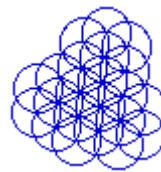


Designs With Circles



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In the Islamic culture the **circle** is a unit of measure. The circle is the basis for the organization of space. It is a starting point in architecture, poetry, music and even calligraphy. From a circle it is possible to construct many regular polygons.

The decimal system we use did not appear as a standard until the eighth century A.D. Before exact units of measurement were used, the scale from one building's plan was used to create another building by referring to the **geometric patterns**. Egyptian rope-stretchers and temple surveyors developed a reproducible method by using pegs and cords to trace circles and straight lines on sand. They established geometric procedures for generating precise and accurate constructions.

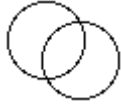
Perfect interrelationships between the parts and the whole of the composition were attained irrespective of mode, form, or scale of expression. A universality was achieved in the Islamic world, consistent with the Islamic belief that all creations are harmoniously interrelated.

Summarized from information found in
Geometric Concepts in Islamic Art
by Issam El-Said and Ayse Parman
Dale Seymour Publications
ISBN 0-905035-03-8

1. Draw a circle with a compass.

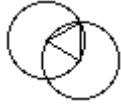


2. Without changing the opening (radius) on the compass, draw another circle whose center is on the rim of the first circle.

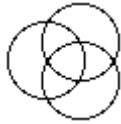


3. If you connect the centers and one of the points where the circles cross, you get an equilateral triangle.

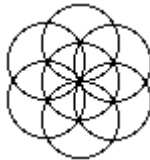
Why do all the sides have the same length?



4. Again without changing the radius, draw another circle whose center is one of the intersection points.

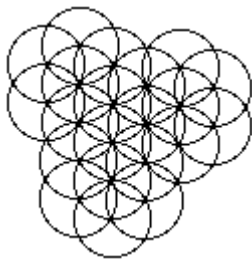


5. Keep drawing new circles at the new intersection points.



Does this design have rotation symmetry? By what angles?
Does this design have reflection symmetry? Across what lines?

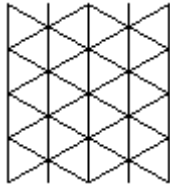
6. Keep drawing more circles at the intersection points until you have a pattern that covers most of the page.



What kinds of symmetry does this pattern have, assuming it goes on forever?

7. Can you find the pattern of triangles in the circle pattern? You will have to

imagine or draw in the lines.



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