



DA VINCI: **SHAPING THE FUTURE**

**PRE-VISIT RESOURCE FOR
PRE-SCHOOL EDUCATORS**

DA VINCI: SHAPING THE FUTURE

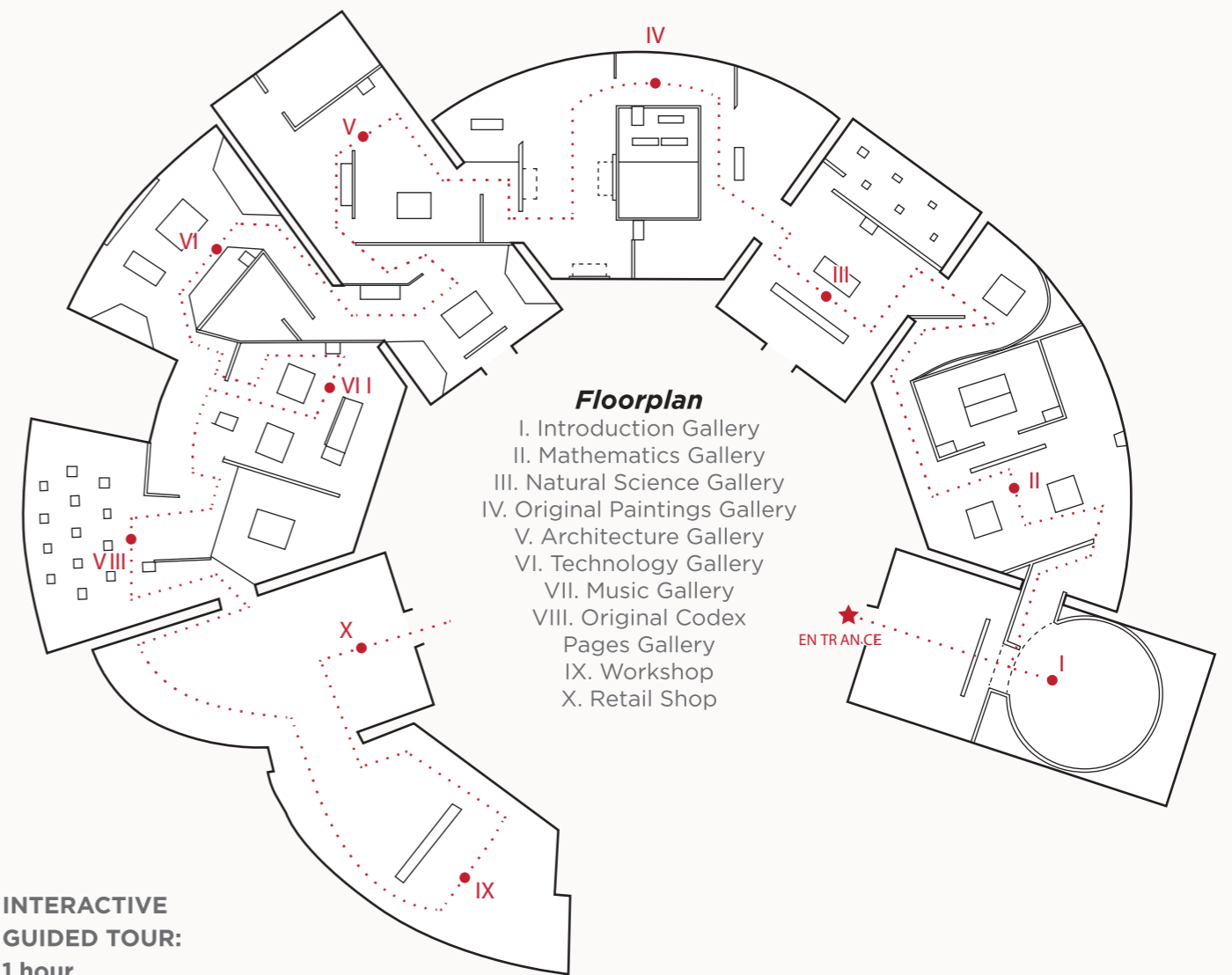
This resource provides information about what your students will encounter during their visit to ArtScience Museum, enabling you to explore the themes with them prior to their visit.

OBJECTIVE: To introduce the various occupations that Leonardo da Vinci held in his life.

Through the interactive guided tour and printed resource, students will be introduced to Leonardo da Vinci as an exemplary 'Renaissance man' but also a profoundly modern man. Students will learn that da Vinci had many talents. He was a mathematician, scientist, artist, architect, engineer, designer, inventor, and musician. These many different professions will reinforce the message to students that da Vinci envisioned the world as an integrated whole, and not made up of separate subjects.

Da Vinci: Shaping the Future is an exhibition which takes us on a journey to explore the ideas of one of history's most famous figures, Leonardo da Vinci. Although da Vinci, considered the classic Renaissance man, lived some 500 years ago, his genius and creativity continue to inspire and stimulate today. A brilliant engineer, mathematician, designer and musician, he was constantly observing, thinking and researching on the world around him. His ideas, most evident in his notebooks, may be seen to fall into five key themes: mathematics, natural science, architecture, technology, and music.

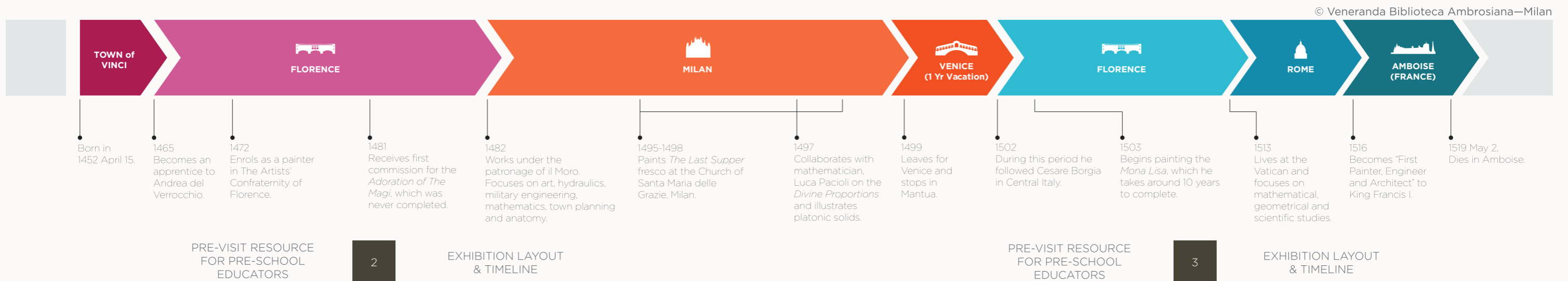
One sizeable compilation of drawings and studies in all subjects can be found in one of da Vinci's collections of notes and drawings known as the *Codex Atlanticus*. It is through the pages of the *Codex Atlanticus* that the exhibition at ArtScience Museum explores da Vinci's extensive research involving multiple areas of study. They reveal a lifetime of innovation and ingenuity expressed by a great man.



INTERACTIVE GUIDED TOUR: 1 hour

Guided by our trained Docents, students can enjoy an interactive tour of the exhibition, with opportunities for handling, discussion and creative exploration. During the tour, there will be multiple objects relating to the five key themes in the exhibition for them to touch and see first-hand. Students will also explore original paintings from the School of Leonardo da Vinci. The tour ends in a transition space where thoughts and experiences are summarised before entering the Inspired by da Vinci gallery, which students can explore free and easy.

A printed resource will be provided for all students which includes engaging activities relating to the five fields of study the students have encountered on the tour.



Gallery: Mathematics

Leonardo da Vinci was a mathematician and loved exploring different shapes and patterns. He became more interested in mathematics after working closely with the famous mathematician, Luca Pacioli. They met in Milan and quickly became close friends. Mathematics and art were topics they discussed very often, both gaining knowledge from the other. Da Vinci was very involved in the study of the platonic solids. There are five types of platonic solids. They are special because every face is the same in terms of size and shape. An example is the cube – each face of the cube is a square.

Gallery: Technology

Leonardo da Vinci was an inventor and an engineer who studied and designed bridges and other big structures. He sketched many mechanical devices for business, transportation, water systems, work tools and weapons of war. The drawings of the Codex reveal an extraordinary technological imagination, able to forerun later inventions such as helicopters, gliders, calculators and other modern devices. Da Vinci had a skill in looking at existing inventions and improving on them. Whatever he was designing, inventing or reinventing, he was never afraid to look beyond the convention or to think big.

Gallery: Natural Sciences

The Properties of Water

Leonardo da Vinci was also a scientist. He spent a lot of time looking at the movement of water. In his experiments, he threw objects into water and observed that the ripples often created circular patterns. He even recorded the effect of merging ripples when he dropped two objects at the same time.

Flight

Leonardo da Vinci's interest in flight arose during the years he was in Florence. He was excited at the possibilities of human flight. He made the flight of birds as the source for his understanding. He would often buy birds in markets and study their wing structure, motion, shape and eventually setting them free. He made many drawings from his observations but never got the chance to make a model of his designs.

Gallery: Architecture

Da Vinci was interested in the designs of buildings. When a terrible plague hit Milan and many people did not survive, da Vinci realized that it was due to the low maintenance of hygiene. So he came up with the plan of an ideal city that would provide clean housing and wide streets to prevent the spread of future diseases. His notebooks are filled with sketches of buildings, bridges, streets and tunnels.

Gallery: Painting

Da Vinci's training as a painter began in the studio of Andrea del Verrocchio in Florence, where he was taught that every feature of a painting should be given equal importance. Da Vinci saw how sight was closely related to our emotional and intellectual priorities as viewers. In order to accurately represent the ways we see, he experimented with various painting techniques such as *sfumato*, *chiaroscuro* and oil painting.

Gallery: Music

Leonardo da Vinci was a talented musician and composer, and enjoyed experimenting with sounds and different instruments. He studied the pitch and frequency of sound proposing that sound travels in circular waves just like water. Playing several instruments including the *lira da braccio*, the lute and the lyre, he explored how to enhance both vocal and musical tonal quality on instruments. Da Vinci drew numerous sketches of new musical instruments that included various flutes, drums and string instruments. One interesting invention was something between an organ/harpsichord and a cello, where spinning wheels of horsehair run along the strings which he named the "*Viola organista*". Another innovative instrument design was a recorder. In da Vinci's time, recorders looked as they do today, with holes at the front of the instrument for the fingers to cover or leave free as the tune dictated. Da Vinci's recorder had elongated, rectangular gaps instead of small round holes, allowing for tonal slides and other nuanced sounds.

Gallery: The Original Codex Pages and Ancient Cover

The *Codex Atlanticus* is a collection of drawings and writings by Leonardo da Vinci. When Leonardo da Vinci died in 1519, he left all his drawings, papers and notebooks to his pupil and assistant, Francesco Melzi. After Melzi's death his heirs allowed da Vinci papers to be split up. At the end of the sixteenth century, a sculptor called Pompeo Leoni managed to obtain almost the entire collection of Leonardo's drawings. In 1622, the collection, by this time known as the *Codex Atlanticus*, was acquired by a Milanese nobleman, Marquis Galeazzo Arconati, who presented it in 1637 to the Veneranda Biblioteca Ambrosiana in Milan.

In 1796 Napoleon Bonaparte invaded Milan and the entire collection of the Veneranda Biblioteca Ambrosiana was brought to Paris. In 1815, the treasures of the Veneranda Biblioteca Ambrosiana were brought home to Italy. In 1938, the Veneranda Biblioteca Ambrosiana placed the *Codex Atlanticus* in a case made and donated by the Milanese goldsmith Alfredo Ravasco. The golden inscription on this original ancient cover reads "Drawings of machines, artworks and secrets and other things

Workshops

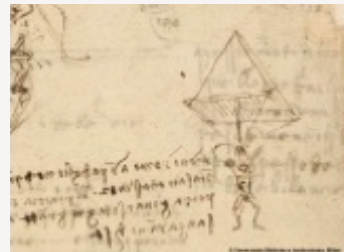
Please note that we may request assistance from the adults accompanying your class during the da Vinci Challenge workshops, as many students will benefit from this additional input.



The da Vinci challenge: Bridges

Developed in partnership with WondersWork

An exploratory, creative design and building workshop where students can build like Leonardo and then test their bridge using different weights.



The da Vinci challenge: Parachutes

Developed in partnership with WondersWork

How do parachutes work? Does the material and shape make a difference? And is it possible to 'steer' a parachute through weights positioned at different points? Working in team, students can experiment with these areas, and create their own parachute to take home.



The da Vinci challenge: Flight

Developed in partnership with WondersWork

Working in teams, students can explore a range of materials to build their own flying machine. Which one will fly the furthest? And can its direction be determined through design additions?



The da Vinci challenge: Projectiles

Developed in partnership with WondersWork

What makes things move? Students can experiment with forces through different items provided, culminating in their own, crafted projectile machine. How far can it throw an object, and what design alterations can improve it further?



Da Vinci Highlights

Students can explore a range of da Vinci's interests and inventions including making a platonic shape and mini-parachute to take home, and using novel construction materials to design and build. The workshop culminates with an interactive demonstration led by our Docents of some of the tertiary projects in the Innovation Now display.



The da Vinci challenge: Vitruvian Man

Students will work in teams to compare their teacher or each other with Vitruvian Man! Is the length of their outspread arms really equal to their height? Is the length of their hand really one tenth of their height? This hands-on workshop brings mathematics alive, and includes a measurements recording sheet for all students.



The da Vinci challenge: Illustrating Nature

Students can experiment hands-on with the different ways that da Vinci illustrated nature, through exploring several different print processes of a sage leaf, and close observational drawing.

Curriculum Links

Aesthetics and Creative Expression

- Enjoy art and music & movement activities
- Express and share ideas and feelings through art and music & movement
- Create art and music & movement using experimentation and imagination

Discovery of The World

- Show an interest in the world they live in
- Find out why things happen and how things work through simple investigations
- Develop a positive attitude towards the world around them

Language and Literacy

- Listen for information and enjoyment
- Speak to communicate meaning and communicate with others
- Read with understanding and for enjoyment
- Use drawing, mark making, symbols and writing with invented and conventional spelling to communicate ideas and information

Social and Emotional Development

- Manage their own emotions and behaviors
- Show respect for diversity
- Communicate, interact and build relationships with others
- Take responsibility for their actions

International Baccalaureate (IB Primary Years Programme)

Source: International Baccalaureate Website

Supports students' efforts to gain understanding of the world and to function comfortably within it

An inquiry into the natural world and its laws, the interaction between the natural world (physical and biological) and human societies; how humans use their understanding of scientific principles; the impact of scientific and technological advances on society and on the environment.

The concepts of time, place and space, change, systems and global awareness

Further Readings

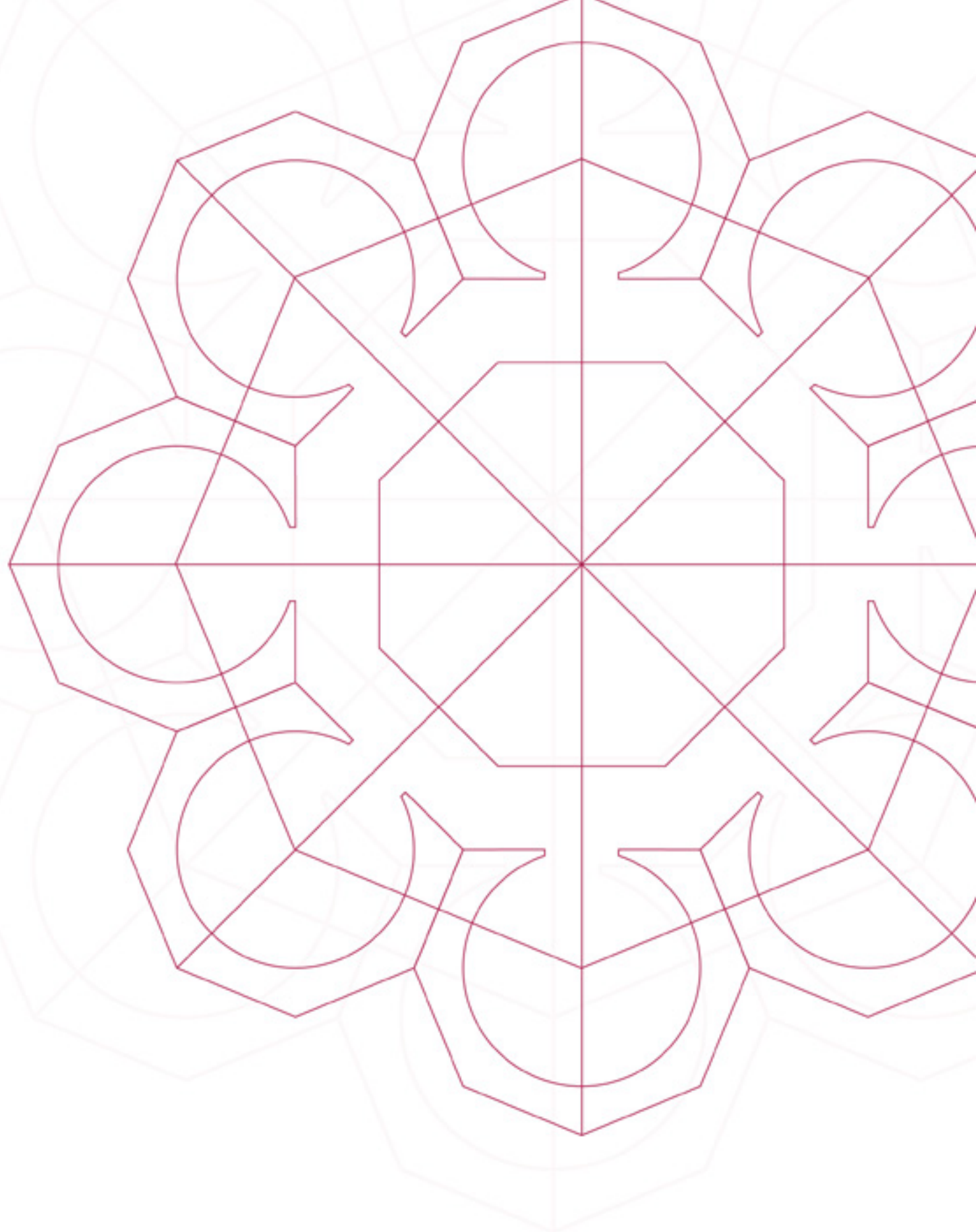
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