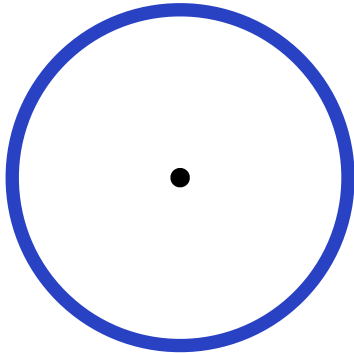


Circles and Patterns

What is a circle? A circle is a curved line which is joined up and all points on the curved line are the same distance from the centre point. It is a perfect shape with no beginning and no end.



It is a universal symbol with many meanings. Even 3000 years ago, it was a sacred symbol for tribes. Greek mathematicians puzzled about it and worked out the mathematical problems of the circle.

The word 'circle' comes from the Greek word meaning 'ring' or 'hoop'.

The words 'circus' and 'circuit' are closely related to the word 'circle'. Why?

In several religions, a circle represents the eternity of God.

God is seen as a circle whose centre is everywhere. Since it has no beginning and no end, many believe that it represents God's eternal love for us.

It is often a symbol of harmony and unity.



A **Wedding ring** is a symbol of eternal love



Olympic Games Symbol: Five interlocking circles representing five continents of the world coming together in healthy competition.

A Circle creates a safe space where people come together such as **Circle Time** at school. Players in a team often gather in a circle to boost the feeling of unity and playing as a team.



Many beautiful flower heads are circular.

Classroom Activities

Encouraging children to be curious about the world around them is important. How many different circles can they find?

Sketch a flower with a circular head such as a daisy or dandelion. They make beautiful patterns.

Other activities offered include Designing Rangoli, Painting on Plates, Making Patterns with Circles and Tessellations.

The methods used will depend on the age of the children and school policy relating to the use of a pair of compasses.

Templates are available.



Rangoli are patterns based on a circle. Rangoli have a special meaning.



Rangoli is an ancient Hindu art form which started in India. Patterns are created on the floor or tabletop using materials such as dry rice flour, petals, coloured sand and stones.

The purpose of rangoli , at the entrance to a household or other buildings such as temple, is to welcome Hindu gods. They are an important part of decorating the house for a festival.

The photograph above shows a rangoli at the entrance to Balaji Hindu Temple. (A temple is sometimes called a mandir.) Paints and chalks have been used for this rangoli but in India, the patterns are often made in petals, coloured flour and rice at the entrance to homes.

Design your own rangoli



There are many ideas online for designing and making rangoli.

It is a popular activity to prepare for Diwali celebrations.

A 'tried and tested' example is from **Maths on Toast** .

<https://www.mathsontoast.org.uk/activities/design-a-rangoli/> See template Page 7.

This is a Family Maths Charity with inspirational fun and hands-on creative experiences relevant to circles and patterns including Rangoli.



Painting on plates

These pictures on china plates are more than 500 years old.

Pictures can be painted on white ceramic plates using acrylic paints.

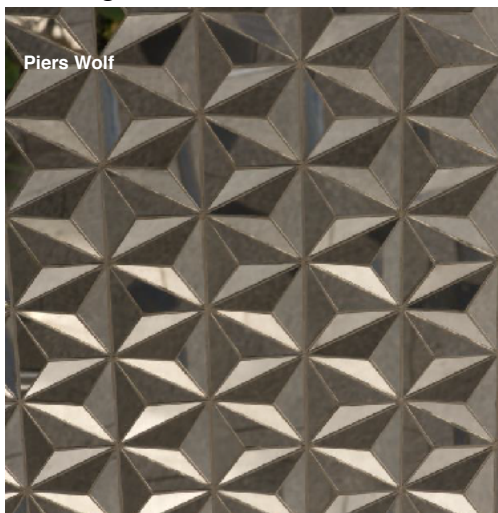
There are several **paper plate art and craft ideas** for the classroom on-line which are fun and cheap. This can be combined with maths activities on the circle: guess the circumference, diameter, radius etc.



Beautiful Patterns 1

Muslims have a fine tradition of creating beautiful geometric patterns to decorate their buildings. For centuries they have loved the precision of geometry. These patterns were created by a Muslim in a Sikh gurdwara in Birmingham in the 1980s.

When the Sikhs were building their gurdwara, a Muslim, who was walking past, offered to decorate the porch ceiling. The Sikhs were so pleased with the design that they asked him to decorate the ceiling of the dome.



He took several months and used over 150,000 pieces of mirror, each cut into precise shapes.

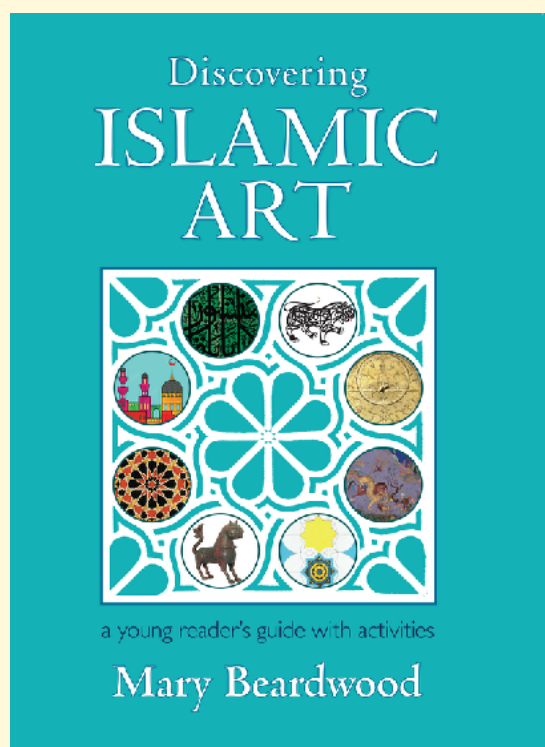
The dome ceiling, Guru Nanak Nishkam Sewak Jatha gurdwara



Ceiling of the porch at the entrance to the Guru Nanak Nishkam Sewak Jatha gurdwara, Birmingham. See illustrated guide. www.birmingham-faith-visits-the-arts-society.org/Sikh

Discovering ISLAMIC ART A young reader's guide with activities.

By Mary Beardwood



Some of the information and activities on Circles and Patterns pages 4, 5, and 6 are reproduced from *Discovering Islamic Art* by Mary Beardwood by kind permission of Peter Harrigan, owner of Medina Publishing.

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Peter Harrigan
Medina Publishing
50 High Street Cowes, Isle of Wight.
+441983300044
peterharrigan@medinapublishing.com

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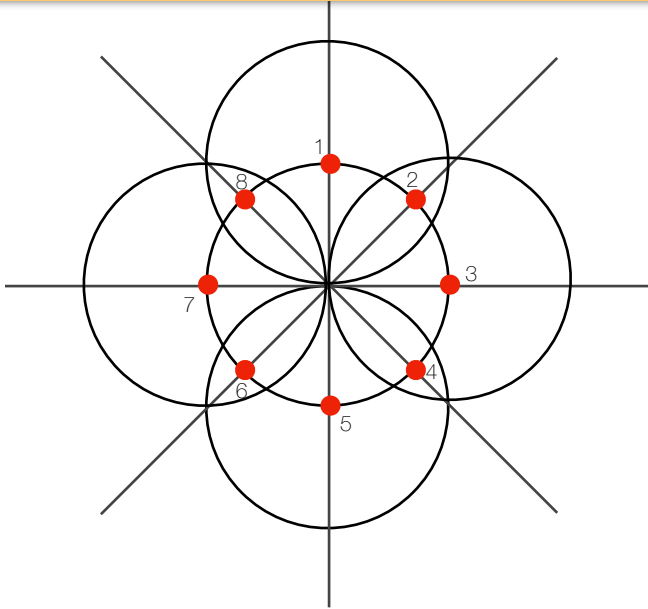
Beautiful Patterns 2 from Discovering Islamic Art

Circles are the starting point for many geometric shapes.

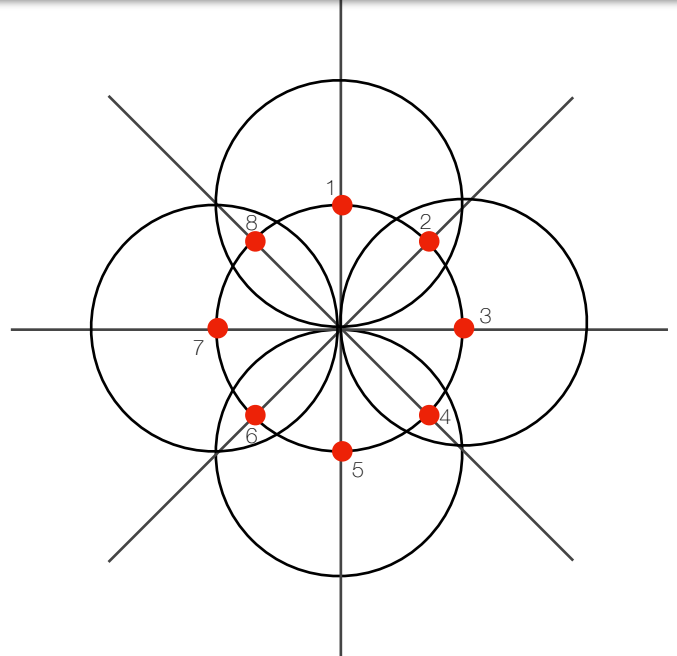
Join the dots using a ruler and coloured pen in these five circle patterns.

Join from 1 to 2, 2 to 3, 3 to 4, 4 to 5, 5 to 6, 6 to 7, 7 to 8, finishing at 1 again.

What shape have you made?



Join 1 to 4, 4 to 7, 7 to 2, 2 to 5, 5 to 8, 8 to 3, 3 to 6, 6 to 1 to make an 8 pointed star.



A photocopyable template for this activity is provided on Page 8

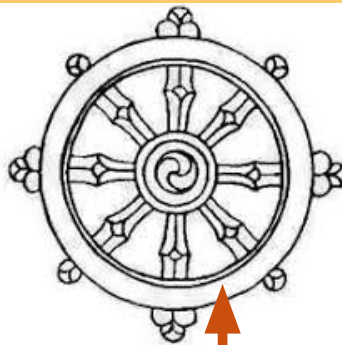


Which religion uses this symbol? It is known as the Star of David. If you join the points, what shape do you make?

The eight pointed star is a symbol of the universe. If you join the points, what shape do you make?



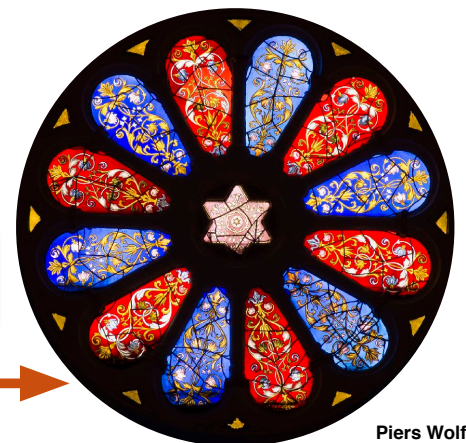
GNNSJ Gurdwara



Which religion uses this eight spoked wheel as its symbol?

The circle is the starting point for the patterns on Birmingham Library.

This 12 petalled stained glass window is known as a 'Rose Window'. Why?



Piers Wolf

Ancient & Modern patterns in Mosques

Many mosques are richly patterned with intricate geometrical designs. The representation of God, humans and animals is not allowed. The circle and continuous patterns are symbols of God and eternity.



Above and to the right is carving on a mausoleum, Marrakesh, Morocco which is about 1000 years old.

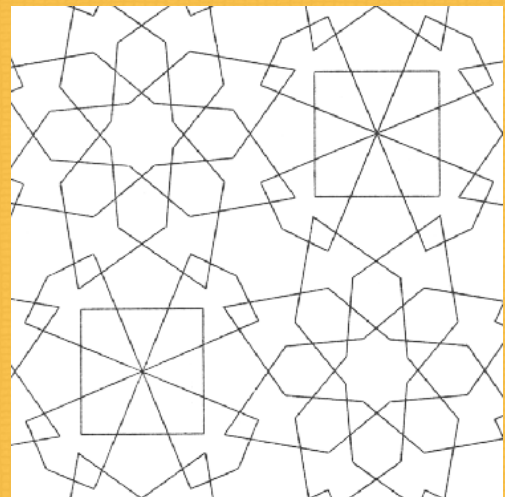


This is the stunning new Cambridge Central Mosque which opened in 2022. It is Europe's first Eco Mosque.

The architects have combined English and Islamic traditions. Note the intricate patterns made from wood.

<https://cambridgecentralmosque.org/tours/>

Islamic patterns to colour



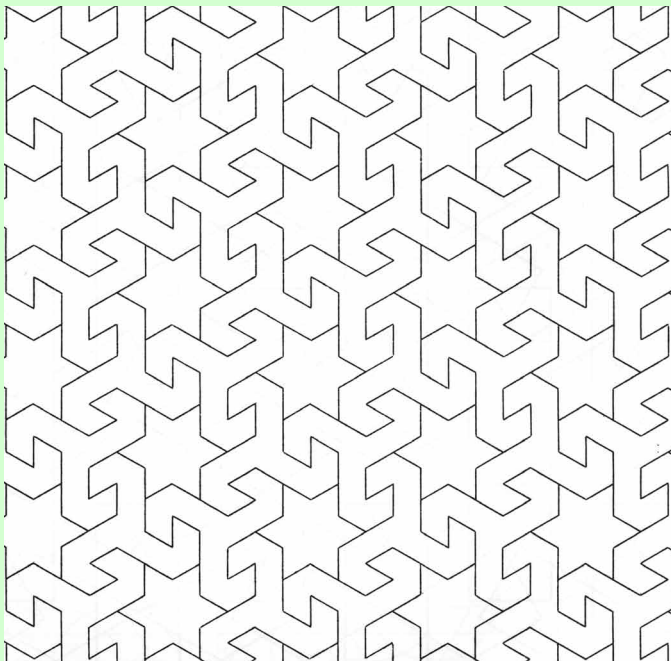
David Collection is a museum in Copenhagen, Denmark. It has a huge collection of Islamic art.

Visit www.davidmus.dk and click on **Mostly for Kids**. Go to **Islamic patterns** and click on the green button to the right to choose a pattern.

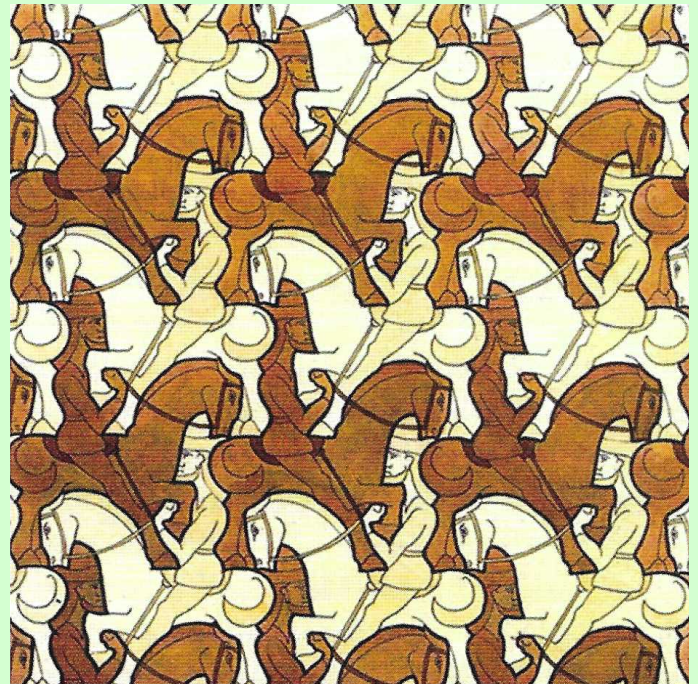
Patterns to colour may be downloaded free of charge and printed as required.

Tessellation from 'Discovering Islamic Art' page 9.

A **Tessellation** is the covering of a surface using one or more geometric shapes, repeated to leave no gaps.



This is another pattern which can be downloaded free of charge from www.davidmus.dk



Inspired by tessellations of geometric shapes when he visited the Alhambra in Spain in 1934, the artist MC Escher drew patterns using birds and animals.

Find out about MC Escher.

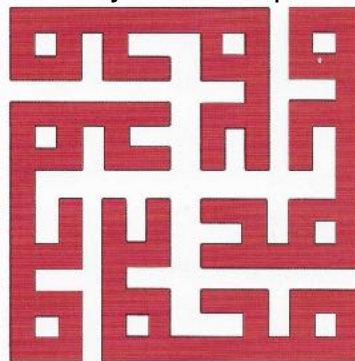
Calligraphy

Calligraphy is the art of beautiful handwriting. It is very important in Islamic art. Islamic calligraphy uses the Arabic alphabet and is strongly linked to the Qur'an. There are several different styles. And it is often used to make beautiful patterns. The writing on the object to the left is cursive script which is flowing and fancy.



Activity from 'Discovering Islamic Art' p. 19

This style has a square shape known as Kufic.



This pattern has been made from the name Mohammed.

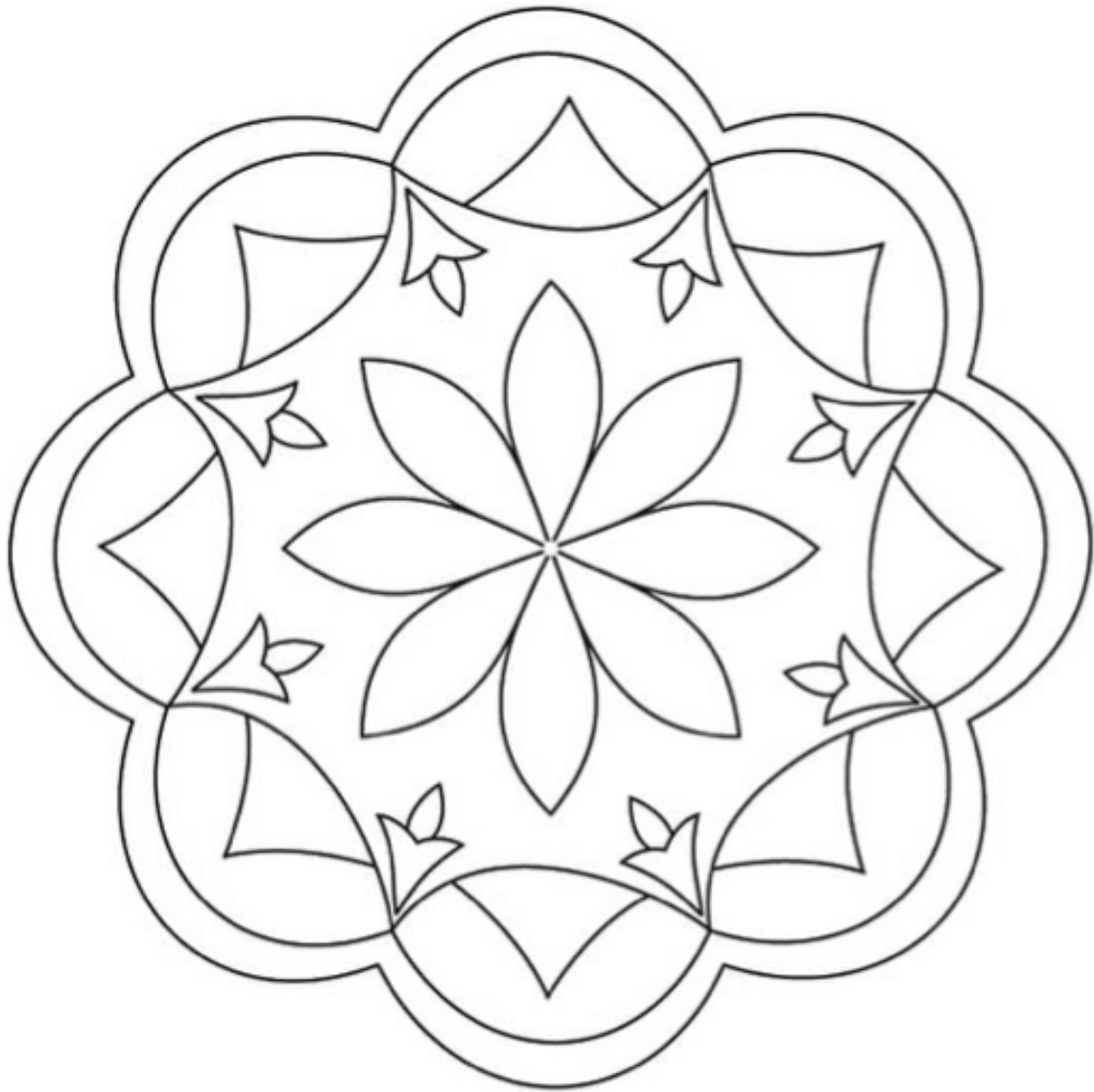
This is the name Mohammed written in Kufic script.



How many times has it been written to make the pattern above?

Photocopiable template for Rangoli See Page 2.

<https://www.mathsontoast.org.uk/activities/design-a-rangoli/>



Photocopiable template for 5 circle pattern
(see page 4 for details)

