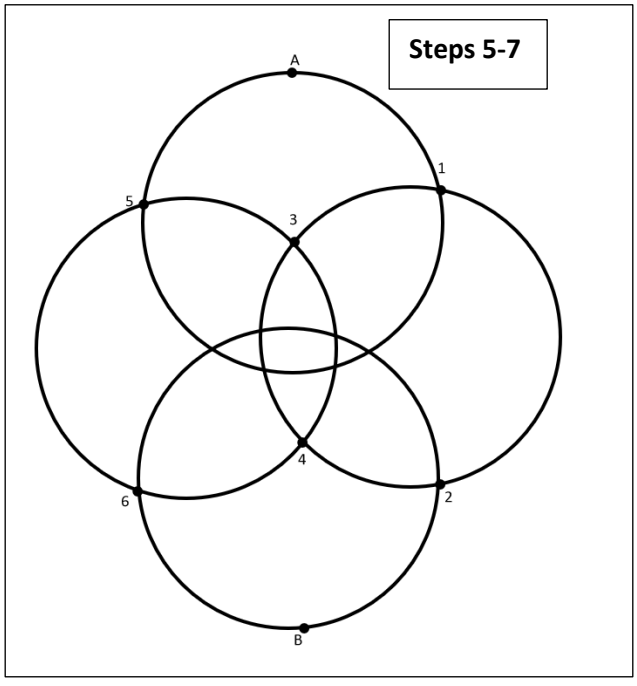
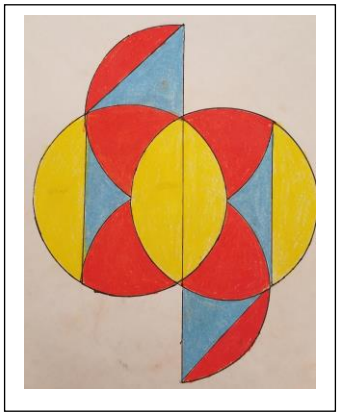
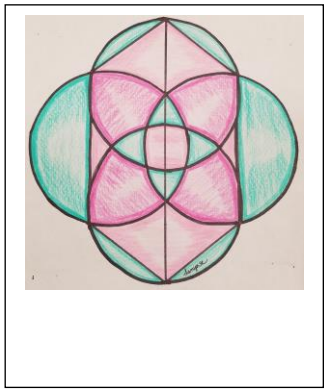
Constructions: Design 1

1. Use your compass to create a medium sized circle (about 4 inches in diameter or 2 inches in radius) in the middle of one edge (left or right) of your paper.
2. Without changing the compass, place the compass point (where your finger goes) anywhere on the edge of your circle and create another circle of the same size.
3. Place the compass point (where your finger goes) at one of the intersection points and create a third circle the same size.
4. Repeat to make a fourth circle at the other intersection point.
5. Mark points at the 6 outermost intersecting points. (see diagram)
6. Using a straightedge, connect pairs of points (1&2, 3&4, 5&6) to make 3 parallel segments. Extend the middle one (3&4) to reach the edge of the circles.
7. Using a straightedge, connect the endpoints of the shorter segments to the endpoints of the longer with a diagonal line segment. (1 and 5 to A/2 and 6 to B)
8. Use a black marker to trace over all the markings you want to keep for your design and erase any other markings.
9. Color your design.



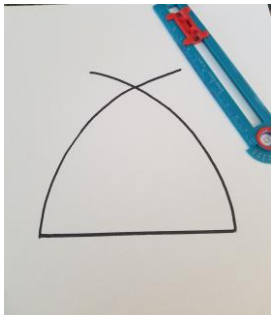




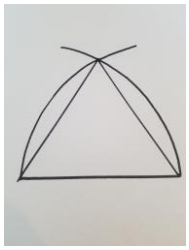
Constructions: Design 2

1. Use your straightedge to draw a horizontal line segment about $\frac{2}{3}$ of the way down your paper. It should be about 4-5 inches long and not too close to the edge of the paper. Open your compass to match the length of the segment.
2. From each endpoint, make a large arc up toward the top of your paper. Make a point where the arcs meet.
3. Use your straightedge to connect each endpoint of the segment to the point where the arcs meet. This is an equilateral triangle.
4. Construct the perpendicular bisector of each side of the triangle. Open the compass a little more than half the length of the side and make arcs above and below each side by placing the compass point (where your finger goes) on each endpoint.
5. Make a point at the intersection and connect the points to create the perpendicular bisector. Extend the segment through the opposite vertex of the triangle.
6. Keep the compass open the same distance. Do the same thing for the other 2 sides of the triangle. You should have 6 arcs in total.
7. Place the compass point (where your finger goes) at the midpoint of one side of the triangle. (This is where the segment your drew intersects the side of the triangle) Open it so that the pencil point is on the vertex of the triangle and construct a complete circle.
8. Repeat for each side of the triangle.
9. Use a black marker to trace over all the markings you want to keep for your design and erase any other markings.
10. Color your design.

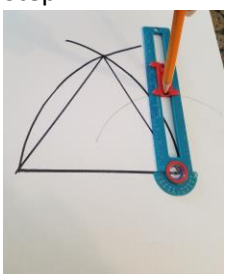
Steps 1-2



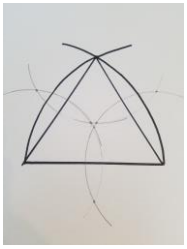
Step 3



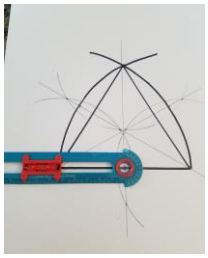
Step 4



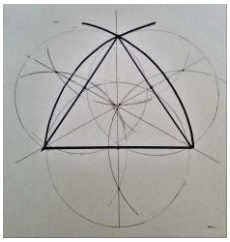
Step 4

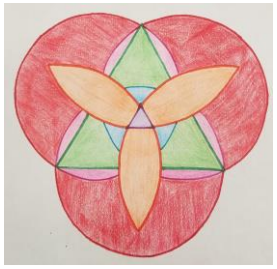


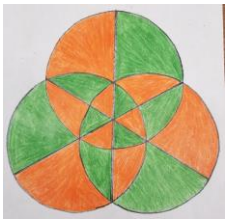
Step 5



Step 6



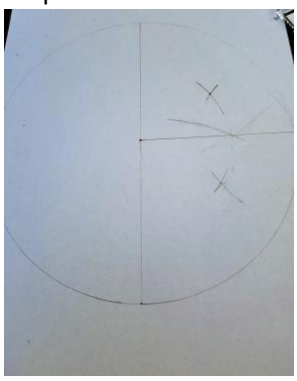




Constructions: Design 3

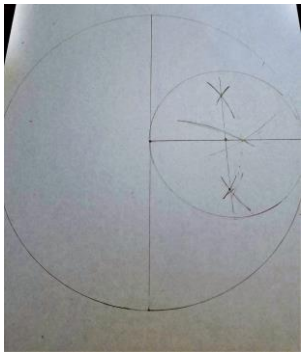
1. Start with a point in the center of your paper. Use your compass to make a large circle with the point your made. Use your straightedge to make a vertical diameter through the center point.
2. Make a radius by constructing a perpendicular bisector of the diameter. Place your compass point (where your finger goes) at the point on the bottom of the diameter. Open the compass a little more than half the diameter's length. Make an arc off the right side. Do the same with the point on the top. Use your straightedge to connect the center to the intersection of the two arcs.

Step 1-3



3. Find the midpoint of the radius you drew by making arcs above and below the radius from its 2 endpoints. Connect the intersection points of the pairs of arcs and make a point at the midpoint of the radius.
4. Put your compass point on the midpoint and open your compass to the center of the original circle. Draw a small circle. Use your straightedge to draw a segment from the bottom of the original diameter to the center of the small circle.
5. Put your compass point at the bottom of the original diameter and open it so that the pencil point is at the intersection of the small circle and the diagonal line you just drew. Draw a large arc that passes through 2 points on the large circle. Mark the 2 points.

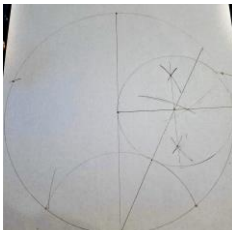
Step 3



Step 4-5

6. Open your compass the distance between the2 points you just marked and copy that distance from each point to make two more points on the edge of the circle. Mark another point ate the top of your original diameter.

Step 6



7. You should have 5 points equally spaced around the circle. Connect the points with a straightedge to make a regular pentagon.
8. Open your compass the length of one side of the pentagon and draw large arcs from one vertex of the pentagon to another.
   Do this for each vertex.

Step 8 (without pentagon)

9. Use a black marker to trace over all the markings you want to keep for your design and erase any other markings.
10. Color your design.