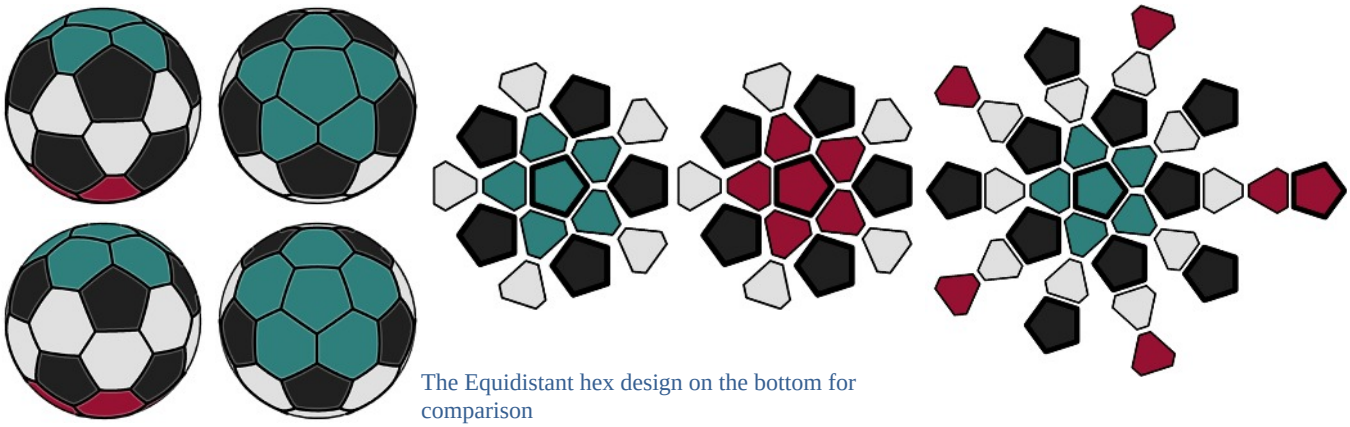
The Equidistant hex design on the bottom for comparison

#40: Repeating Triple Swirl. Similar to the Triple Swirl arrangement but each swirl is a single row of panels thick, making six total swirls that repeat the three colors. This arrangement is chiral (its mirror image is not the same). Laying the panels out as shown above with the fronts facing up will yield the clockwise swirls shown in the illustrations while laying them out with the backs facing up will reverse their direction. Totals: 4 pents and 6 hexes of each swirl color; 2 hexes of the hub color.



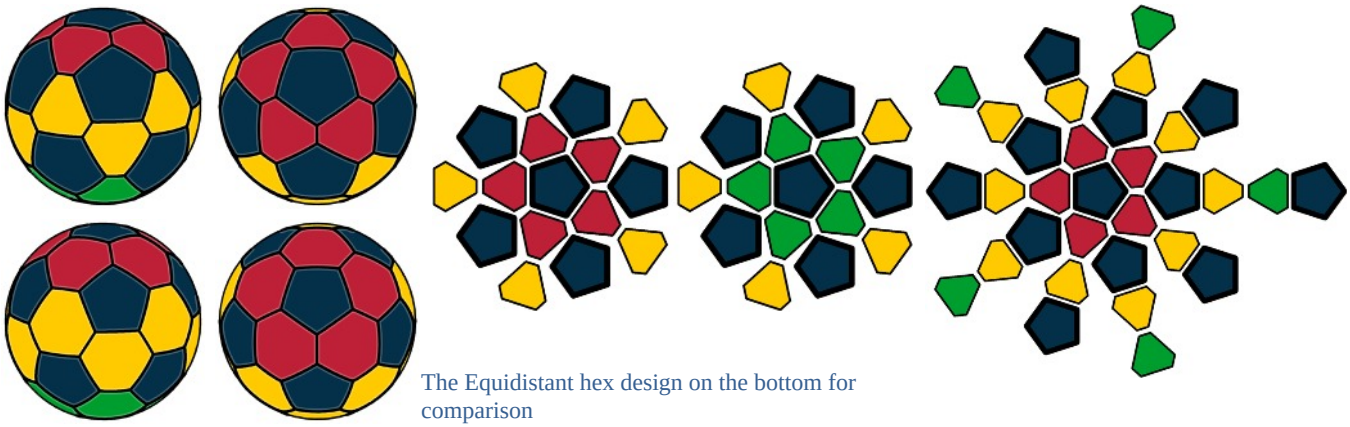
The Equidistant hex design on the bottom for comparison

#41a: Checkered Hex-centric Belt with Dual Caps. Same as the 3-color Hex-centric Checkered Belt arrangement, but with caps of two unique colors. This hex-centric version has somewhat triangular caps and a single, undulating ring of pents in the belt. There is a total of 3 pents and 4 hexes of each cap color, 6 pents of one belt color, and 12 hexes of the other belt color.



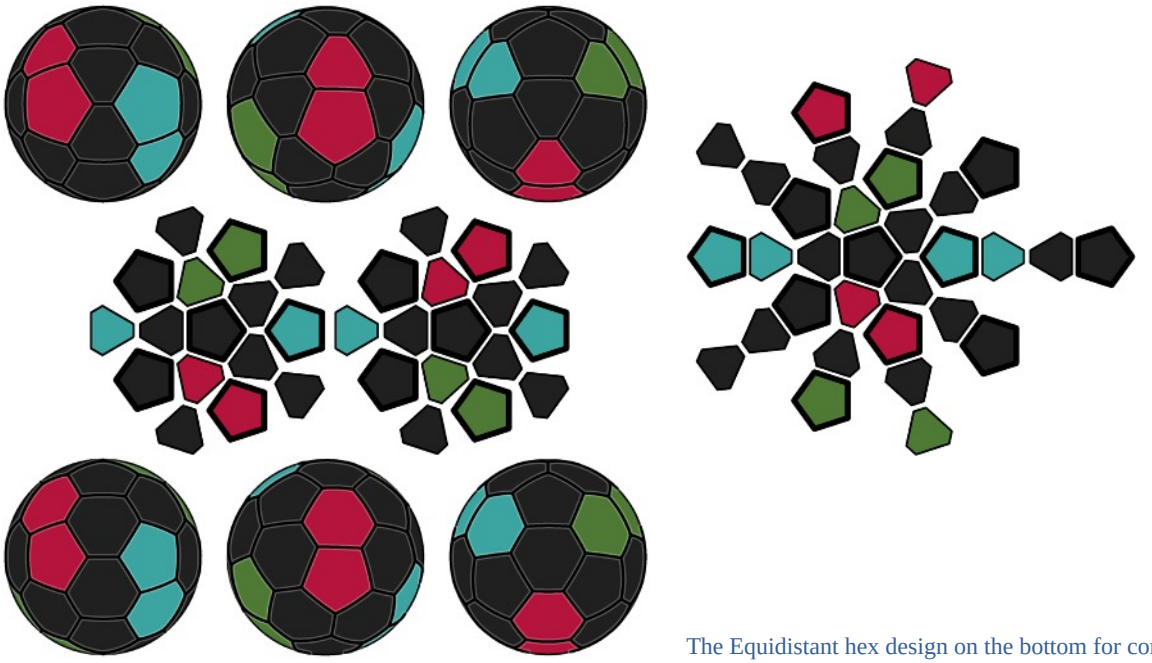
The Equidistant hex design on the bottom for comparison

#41b: Checkered Pent-centric Belt with Dual Caps. Same as the Three-Color Pent-centric Checkered Belt arrangement, but with caps of two unique colors. This pent-centric version has rounder caps and a double, checkered ring of pents in the belt. There is a total of 1 pent and 5 hexes of each cap color, 10 pents of one belt color, and 10 hexes of the other belt color.



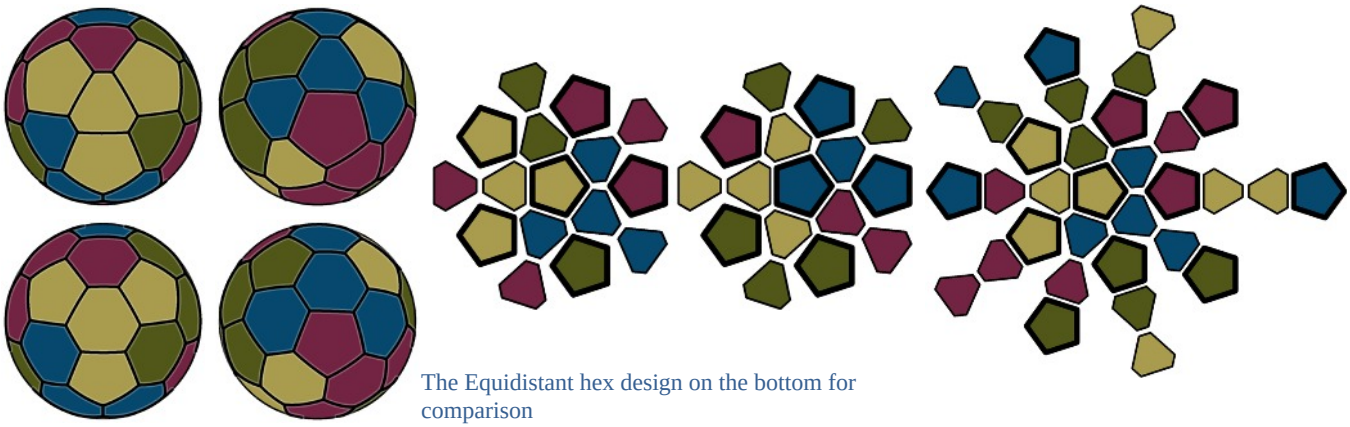
The Equidistant hex design on the bottom for comparison

#42: Belt with Dual Caps and Stars. Same as the 3-color Pent-centric Belt arrangement but the pentagons are all assigned a fourth, contrasting color. Or, the same as the 3-color Belt with Stars arrangement but each cap is a unique color.



The Equidistant hex design on the bottom for comparison

#43: Staggered Pairs (4-color variation). Same as the 2-color Staggered Pairs arrangement but the stripes are in three colors and arranged so each stripe is opposite the matching stripe, and each hub hex has all three colors connected to it. There is a total of 2 pents and 2 hexes of each stripe color, and 6 pents and 14 hexes of the background color.



The Equidistant hex design on the bottom for comparison

#44: Tesselation of Shuriken. A combination shuriken (a hex surrounded by three pents) and radiation symbols (a hex surrounded by three hexes), which count as shuriken in this context, that fill every panel. Each color is on a shuriken and radiation symbol pair that are opposite each other. My latest corduroy beanbag (pictured beneath the chapter header) uses this arrangement. There is a total of 3 pents and 5 hexes of each color.

5 colors

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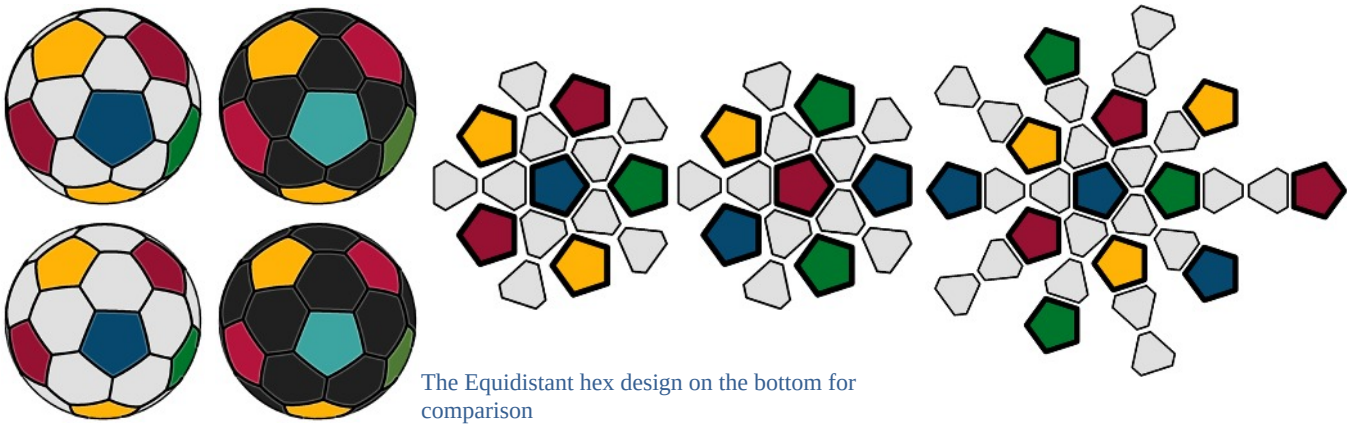
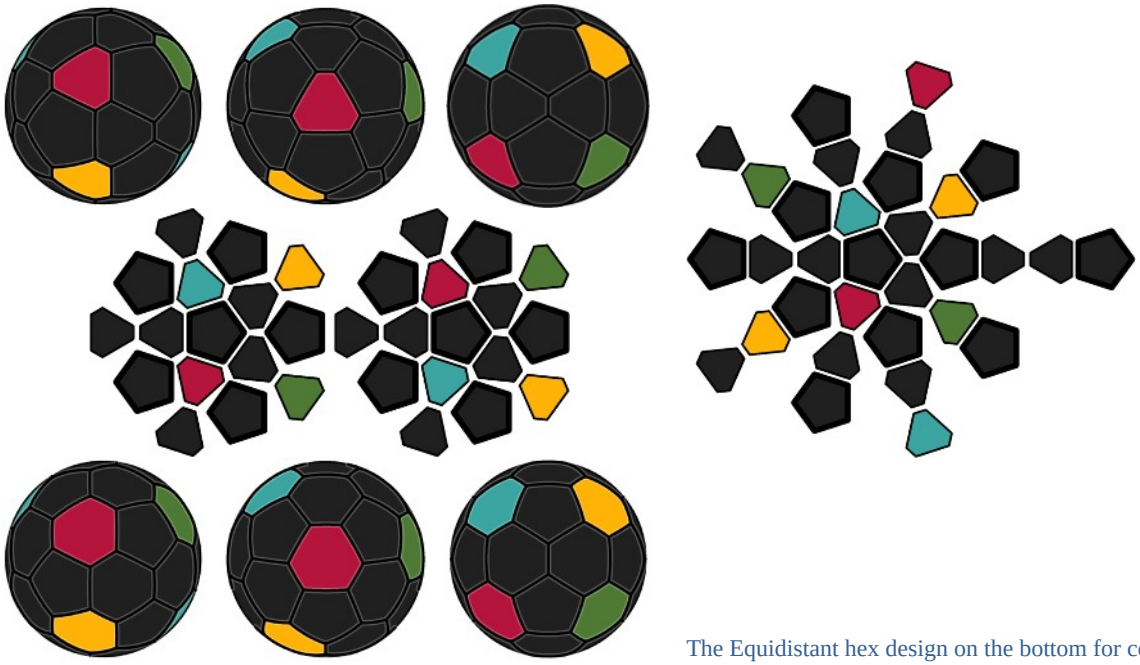


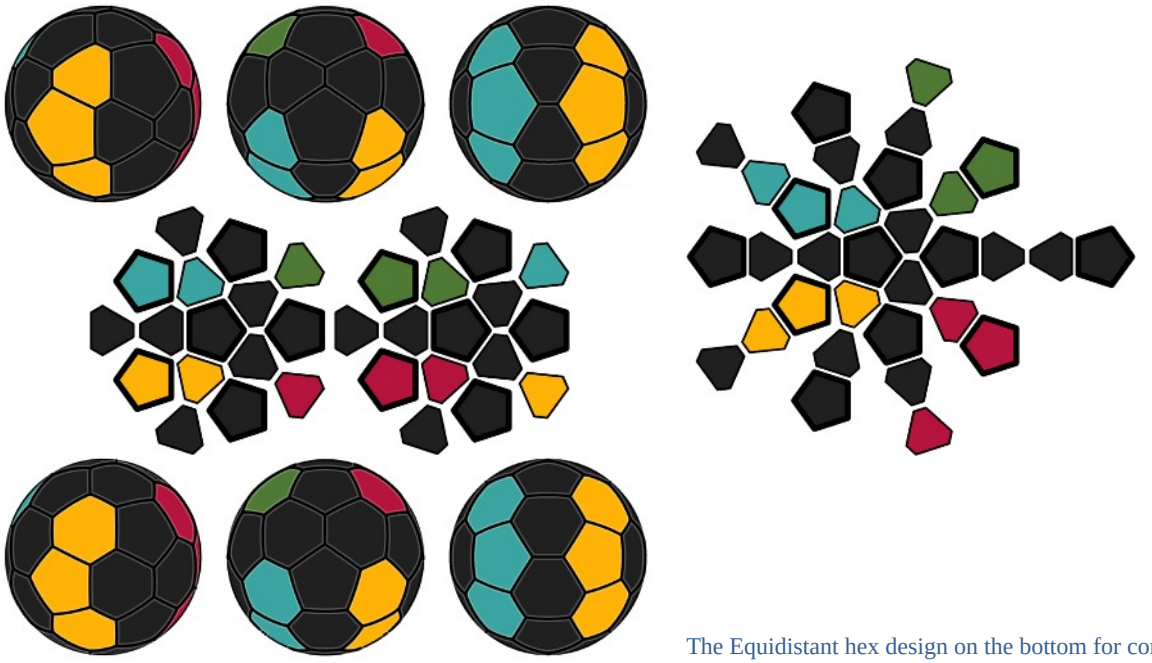
The Equidistant hex design on the bottom for comparison

#45: Four-Color Patchwork Pents. The pentagons follow the 4-color patchwork (or four-color theorem) arrangement of the dodecahedron. The four colors are arranged so that no pentagon has a neighbor of the same color. The hexes are all a single, neutral color. I show both a light and dark color for the hexes because both look great. There is a total of 3 pents of each of the four main colors.



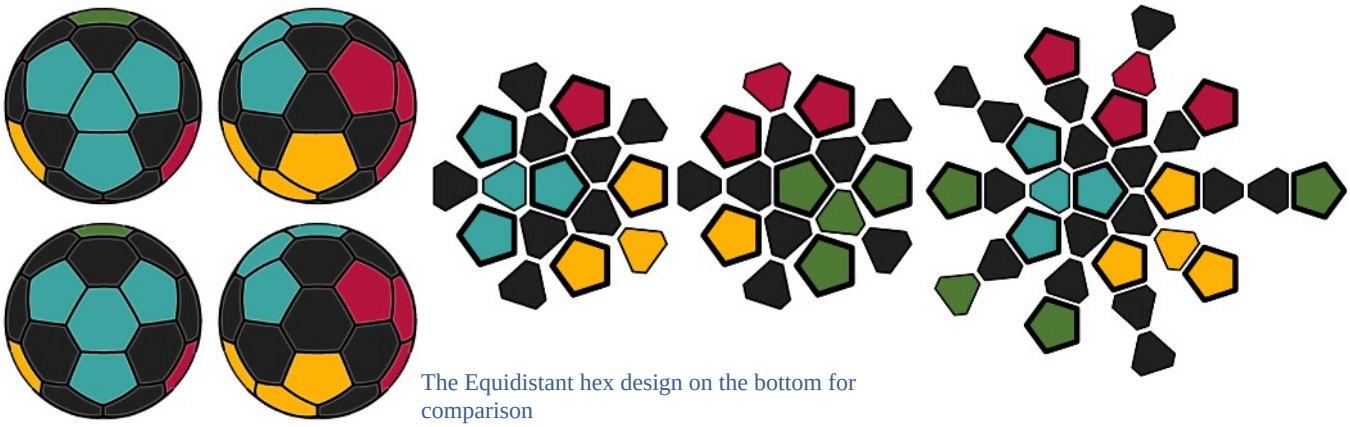
The Equidistant hex design on the bottom for comparison

#46: Cube Corners (5-color variation). Same as the 2-color Cube Corners arrangement but the 8 hex panels are now in four colors arranged so that each color is opposite its match like the octahedron's patchwork arrangement. There are 24 background panels (12 of each shape).



The Equidistant hex design on the bottom for comparison

#47: Claw Marks (5-color variation). Same as the 2-color Claw Marks arrangement but each stripe is a different color. There is a total of 1 pent and 2 hexes of each stripe color, and 8 pents and 12 hexes of the background color.



The Equidistant hex design on the bottom for comparison

#48: Shuriken (5-color variation)/"Atomic"/"Radioactive". Same as the 2-color Shuriken arrangement, but each shuriken is a different color. There is a total of 3 pents and 1 hex of each shuriken color, and 16 hexes of the background color.

6 colors

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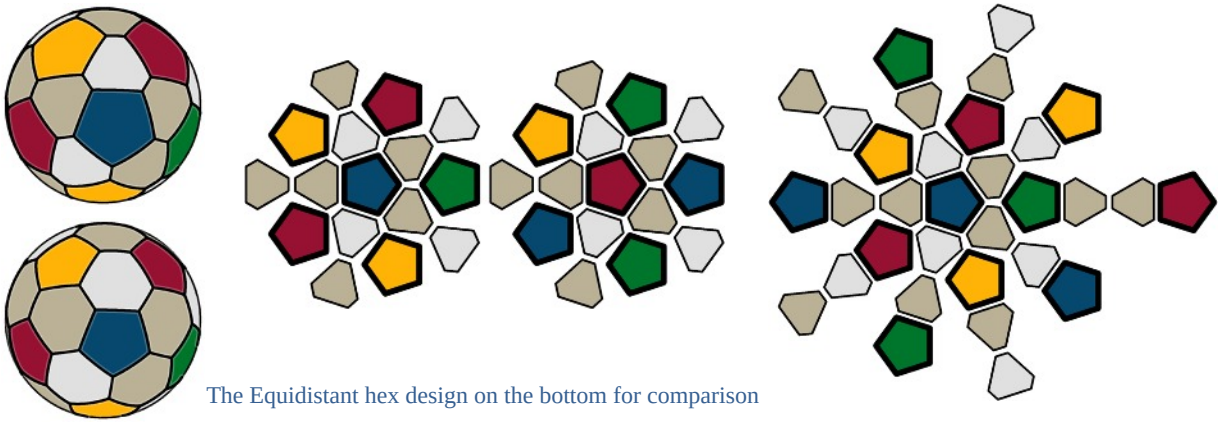
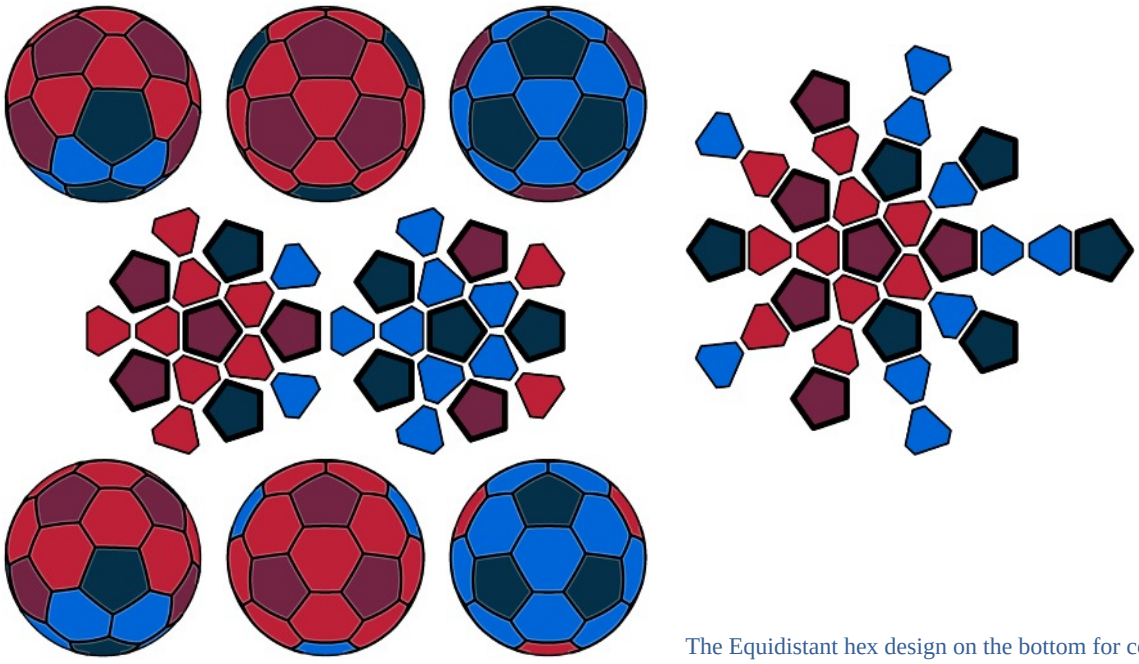


The Equidistant hex design on the bottom for comparison

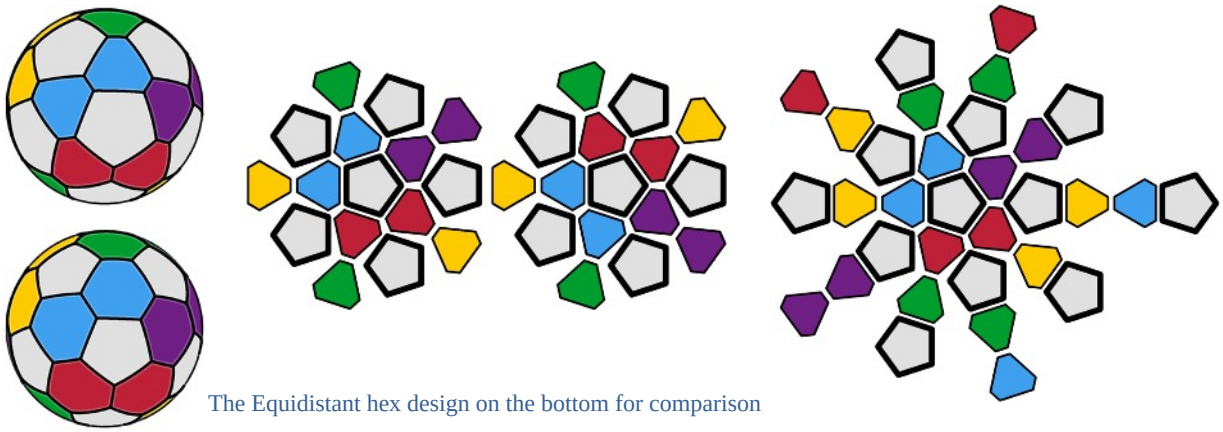
#49: Four-Color Patchwork Pents with Cube Hexes. This is the same as the Four-Color Patchwork Pents arrangement, but combined with the cube arrangement of the hexes. The hexes are now two unique colors. One color (beige in this case) is on 12 panels arranged as six pairs, each of which is perpendicular to those adjacent to it and parallel to the one opposite it, corresponding to the six faces of the cube. The other color (white) is on the 8 remaining panels, corresponding to the eight corners of the cube. One of my corduroy beanbags pictured at the beginning of the chapter uses this arrangement. There is a total of 3 pents of each of the four main colors, 12 hexes of the paired cube face color (beige), and 8 hexes of the corner color (white).



The Equidistant hex design on the bottom for comparison

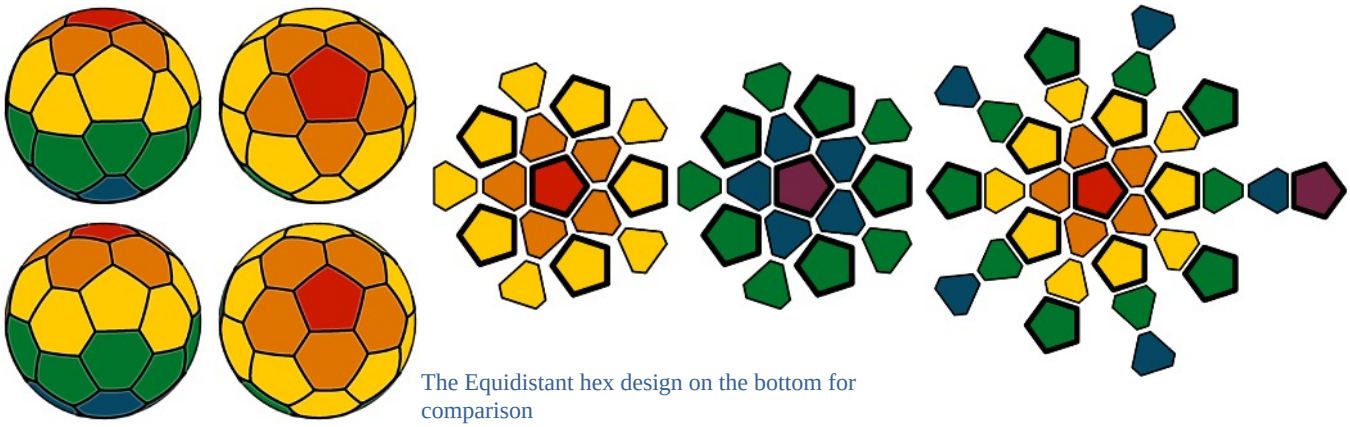
#50: Tri-Wing Hemispheres (4-color variation)/"Flip-Flop". Same as the 2-color Tri-Wing Hemispheres arrangement, but the pents are a different color from the hexes that surround them, producing a checkered appearance. This arrangement came from a footbag by a stitcher called akalazou. His photos are on the right. He called the arrangement “flip-flop”.

http://modified.in/footbag/viewtopic.php?f=11&t=21008&sid=b2fd5bffc548d7f20fa24dab855ca820&start=20



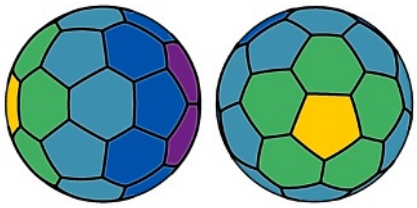
The Equidistant hex design on the bottom for comparison

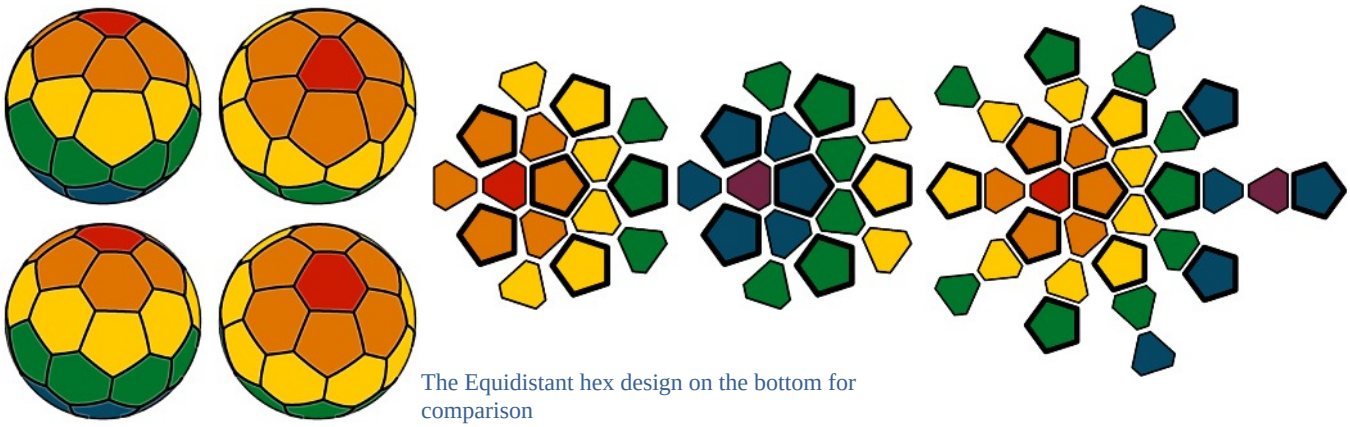
#51: Hex Pairs. Each of the five main colors is on two pairs of hexes that are opposite each other. I got this arrangement from the Footbag Central website, but their arrangement uses the icosidodecahedron (pents and triangles). I drew up the diagrams for it in the icosidodecahedron section, and then realized it would work quite well for this design, too. I used the same color palette here, which is a little different from the palette I use in the other diagrams in this section.



The Equidistant hex design on the bottom for comparison

#52a: Flowers and Pent-centric Rings/"Flower". A flower-like design on opposite sides of the ball composed of a pent with a hex on each edge, and a ring of alternating pents and hexes around each flower. This pent-centric version has rounder-looking flowers, but the two widest rings around the middle undulate more. Related to the Alternating Pent-centric Rings arrangement, but with six unique colors. On the right is another very nice color selection from a footbag I found on Reddit.





The Equidistant hex design on the bottom for comparison

#52b: Flowers and Hex-centric Rings. A flower-like design on opposite sides of the ball composed of a hex surrounded by three hexes and three pents, and a ring of pents and hexes around each patch. This hex-centric version has somewhat triangular flowers, but the two widest rings around the middle undulate less. Related to the Alternating Hex-centric Rings arrangement, but with six unique colors.

The Equidistant hex design on the bottom for comparison

#53: Five Swirls (pent-centric). Each of the five main colors form spiraling stripes of 6 panels with two opposing pents forming the hubs (the spirals run from one pent to the opposite one). The hub pents are a sixth, neutral color. This arrangement is chiral (its mirror image is not the same). Laying the panels out as shown above with the fronts facing up will yield the clockwise swirls shown in the illustrations while laying them out with the backs facing up will flip the arrangement to its mirror image, reversing their direction. There is a total of 2 pents and 4 hexes of each of the five stripe colors.

7 colors

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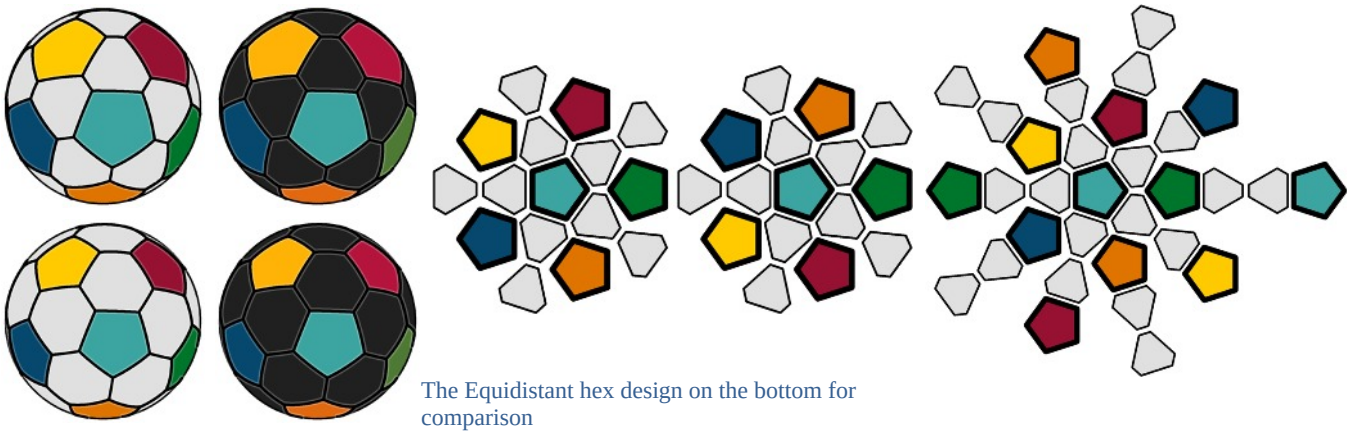
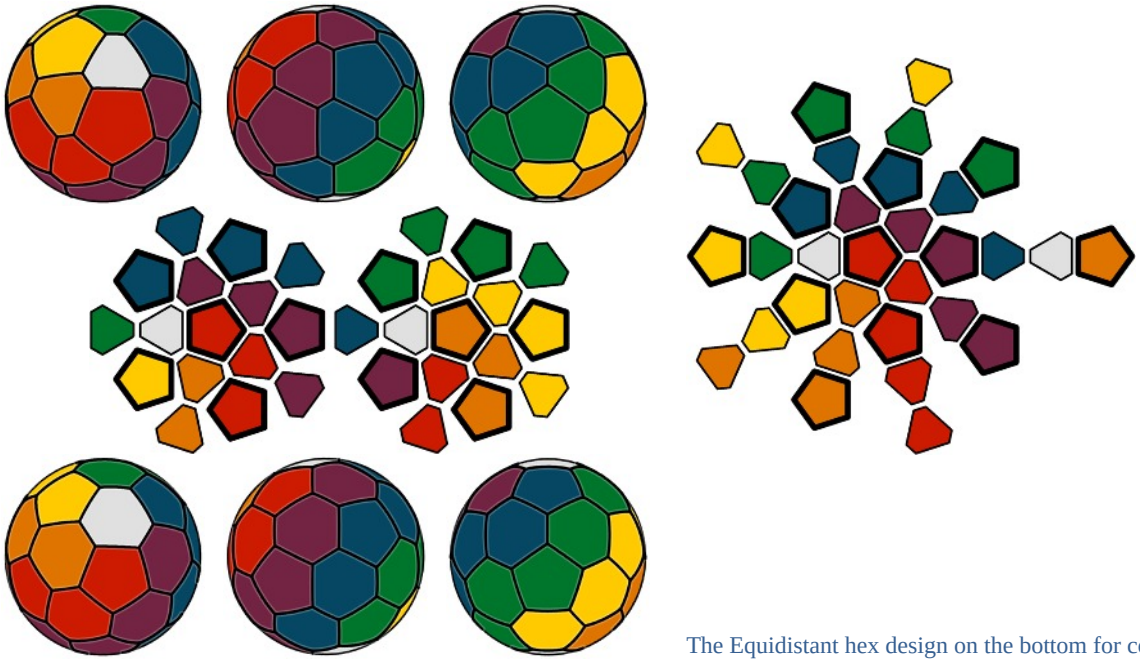


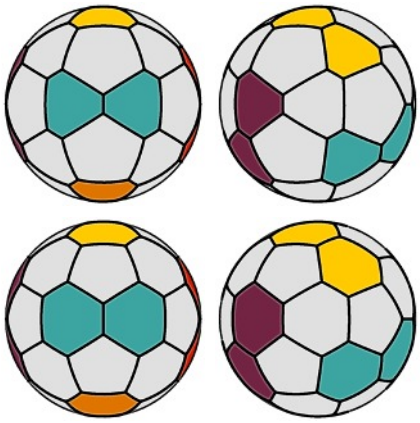
The Equidistant hex design on the bottom for comparison

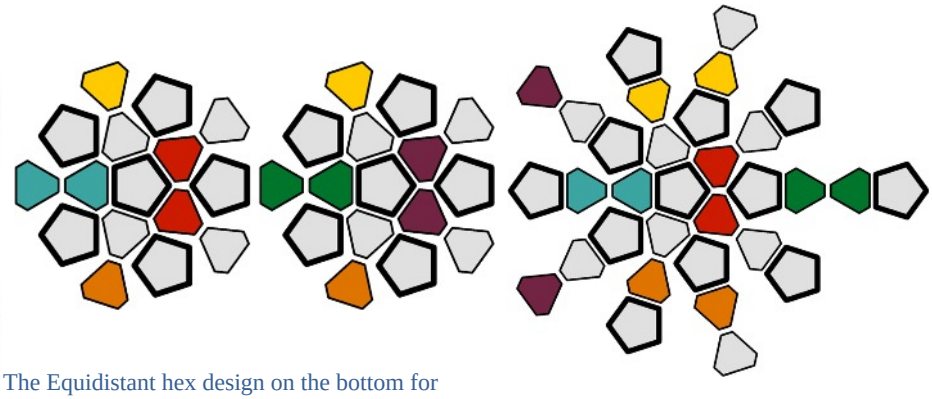
#54: Six-Color Patchwork Pents. Each of the six main colors are on opposite pairs of pents. The hexes are all a single, neutral color. I show both a light and dark color for the hexes because both look great.



The Equidistant hex design on the bottom for comparison

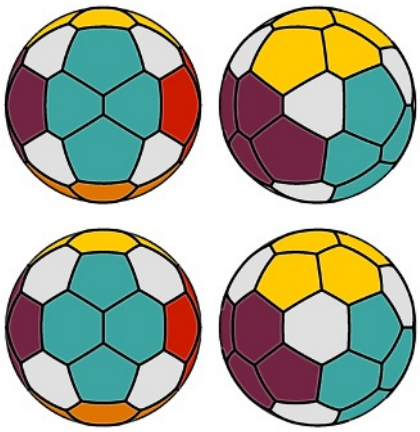
#55: Six Swirls (hex-centric). Each of the six main colors form spiraling stripes of 5 panels with two opposing, neutral-color hexes forming the hubs (the spirals run from one hex to the opposite one). The spirals have a bit of an abrupt bend to them as shown by the red spiral in the first image and the green spiral in the third. The stripes of the Five Swirls arrangement are smoother. This arrangement is chiral (its mirror image is not the same). Laying the panels out as shown above with the fronts facing up will yield the clockwise swirls shown in the illustrations while laying them out with the backs facing up will reverse their direction. There is a total of 2 pents and 3 hexes of each of the six stripe colors.

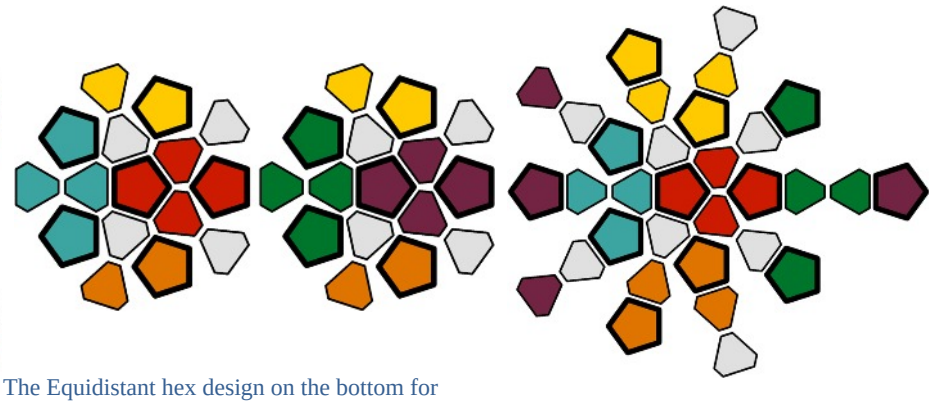




The Equidistant hex design on the bottom for comparison

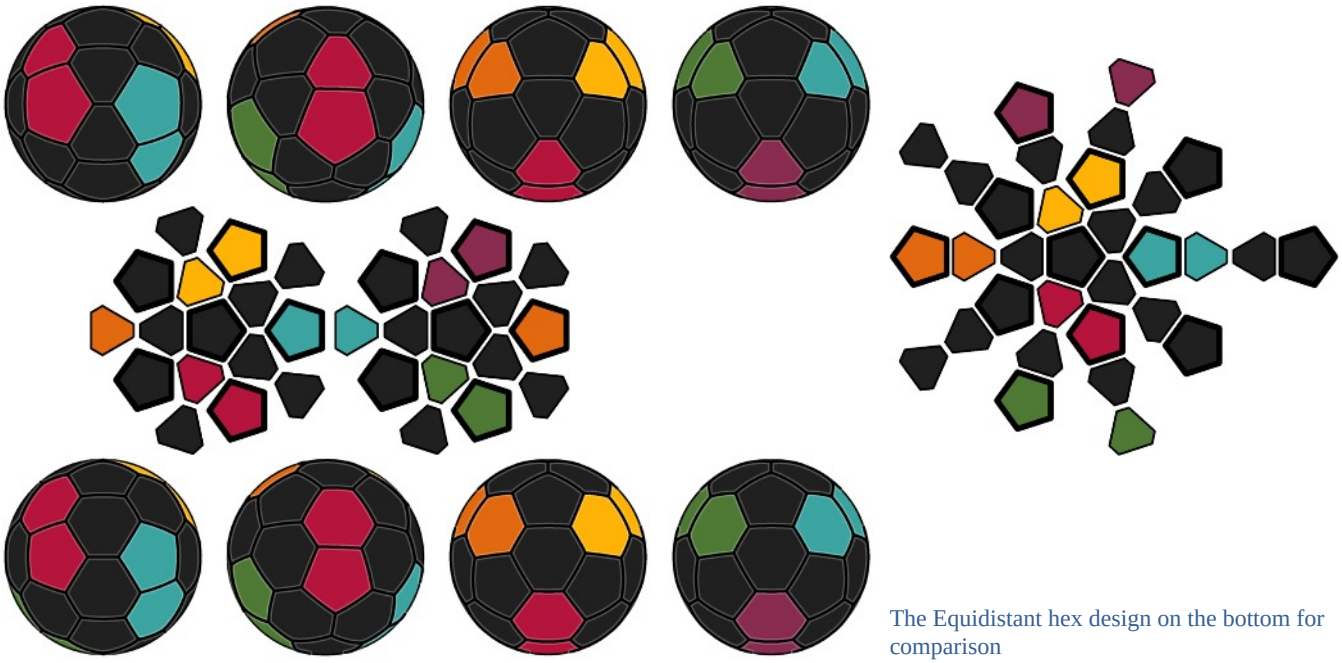
#56: Cube Pairs (7-color variation). Same as the 2-color Cube Pairs arrangement but each stripe is a unique color. Each color will be on 2 hex panels and, as before, the contrasting background color will be on the remaining 20 panels (12 pents, 8 hexes).





The Equidistant hex design on the bottom for comparison

#57: Cube Patches (7-color variation)/"Six Egg". Same as the 4-color Cube Patches arrangement but each patch is a unique color.



The Equidistant hex design on the bottom for comparison

#58: Staggered Pairs (7-color variation). Same as the 2-color Staggered Pairs arrangement but the stripes are each a unique color. There is a total of 1 pent and 1 hex of each stripe color, and 6 pents and 14 hexes of the background color.

8 colors

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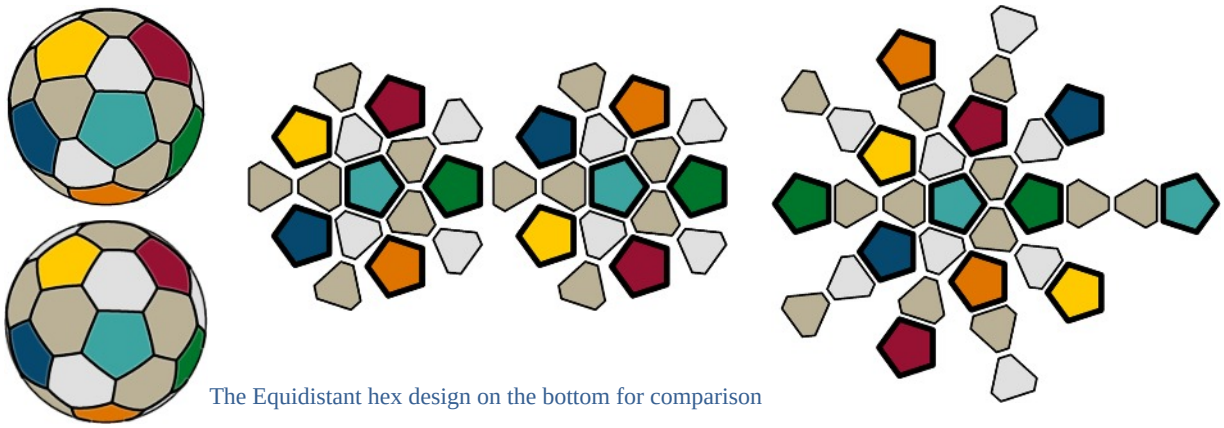
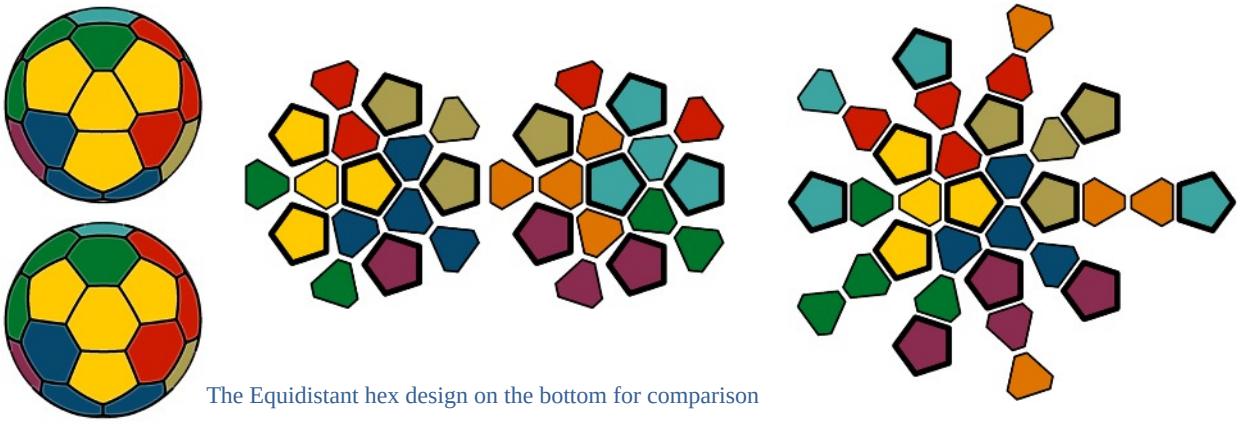


The Equidistant hex design on the bottom for comparison

#59: Six-Color Patchwork Pents with Cube Hexes. Same as the Six-Color Patchwork Pents arrangement but combined with the cube arrangement of the hexes. The hexes are now two unique colors. One color (beige in this case) is on 12 panels arranged as six pairs, each of which is perpendicular to those adjacent to it and parallel to the one opposite it, corresponding to the six faces of the cube. The other color (white) is on the 8 remaining panels, corresponding to the eight corners of the cube. There is a total of 2 pents of each of the six main colors, 12 hexes of the paired cube face color (beige), and 8 hexes of the corner color (white).



The Equidistant hex design on the bottom for comparison

#60: Tessellation of Shuriken (8-color variation). Same as the 4-color Tessellation of Shuriken arrangement but each shuriken/radiation symbol is a unique color. A shuriken is composed of a hex surrounded by 3 pents, and a radiation symbol (which counts as a shuriken in this context) is a hex surrounded by 3 hexes. There are four of each type of figure.

Photos

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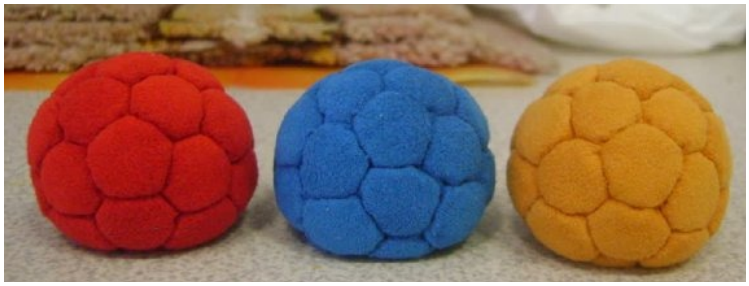
I found most of the following photos on http://modified.in/footbag/viewtopic.php?t=21008, http://modified.in/footbag/viewtopic.php?p=436817, and http://umbrellabags.wordpress.com/. Those that are from other sources have a footnote beside them providing the source URL. An image search on the web for "32-panel footbag" will find all of these and more.

Some of these arrangements work better with the 14-panel hex variation (particularly the character faces at the end), and some work better with the triangle variation. There are duplicate arrangement patterns among these photos, but they use different colors, and the pairs with black lines between them are two views of the same bag. The photos are ordered, with a few exceptions, by the number of colors they contain.



[6]

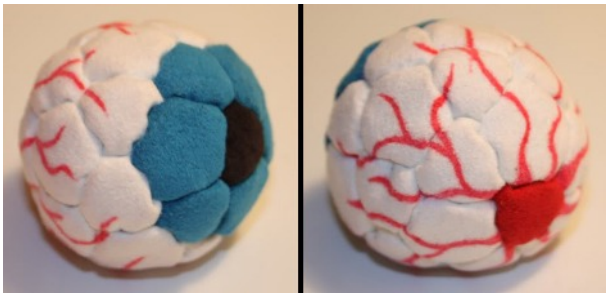
6 http://www.adventuretrading.com/footbags/panelled/hero-soccer.html

32-Panel Beanbag Color Arrangements

[7]

[7] http://www.footbagcentral.com/I%5E2-32-Panel-Footbag-Hacky-Sack

32-Panel Beanbag Color Arrangements












8

9

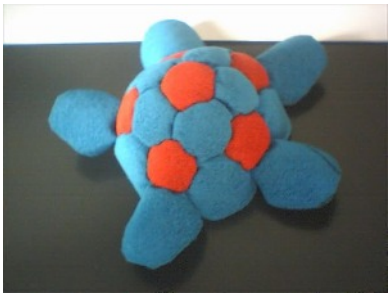


8 http://sportgam.com/beanbags-and-foot-bags/hero-black-neon-rainbow-32-panel-hacky-sack-footbag-comes-with-tips-game-instructions/

9 http://www.footbagcentral.com/I%5E2-32-Panel-Footbag-Hacky-Sack

32-Panel Beanbag Color Arrangements

10



11

12

13

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10 http://www.footbagcentral.com/I%5E2-32-Panel-Footbag-Hacky-Sack

11 https://www.pinterest.com/pin/526076800195406707/?nic_v2=1aI2vjckY. This sea turtle is actually an unfinished ball. The flippers and head are formed by the hex panels attached to the initial hemisphere. But this idea could be used to make a sea turtle ball by completing the ball with a single, belly color, and sewing extra hexes or actual feet and head pieces into those same seams and adding features to them.

12 http://modified.in/footbag/viewtopic.php?f=11&t=22702

13 https://www.haniabag.com/shop/32-panels/32-panel-footbag-custom/

Ready-to-Print Patterns for All Variations

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The pattern pages are 8.27″×11″ (210mm×279mm) to fit both "Letter" and "A4" sizes. ***Make sure the print is not being scaled to fit the printer margins*** *(select Default/None scaling/Actual size/Ignore printer margins). To verify correct sizing,* ***compare the centimeter grid to a ruler*** *and adjust the next print if necessary. (Note that PDF viewers and printers can both contribute to slight size inaccuracy.)*

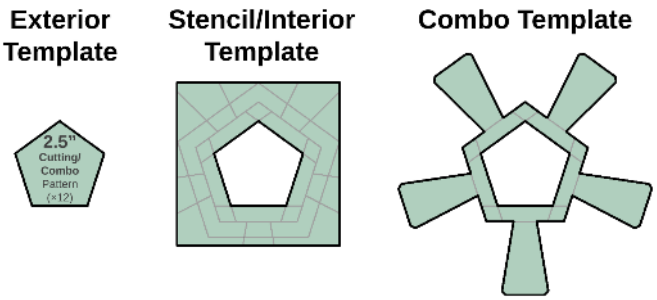
My **Equidistant design patterns** begin on the next page. Those are followed by the **Footbag Hex Variation**, the **Triangle Variation** (icosidodecahedron), and finally the **Equilateral Hex Variation** (truncated icosahedron/soccer ball).

The patterns are for beanbag diameters from 2″ – 3″ in ¼″ increments, with 7″ patterns for scaling to larger sizes. The patterns are sized using my inflation-corrected sizing so as hopefully to produce accurate finished sizes (the Hex variant patterns are reduced by 3.8% and the Triangle variant by 3.0% from the mathematical calculations to account for the inflation in size I observed in my corduroy bag).

To make the templates, I recommend cutting out the portions of the paper with the patterns you want and gluing or taping them to your template material, and then cutting along the patterns.

The patterns are Combo patterns. They have the **stitching patterns on the inside (filled with gray)** and the **cutting patterns on the outside**, with **4mm, 6mm, and 8mm allowances** so you can choose the amount that works best for your fabric and preference (the lighter, 6mm pattern is a hair under ¼″). They also include **tabs to help you hold the templates down**. You may not need all the tabs with a rigid enough template material.

The examples on the right show the **three ways you can cut out the templates**. If you want separate stitching and cutting templates, you will need to print the patterns twice.



To produce other pattern sizes or correct an incorrectly sized beanbag, adjust the size scaling in the print dialog. For example, to reduce my 2.5″ pattern to the 2.3″ size recommended by the Juggling Store for small hands and numbers juggling, divide 2.3 by 2.5, multiply the result by 100, and that is your scale (92% in this case). If your beanbag ends up not being the expected size, see the **General Information and Techniques** chapter under "Adjusting/Scaling a Pattern to Produce an Accurate Ball Size" for help with correcting it.

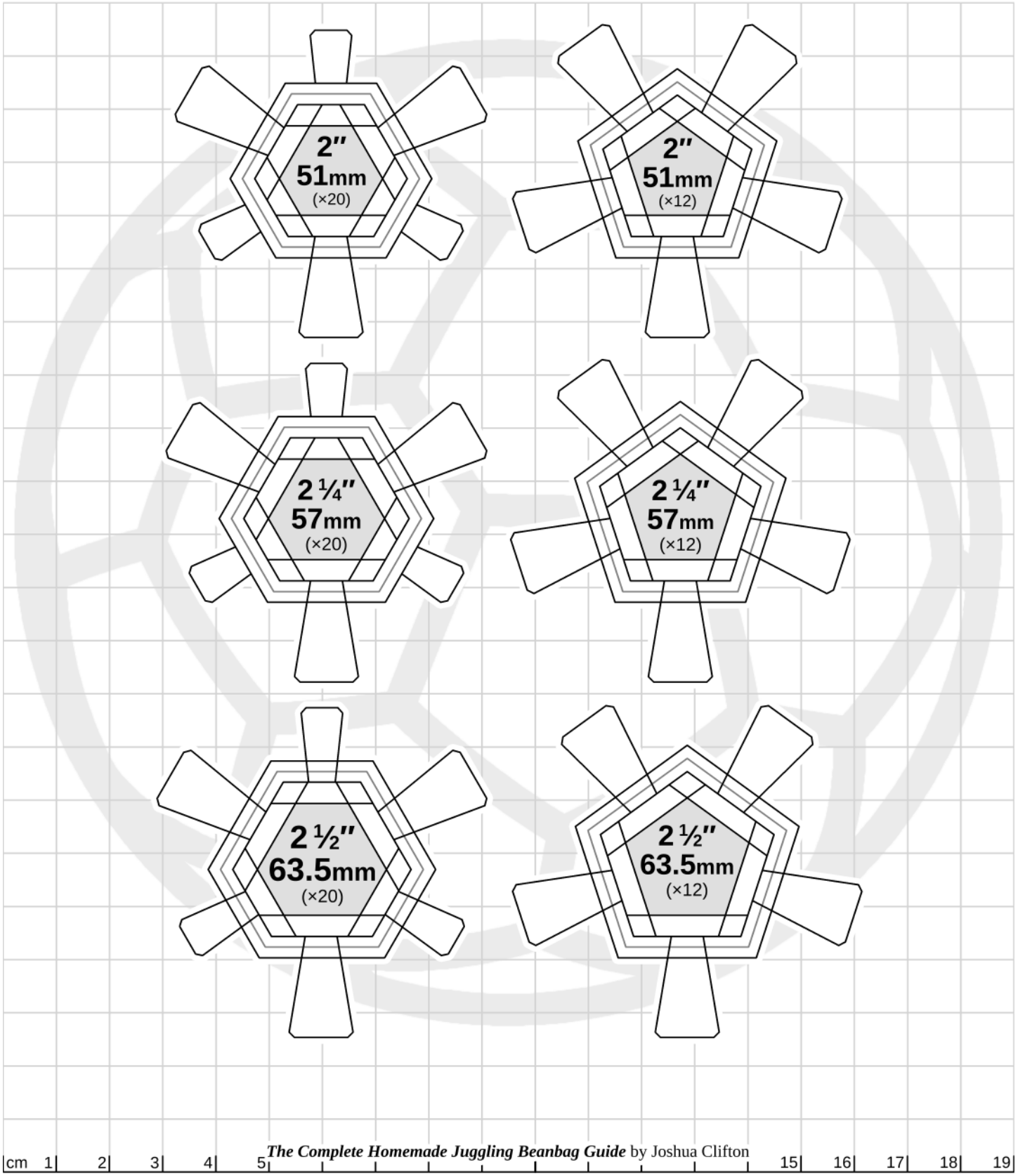
The table below provides the scaling for the ⅛″ increments between my ¼″ sizes. The centimeter grid can be used to verify correct scaling.

Target Diameter	Print this pattern size	At this scale
1¾″ (44.5mm)	2″	87.5%
1⅞″ (47.6mm)	2″	93.8%
2⅛″ (54.0mm)	2¼″	94.4%
2⅜″ (60.3mm)	2½″	95%
2⅝″ (66.7mm)	2¾″	95.4%
2⅞″ (73.0mm)	3″	95.8%

Equidistant Truncated Icosahedron (32 Panels)

Uses 20 hexagons, 12 pentagons

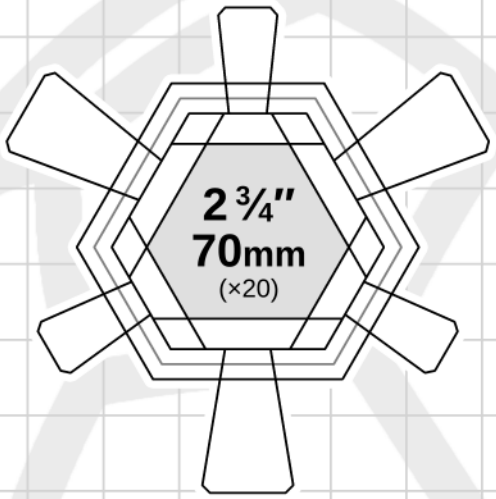
Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.

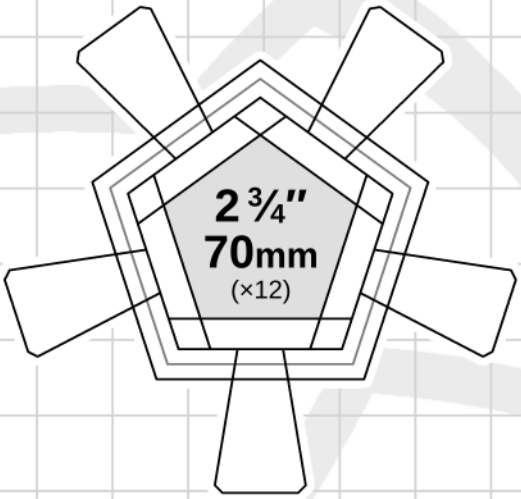


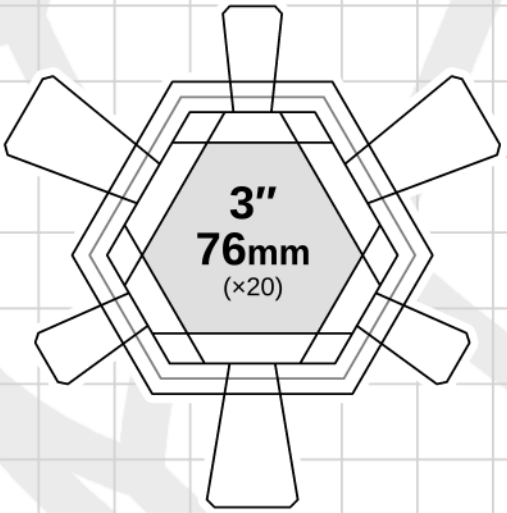
Equidistant Truncated Icosahedron (32 Panels)

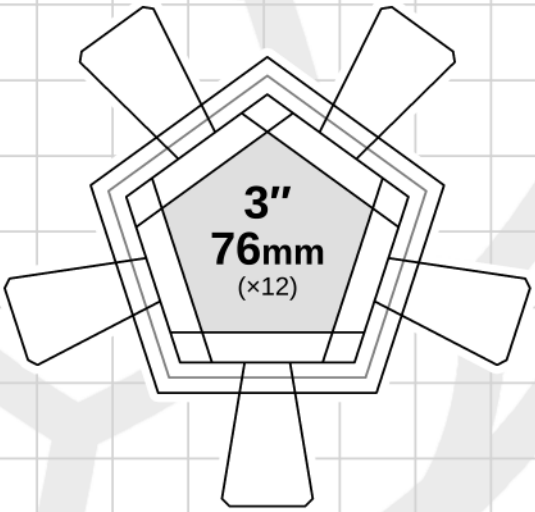
Uses 20 hexagons, 12 pentagons

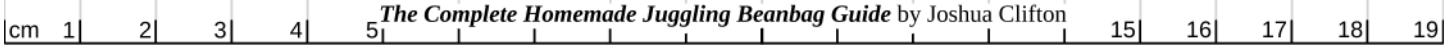
Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.









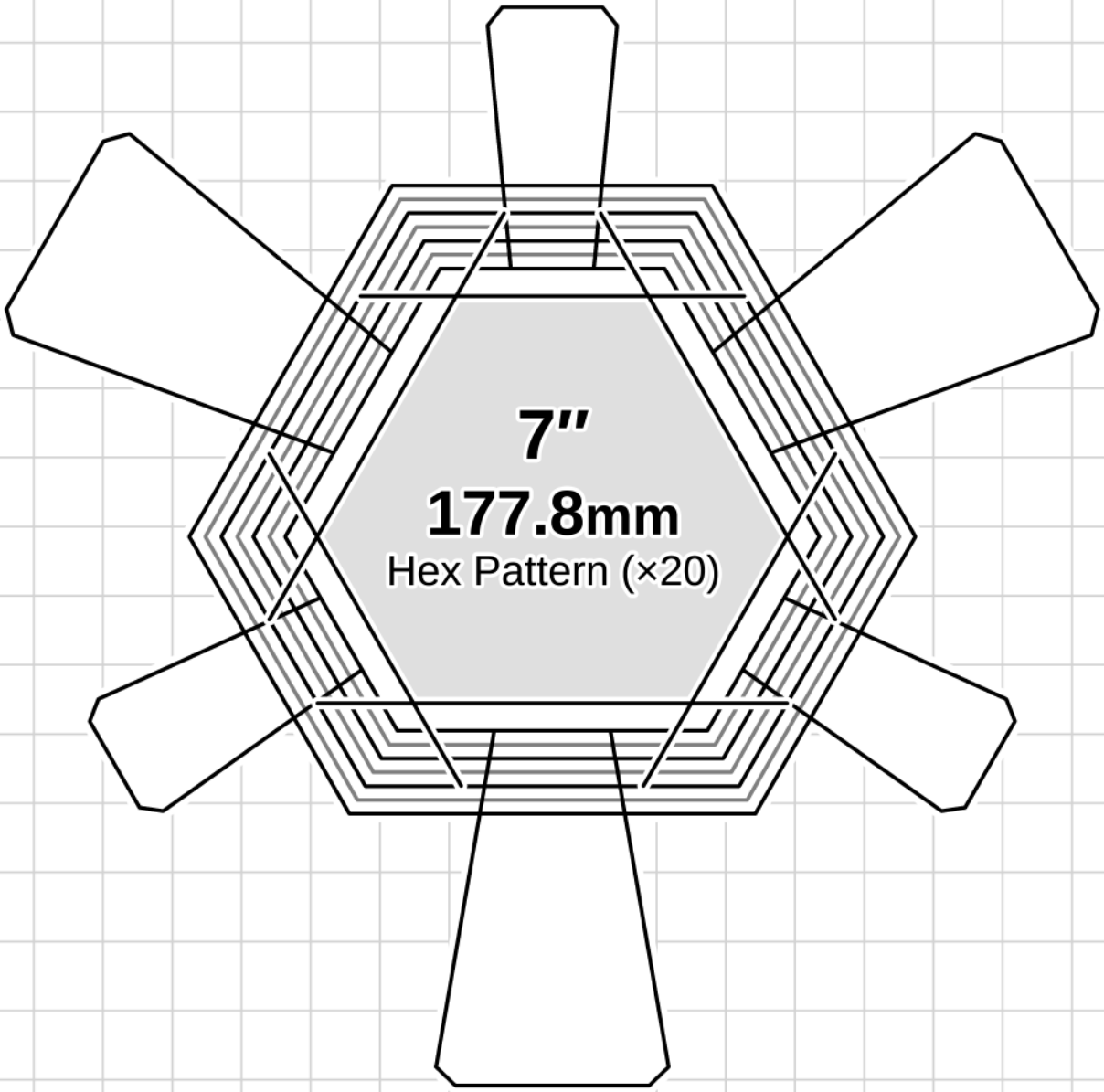


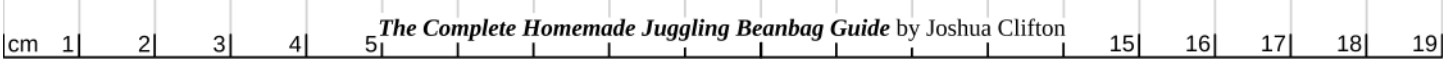
Equidistant Truncated Icosahedron (32 Panels)

Uses 20 hexagons, 12 pentagons

Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.

Extra large and versatile patterns for scaling to larger sizes in the Print Dialog (the pent is on the next page). Print each pattern twice if you want both a stitching template and a cutting template (or cut out combo templates). The inner patterns (filled with gray) are the stitching patterns. Each dark pattern outside of those marks a 4mm seam allowance interval (at 100% scaling). Use those or the lighter, half-intervals between them to cut out the amount of allowance you want for the cutting templates.

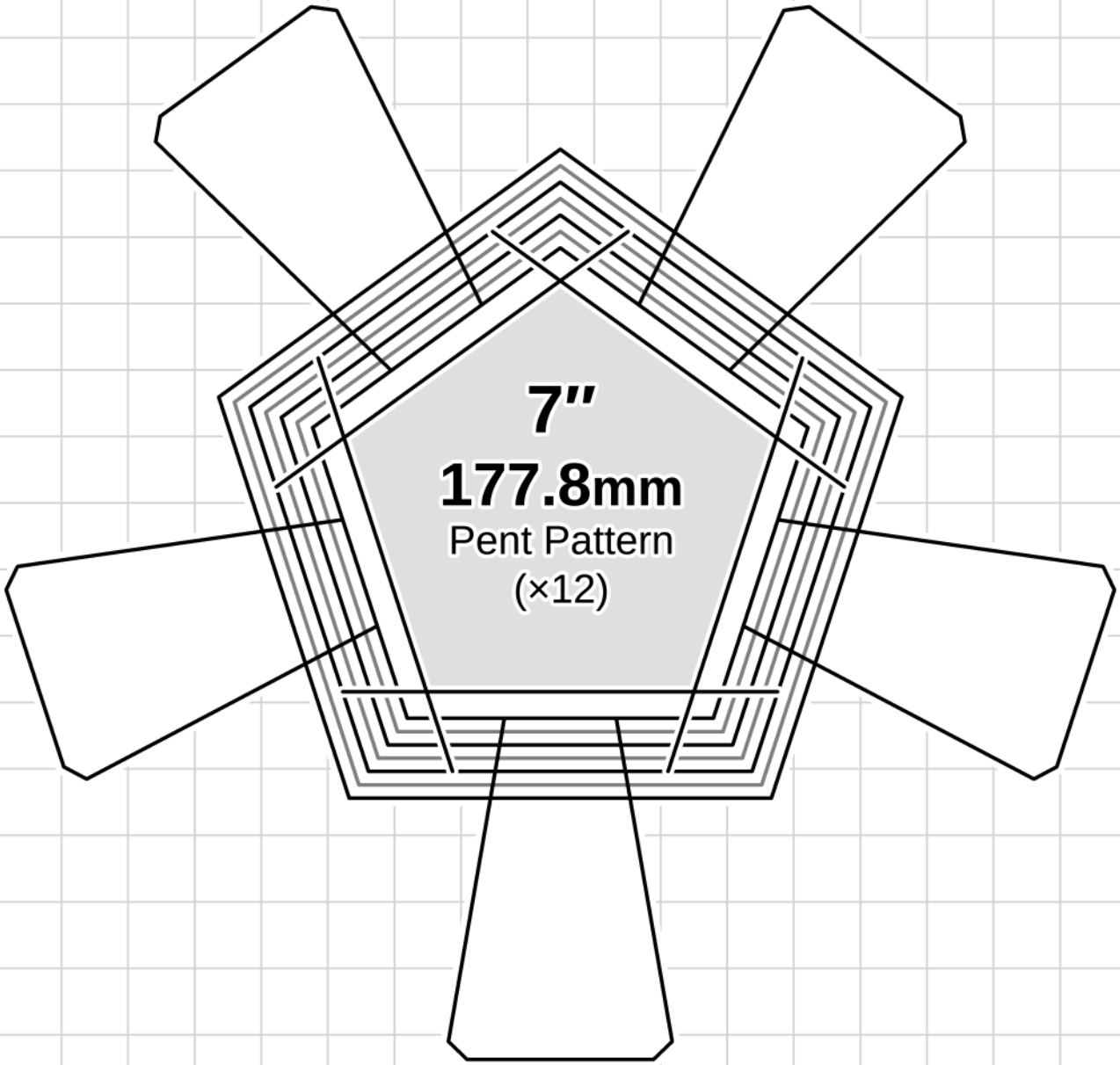


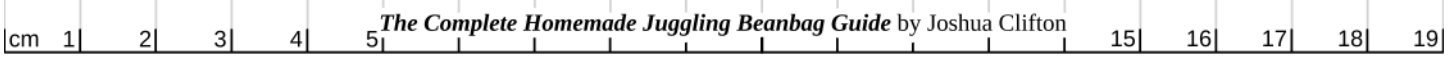


Equidistant Truncated Icosahedron (32 Panels)

Uses 20 hexagons, 12 pentagons

Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.

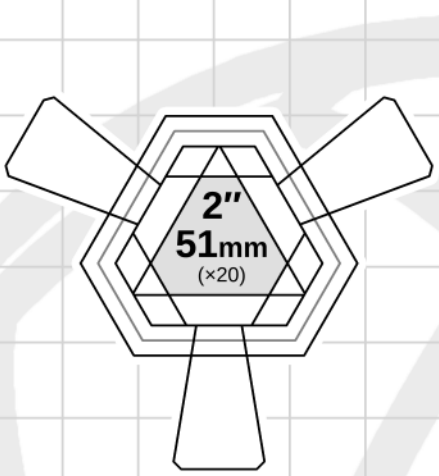


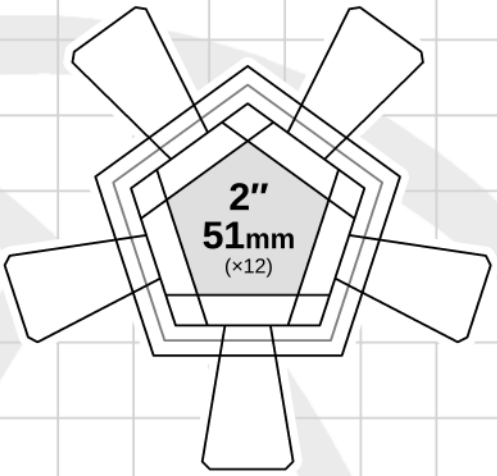


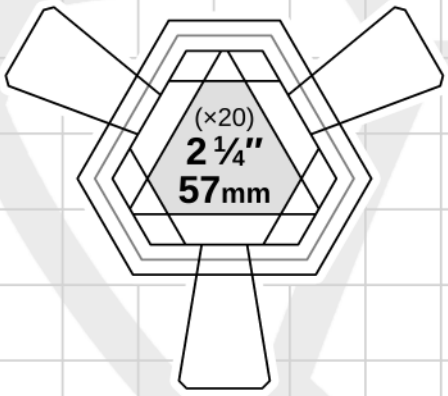
Modified Icosidodecahedron (32 Panels)

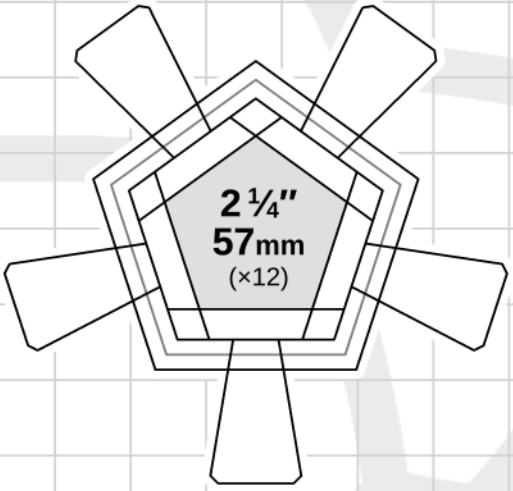
14-Panel/Footbag-Style Hexes **(Uses 20 hexagons, 12 pentagons)**

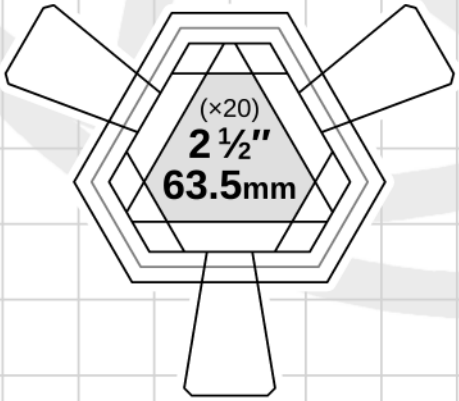
Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.

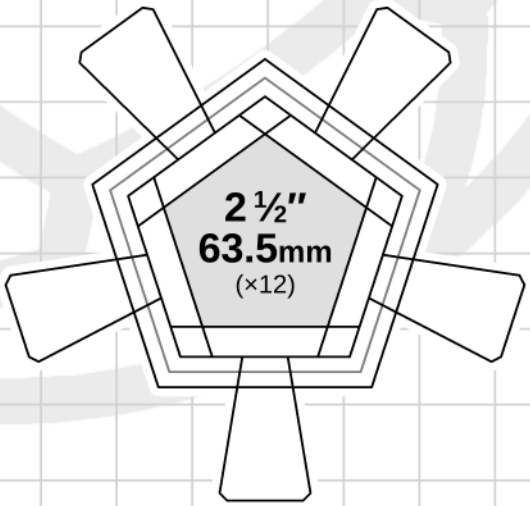


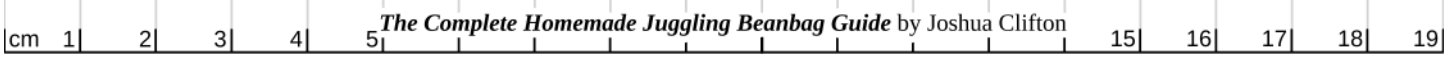








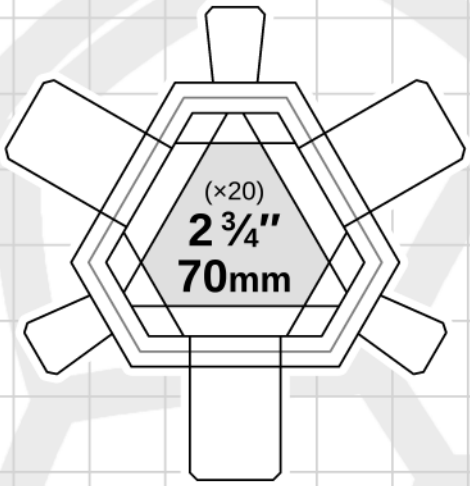


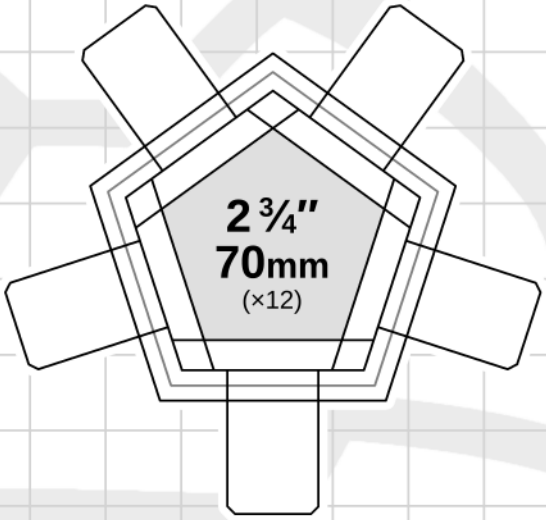


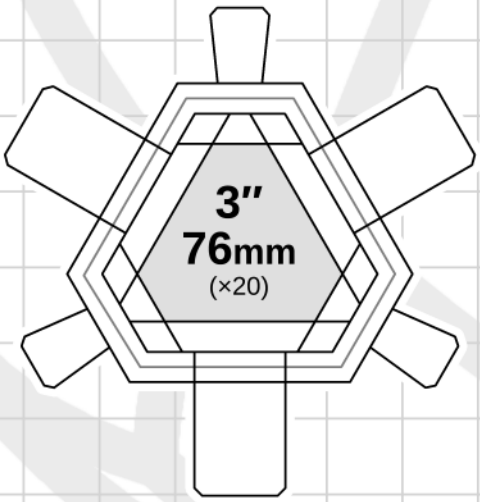
Modified Icosidodecahedron (32 Panels)

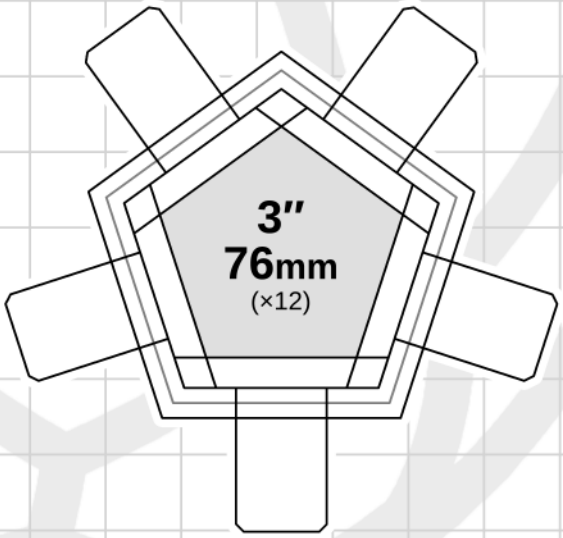
14-Panel/Footbag-Style Hexes **(Uses 20 hexagons, 12 pentagons)**

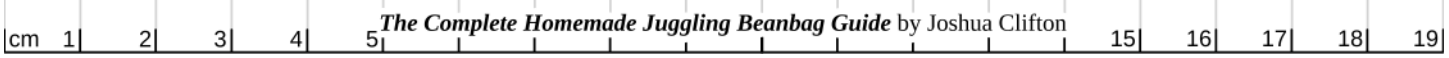
Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.









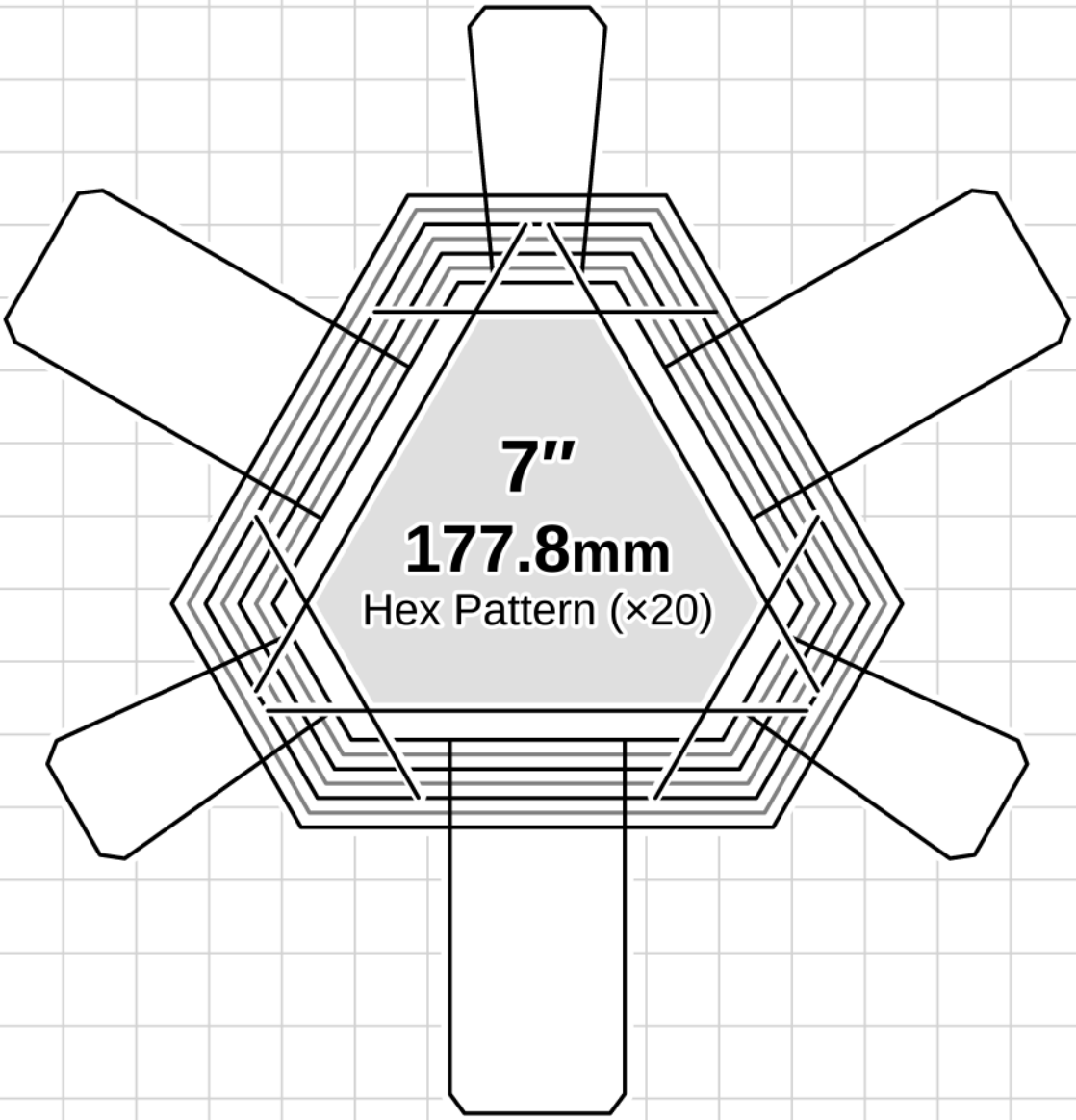


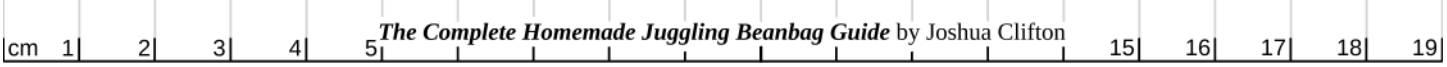
Modified Icosidodecahedron (32 Panels)

14-Panel/Footbag-Style Hexes (Uses 20 hexagons, 12 pentagons)

Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.

Extra large and versatile patterns for scaling to larger sizes in the Print Dialog (the pent is on the next page). Print each pattern twice if you want both a stitching template and a cutting template (or cut out combo templates). The inner patterns (filled with gray) are the stitching patterns. Each dark pattern outside of those marks a 4mm seam allowance interval (at 100% scaling). Use those or the lighter, half-intervals between them to cut out the amount of allowance you want for the cutting templates.

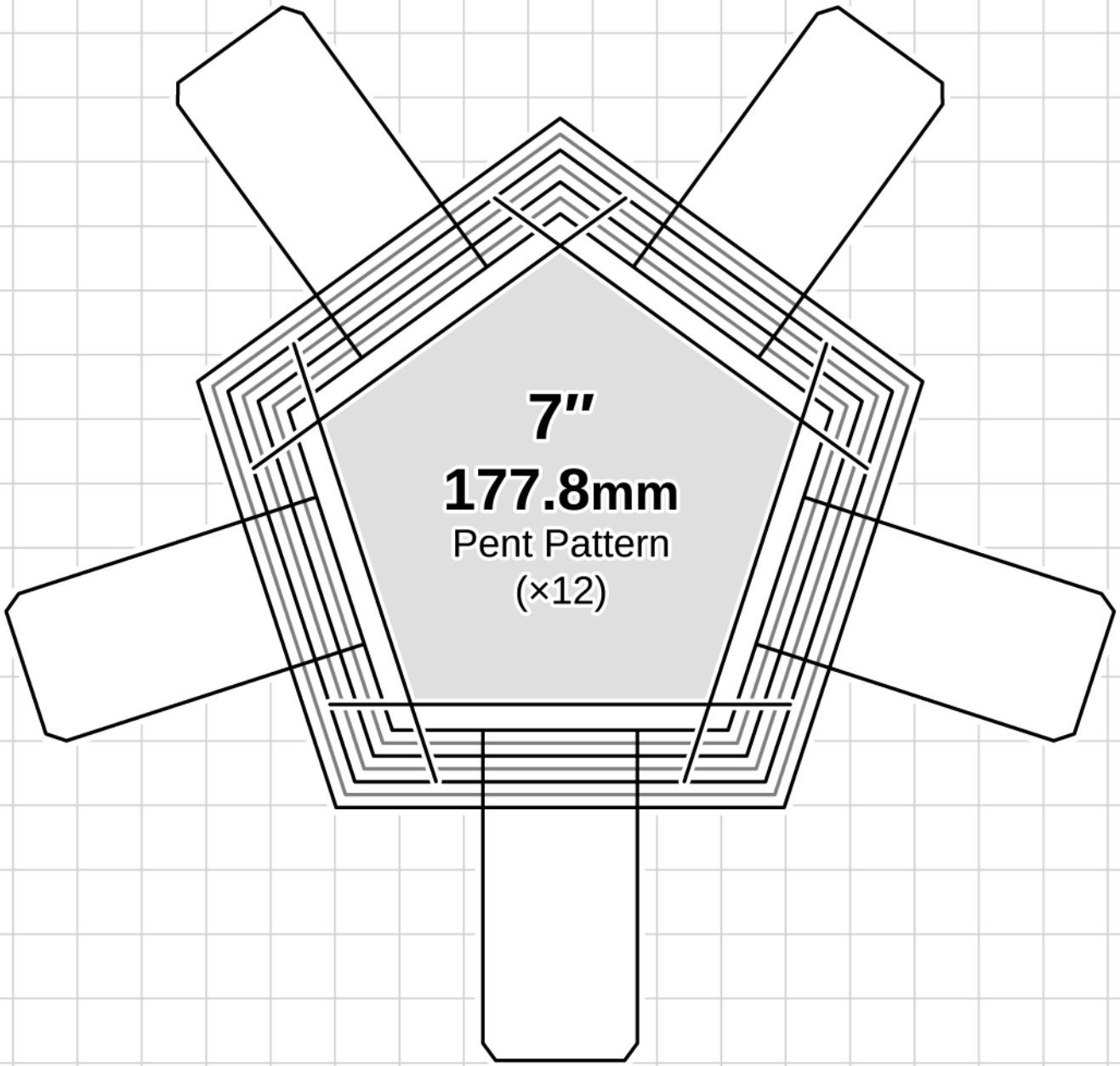




Modified Icosidodecahedron (32 Panels)

14-Panel/Footbag-Style Hexes **(Uses 20 hexagons, 12 pentagons)**

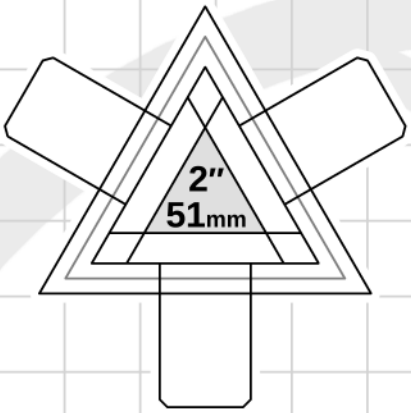
Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.

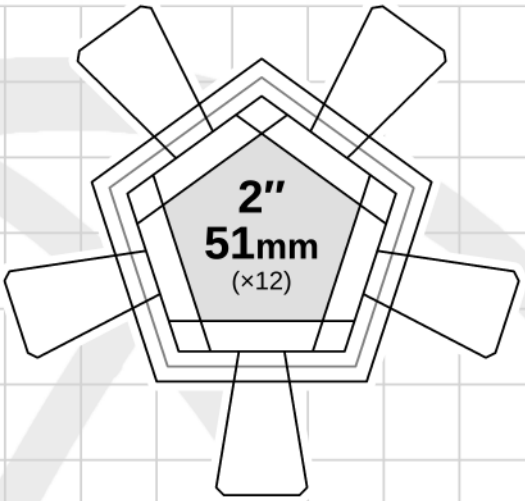


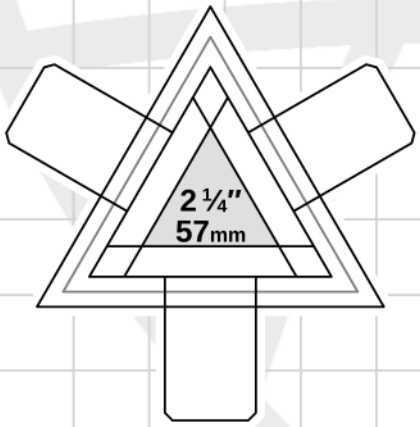
Icosidodecahedron (32 Panels)

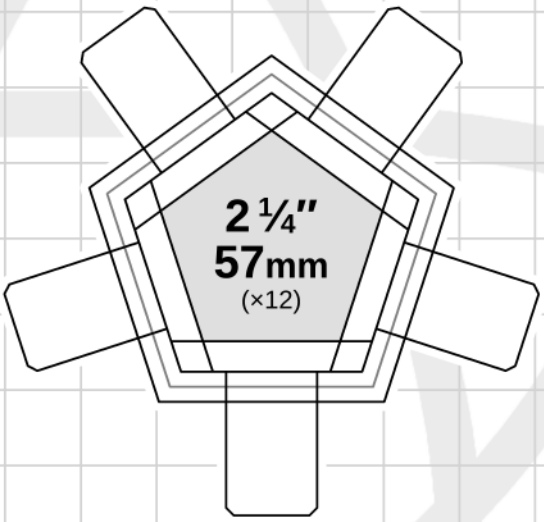
Uses 20 triangles, 12 pentagons

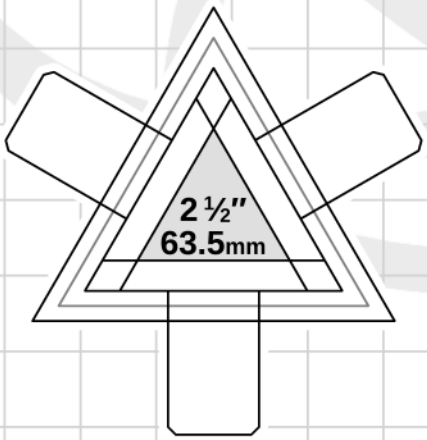
Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.

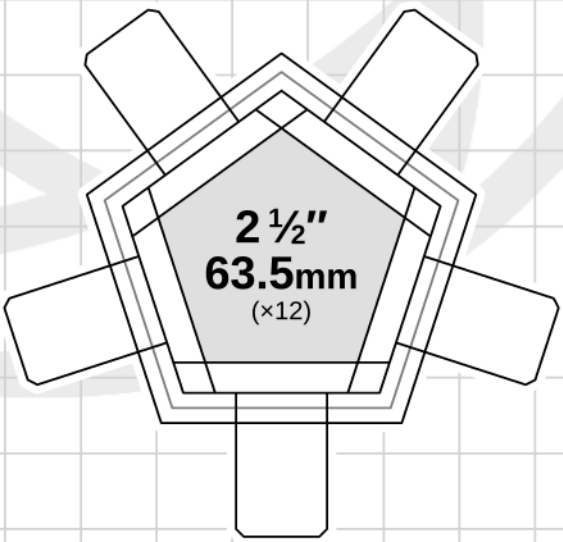


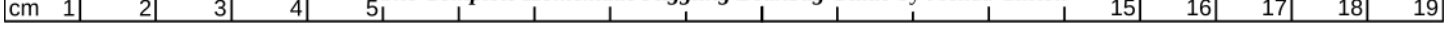








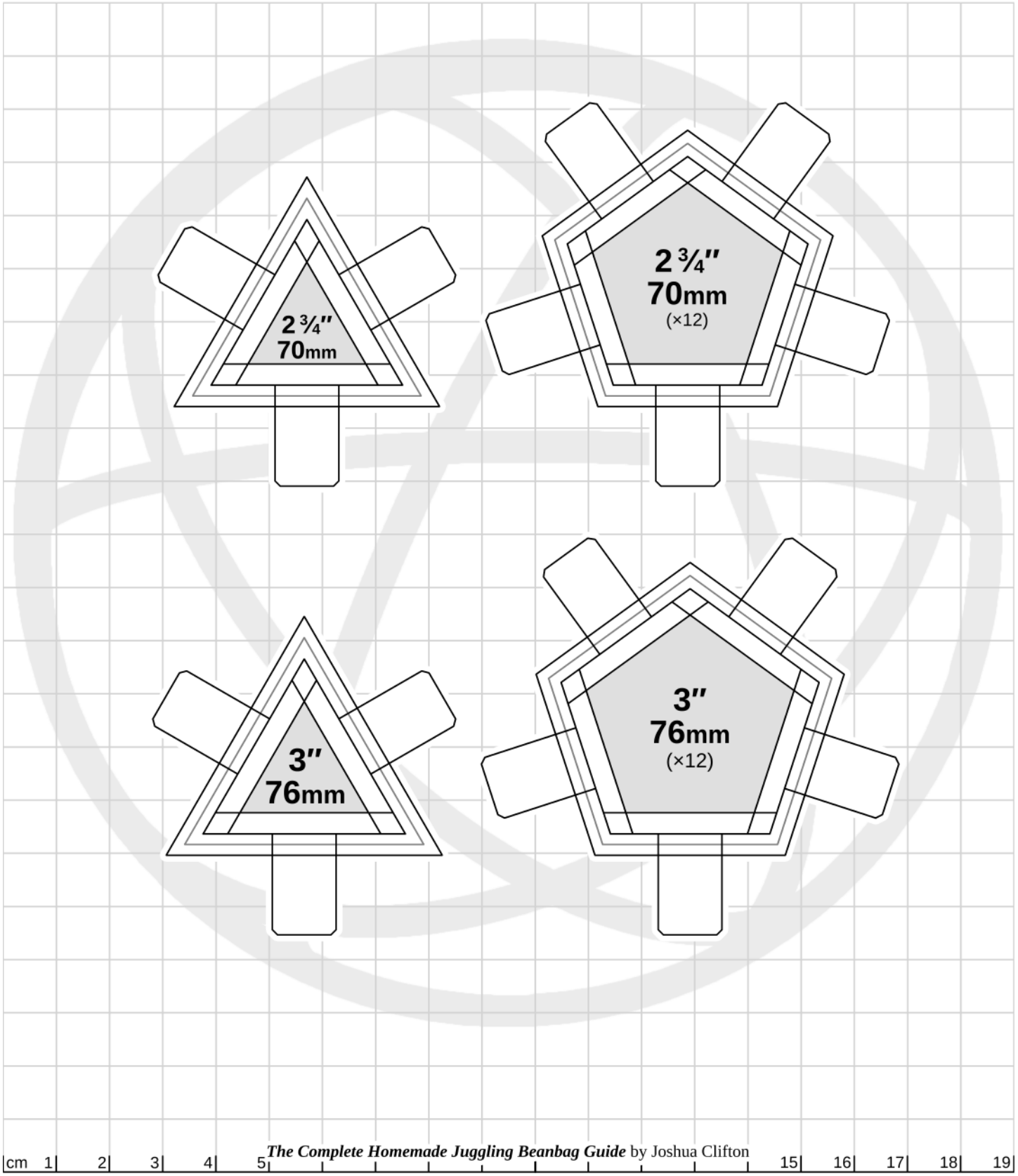




Icosidodecahedron (32 Panels)

Uses 20 triangles, 12 pentagons

Pattern sizes are adjusted for corduroy and do not account for gathered seams.
For footbags with gathered seams, try two sizes (1/2″) or 25% larger than target diameter.



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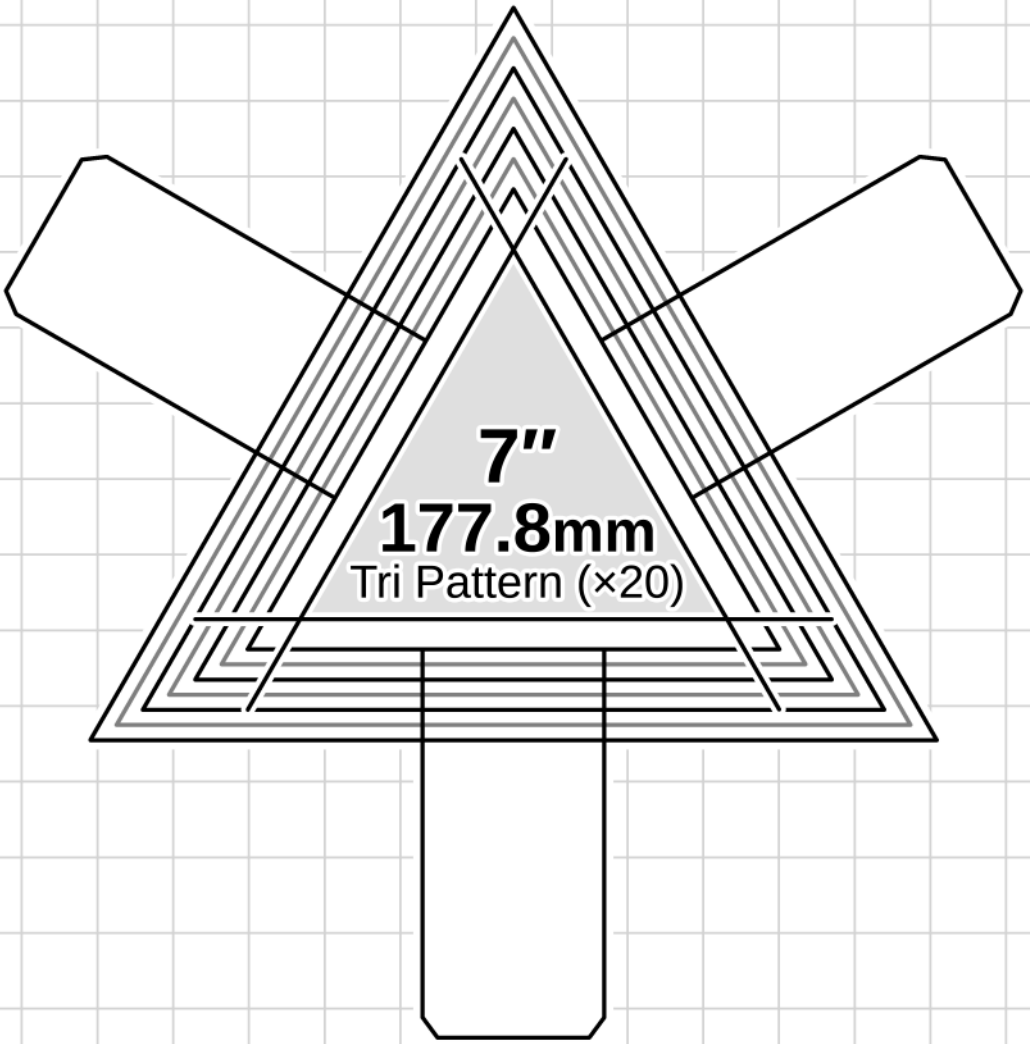
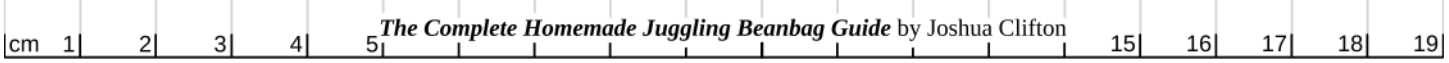
Extra large and versatile patterns for scaling to larger sizes in the Print Dialog (the pent is on the next page). Print each pattern twice if you want both a stitching template and a cutting template (or cut out combo templates). The inner patterns (filled with gray) are the stitching patterns. Each dark pattern outside of those marks a 4mm seam allowance interval (at 100% scaling). Use those or the lighter, half-intervals between them to cut out the amount of allowance you want for the cutting templates.





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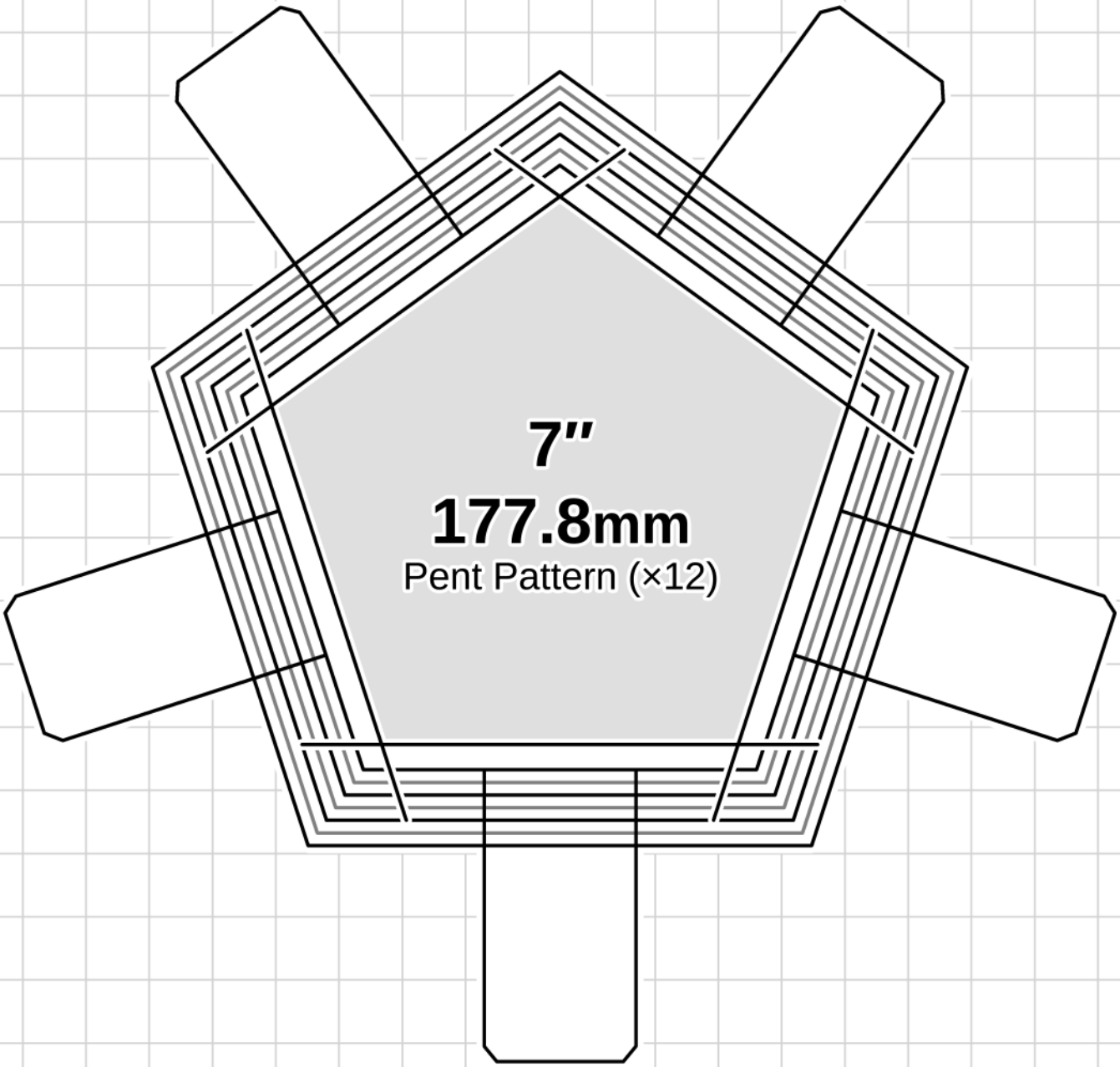

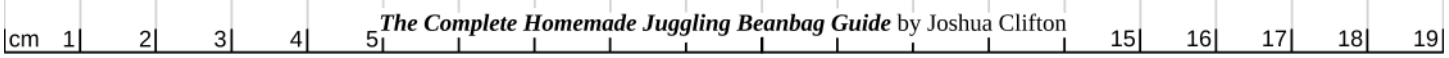

Truncated Icosahedron/Soccer Ball (32 Panels)

Uses 20 equilateral hexagons, 12 pentagons

Pattern sizes are adjusted for corduroy and do not account for gathered seams.
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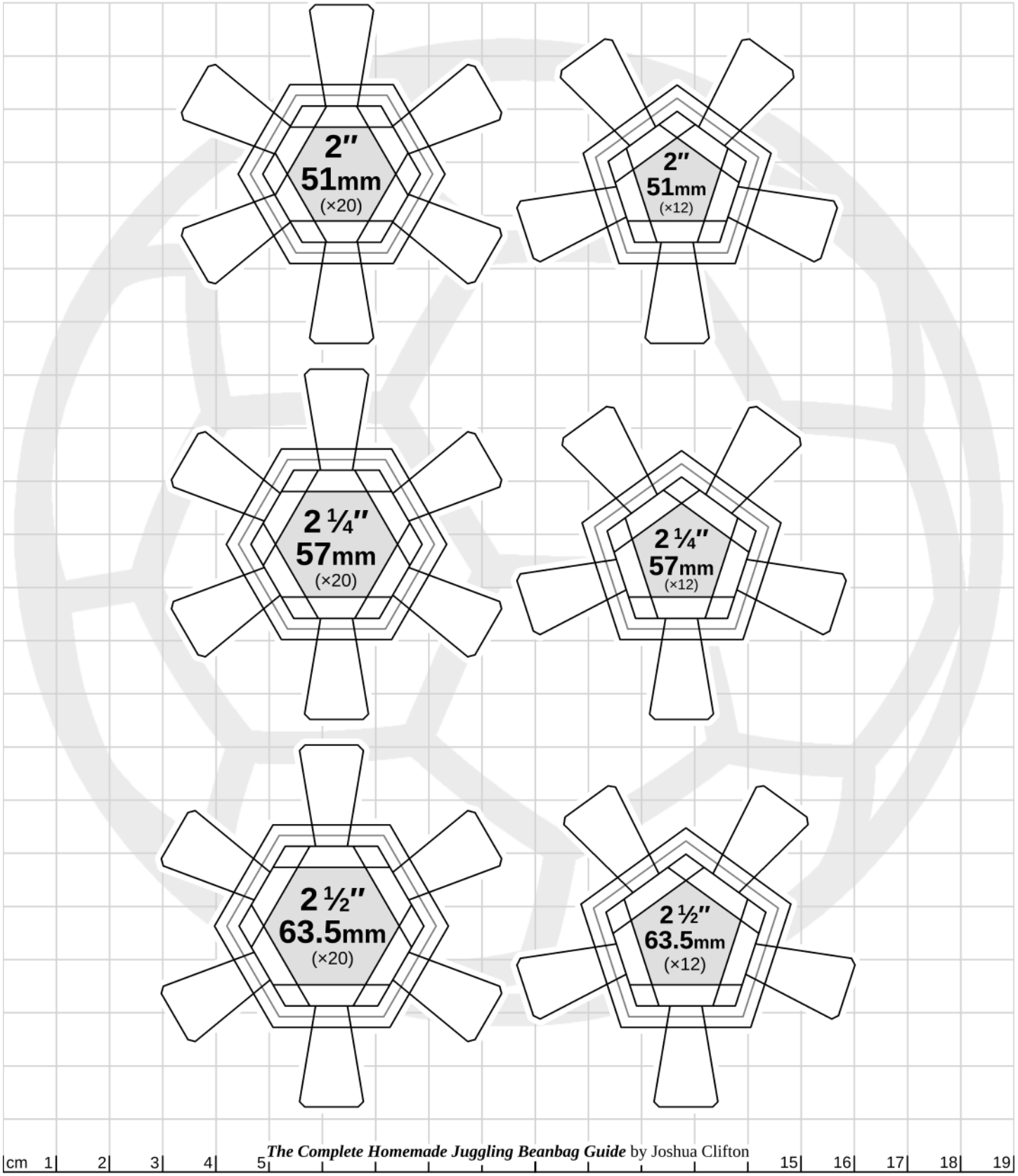

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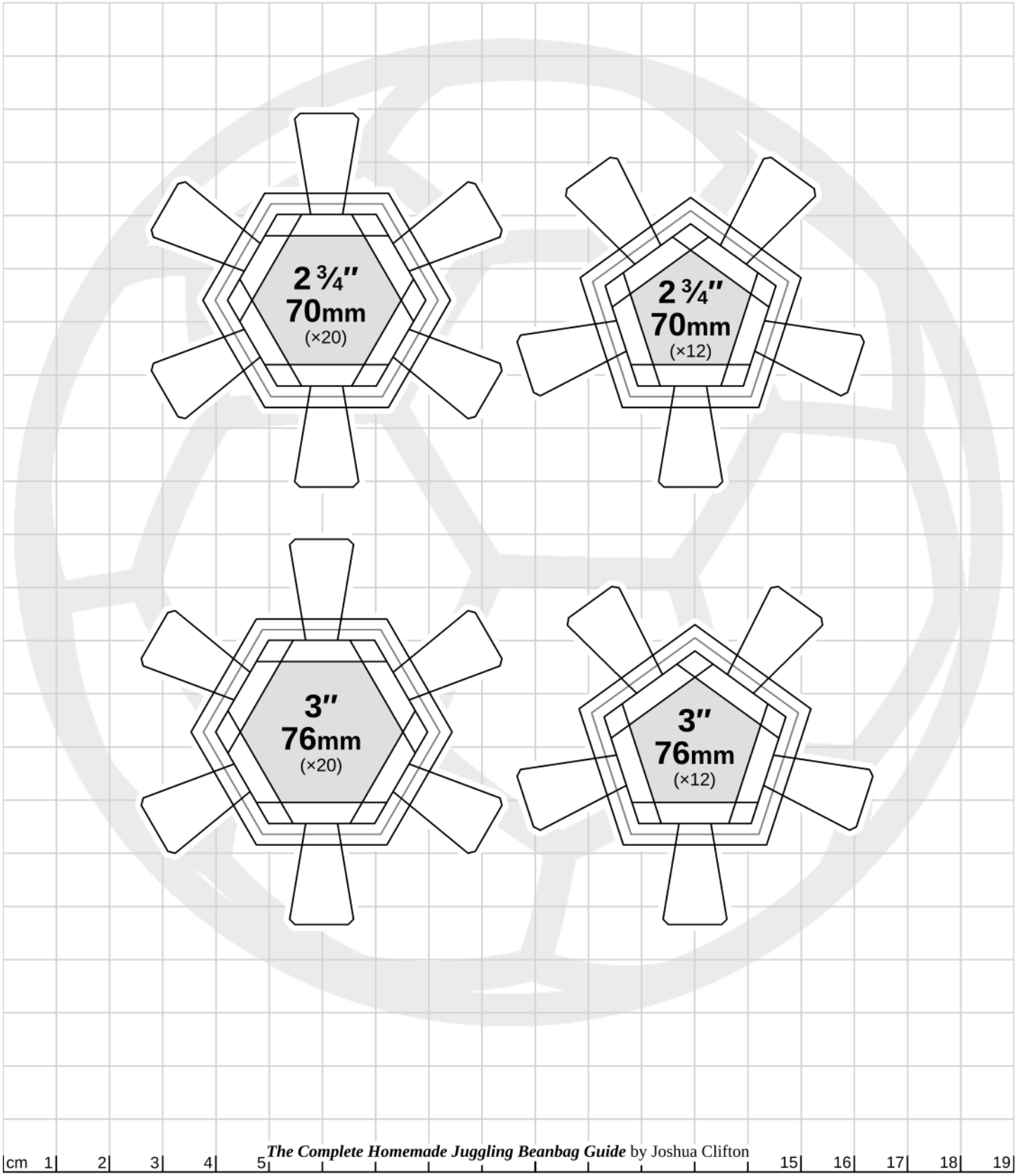

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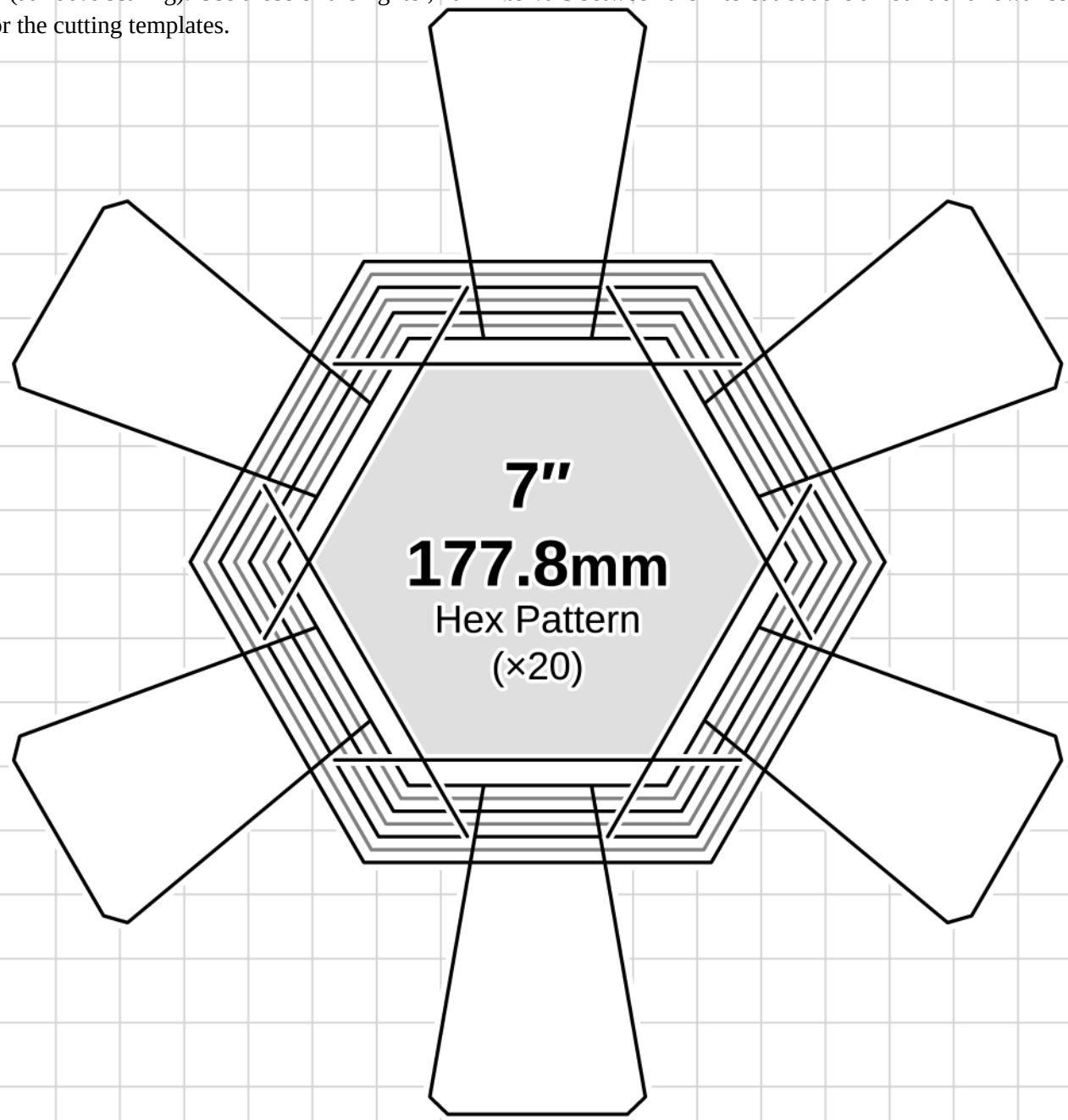

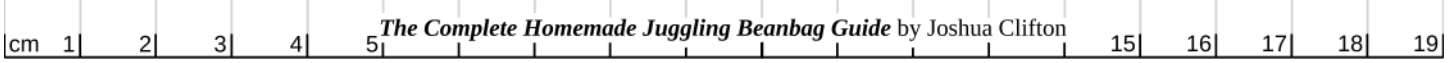

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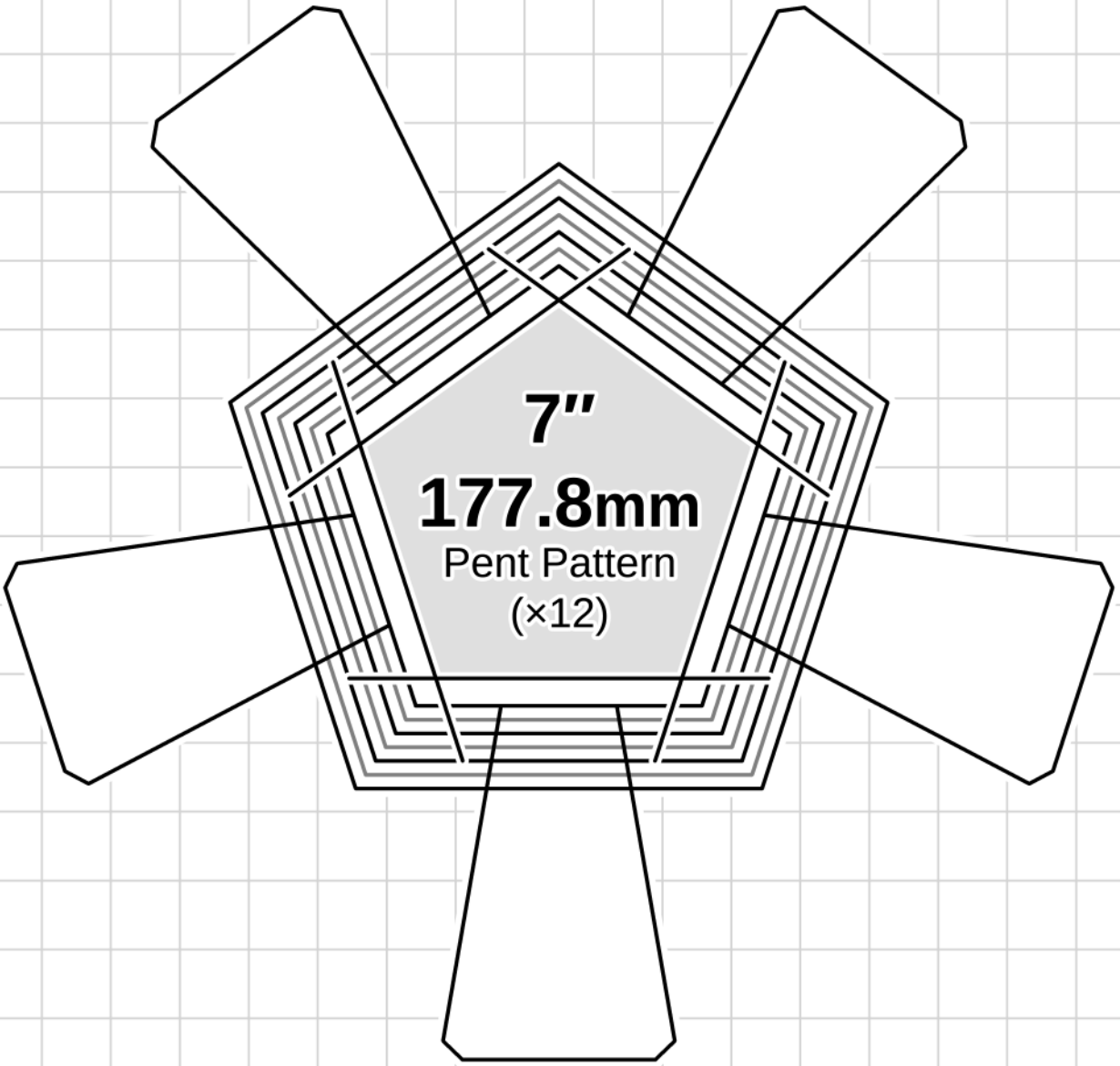

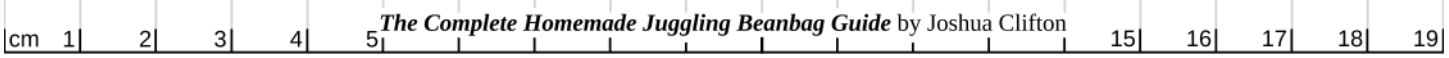

Blank Color Arrangement Diagrams for All Variations

Back to Index

Following are the ball and assembly layout diagrams I used for my color arrangement illustrations **(the main, Equidistant version first, followed by the Footbag Hex and Triangle variations)**. You can use these to experiment with your own arrangements. The Equidistant diagrams are a close enough substitute for the true truncated icosahedron/soccer ball, so I did not include that variation. I also offer PNG format diagrams for download on my website that you can use in an image editor. If they are unavailable, you can capture a screenshot of these pages or export the images and then color them in an image editor. Or you can just print them and color them by hand.