

Bugün:
27.Ağustos.2024

Yaratıcı Kodlamaya devam

Kompleks şekilleri kodlamak

Transformation Matriks işlemleri

Yaratıcı Kodlama ile kompleks şekil üretmek

Geometrik Desenler

İslam Sanatı Geometri Desenleri

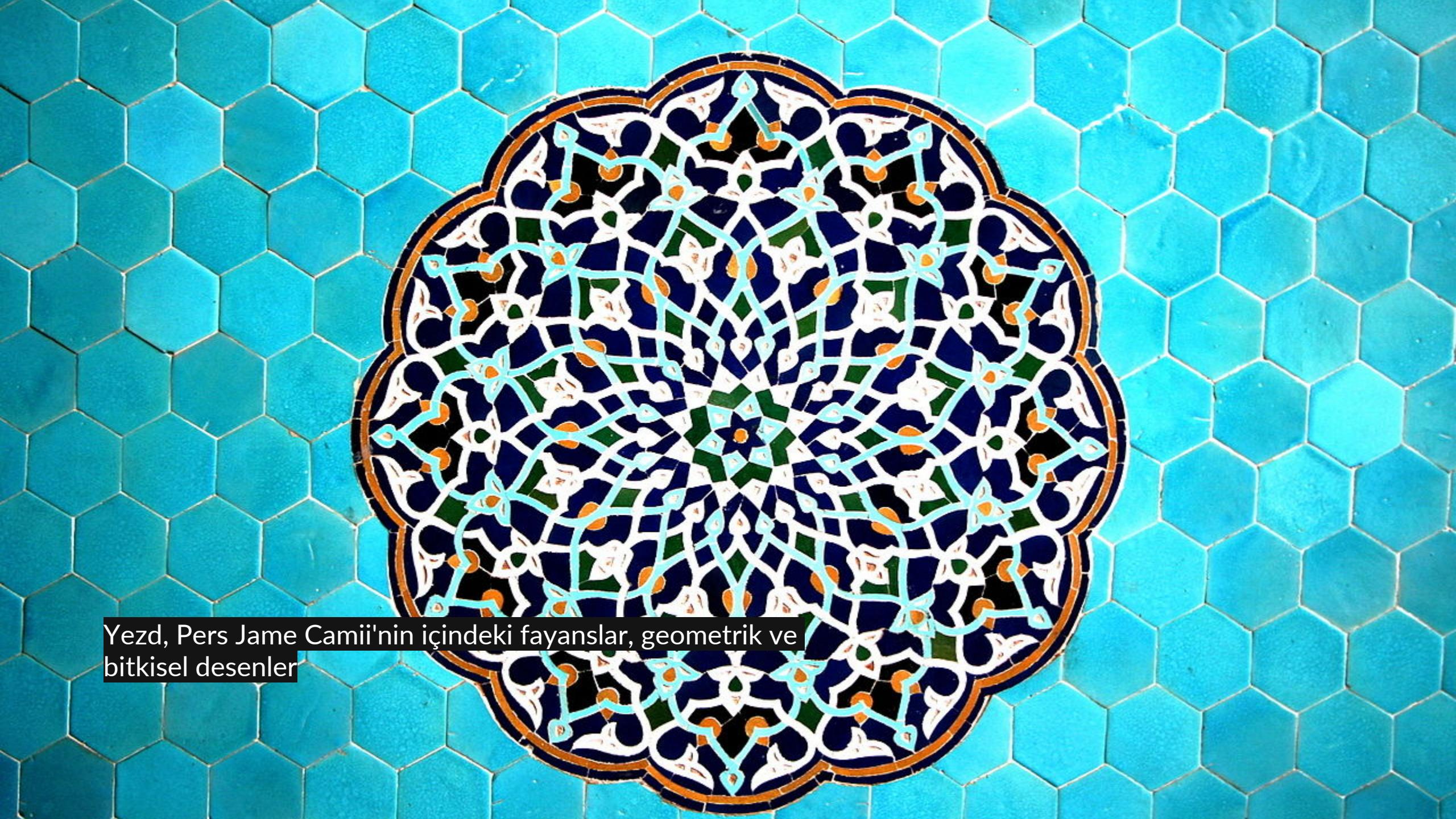
İslam sanatındaki geometrik tasarımlar, çok çeşitli mozaikler de dahil olmak üzere karmaşık ve karmaşık desenler oluşturmak için arabeskler (genellikle birleştirilirler) gibi üst üste bindirilip iç içe geçebilen tekrarlanan kareler ve dairelerin kombinasyonları üzerine kuruludur.

İslam sanatı, ibadet nesnesi haline gelmemek için çoğunlukla figüratif imgelerden kaçınır. İslam kültüründeki bu anikonizm, sanatçıların figürsüz sanatı keşfetmesine neden oldu ve matematiksel temelli dekorasyona doğru genel bir estetik kayma yarattı.

İslam kültüründe desenlerin manevi aleme köprü, zihni ve ruhu arındırma aracı olduğuna inanılır.







Yezd, Pers Jame Camii'nin içindeki fayanslar, geometrik ve bitkisel desenler



Şah Nematollah Vali Mabedi, Mahan, İran, 1431. Mavi girihs
çinili kubbe, üstten sırayla 5, 7, 9, 12, 11, 9 ve 10 puanlı
yıldızlar içerir. İslam sanatında 11 noktalı yıldızlar nadirdir



Girih, Shah-i-Zinda, Semerkant, Özbekistan



Shah-i Zinda, Semerkant, Özbekistan

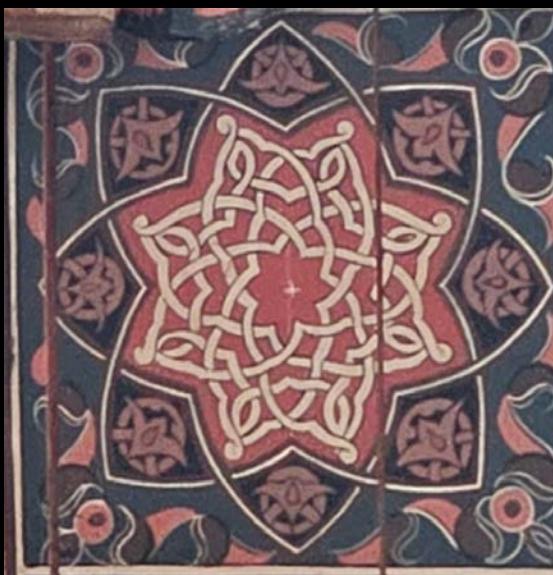
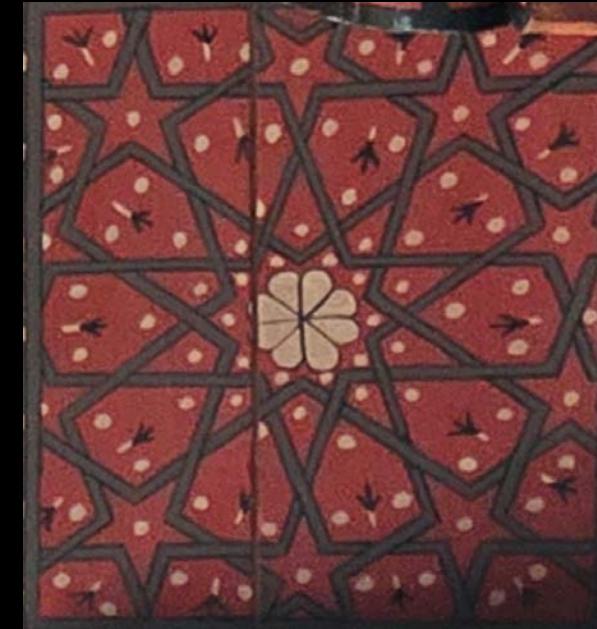
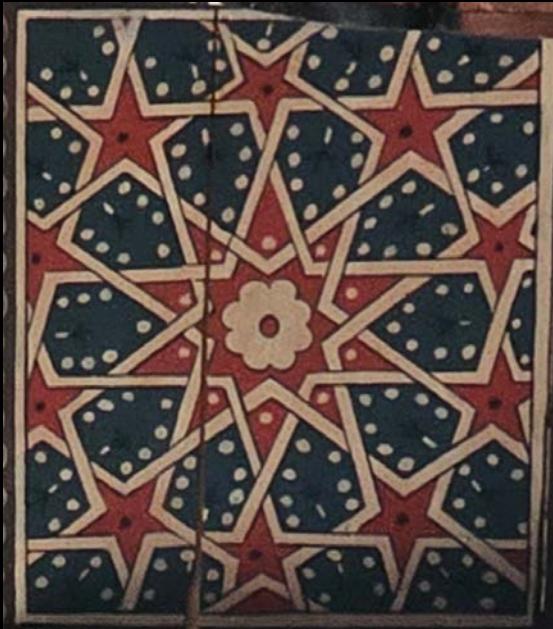
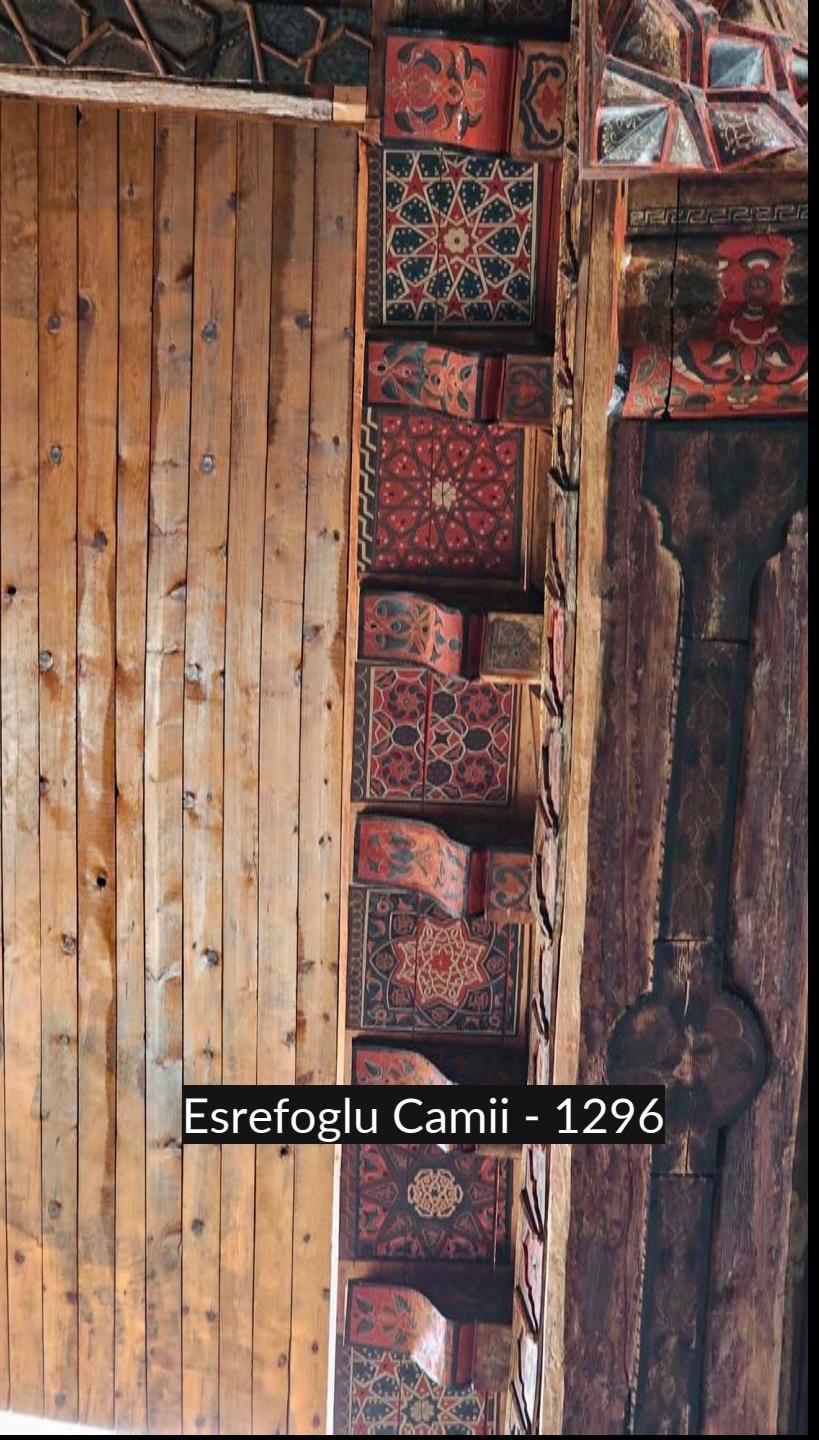
Shah-i Zinda, Semerkant, Özbekistan

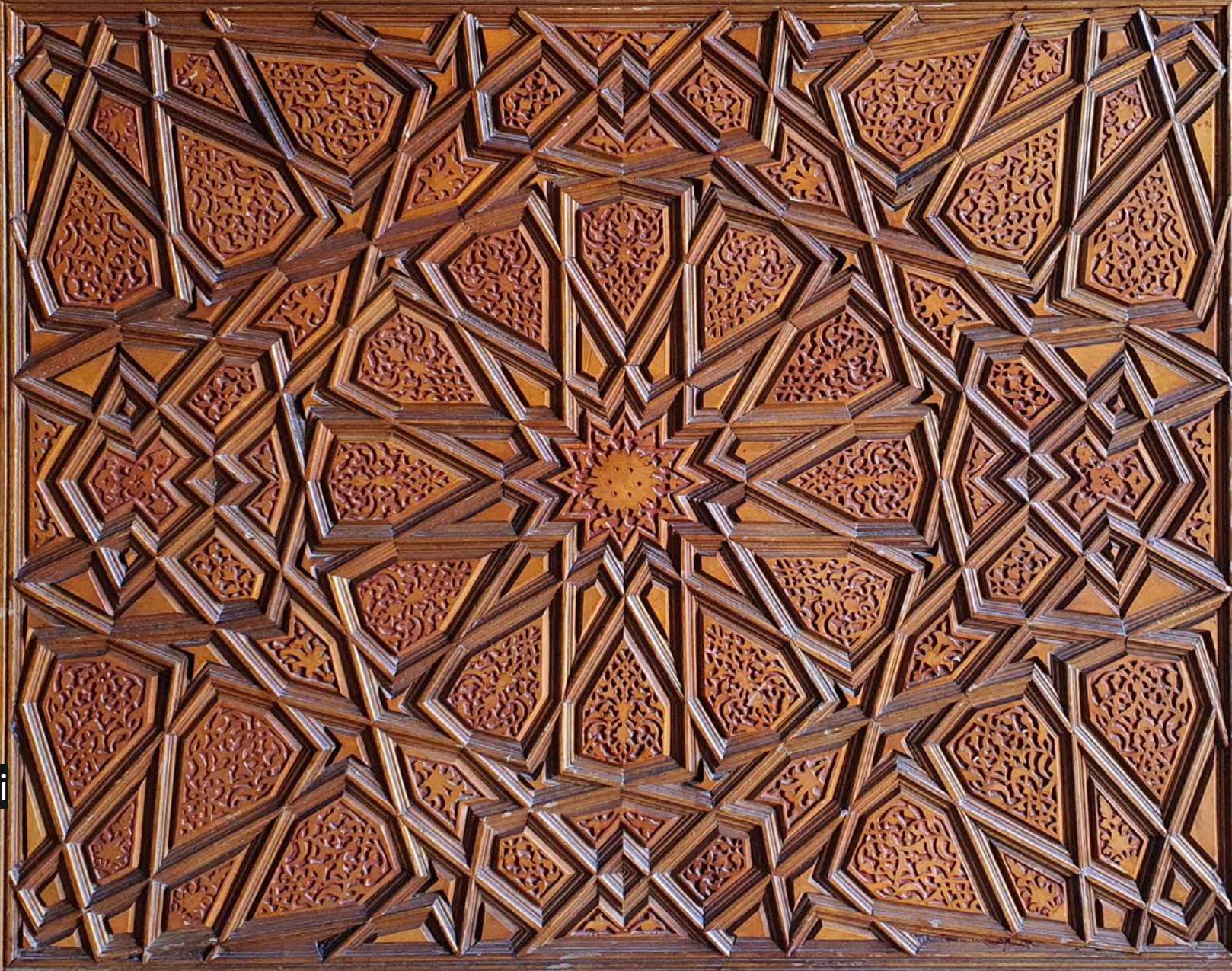


Esrefoglu Camii - 1296



Esrefoglu Camii - 1296





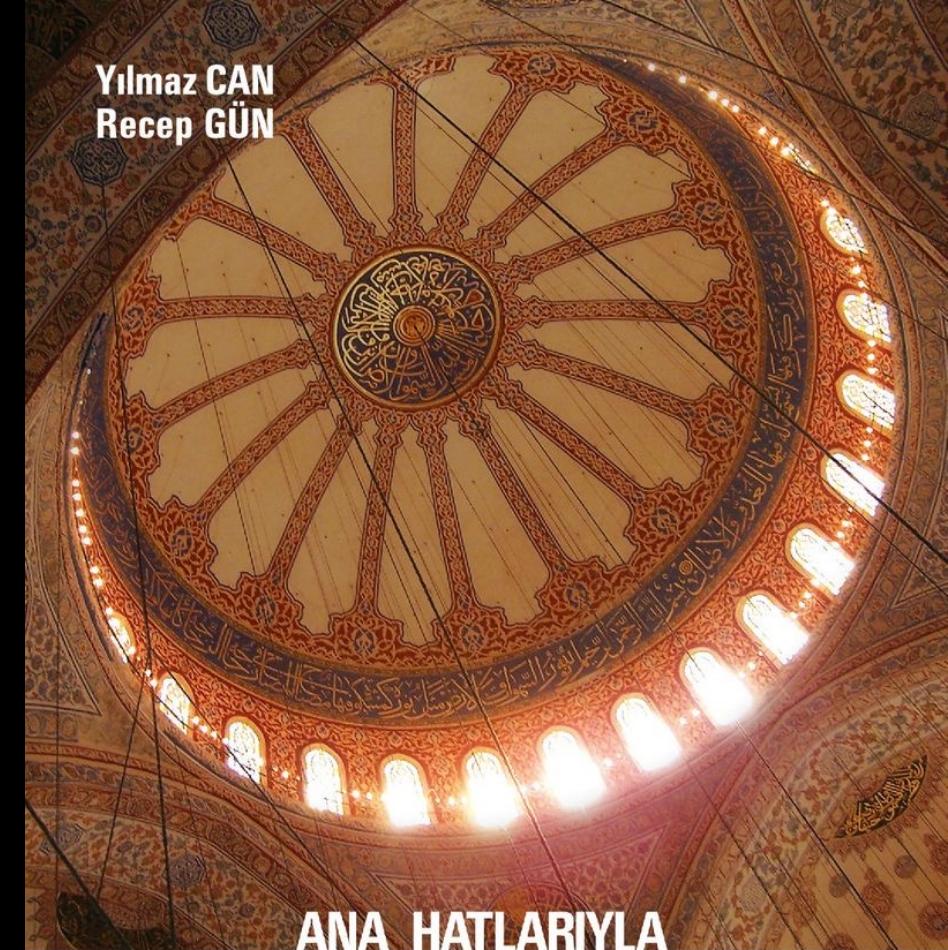
Fatih Camii

Ana Hatlarıyla Türk İslam Sanatları ve Estetiği

Yılmaz Can, Recep Gün

İslam sanatında belirginleşen sonsuzluk fikri ve somuttan soyuta kaçış anlayışı, esas itibariyle İslam'ın varlık telakkisiyle ilgiliidir. İslam düşünürleri tüm varlık aleminin, Yaratıcının bir tecellisinden ibaret olduğunu ve her varlığın arkasında Yaratıcı'nın bulunduğuunu belirtirler. Onlara göre her şey geçicidir; ezeli ve ebedi olarak yegane kalıcı varlık Allah'tır. İşte İslam tezniyatında bu gerçekler hatırlatılmakta ve Yaratıcının sonsuz gücüne, kudretine karşılık insanın acizine işaret edilmektedir.

Yılmaz CAN
Recep GÜN



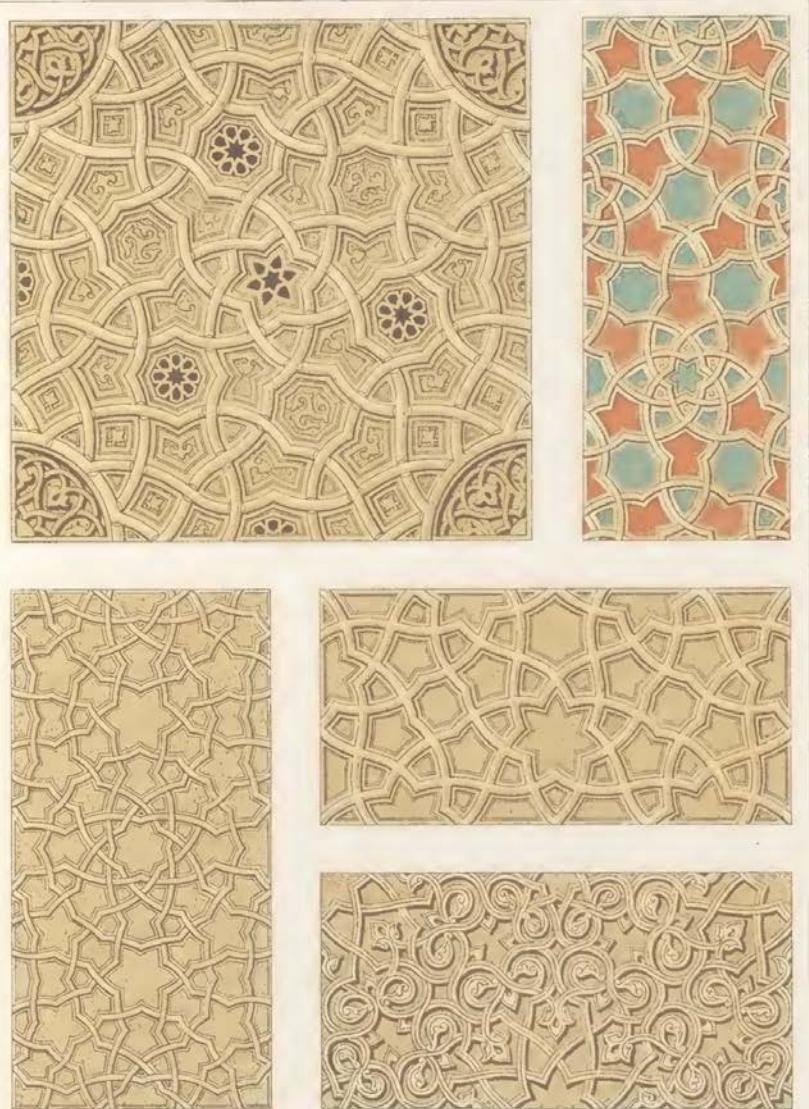
ANA HATLARIYLA
TÜRK İSLÂM SANATLARI
ve ESTETİĞİ



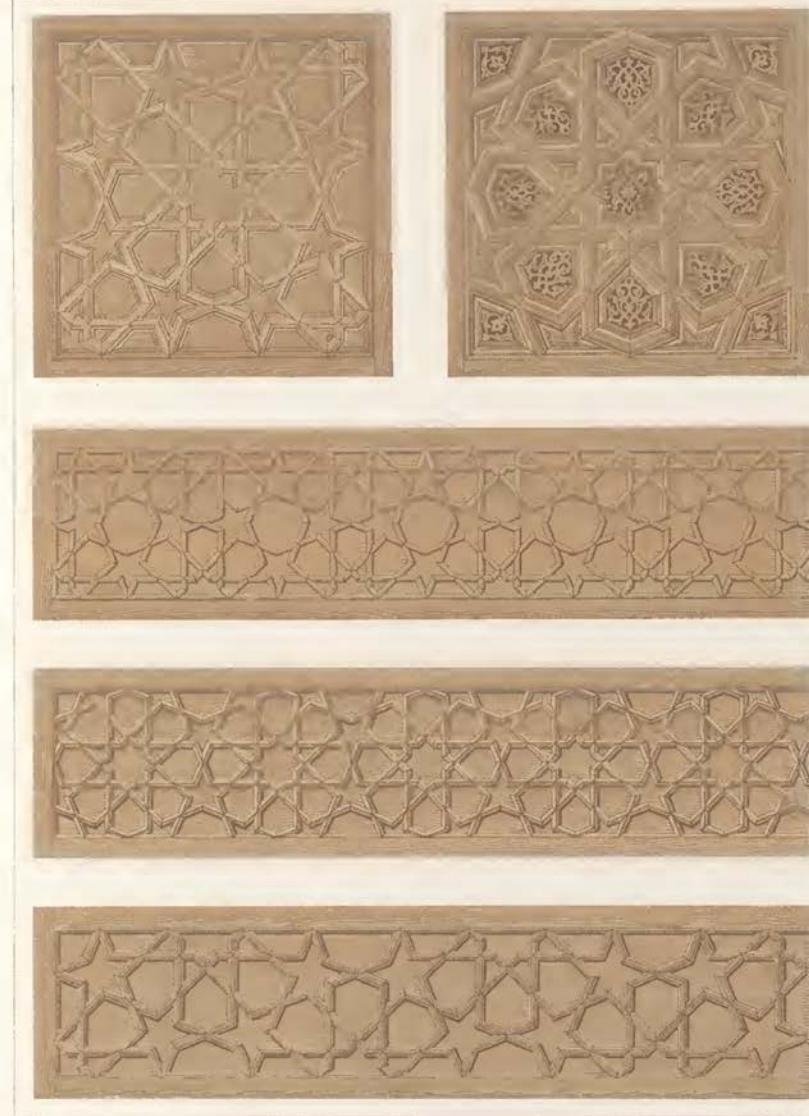
kayhan

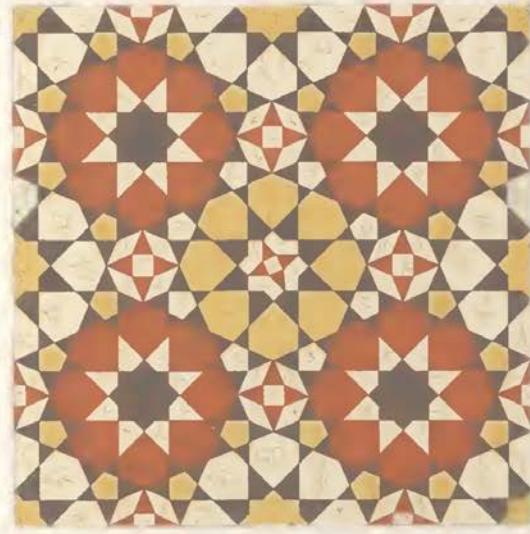
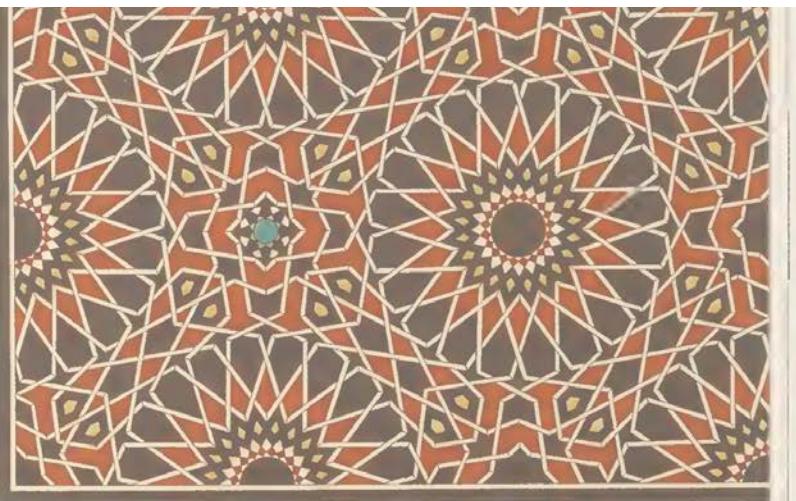
kitapyurdu.com

PL III.



PL II



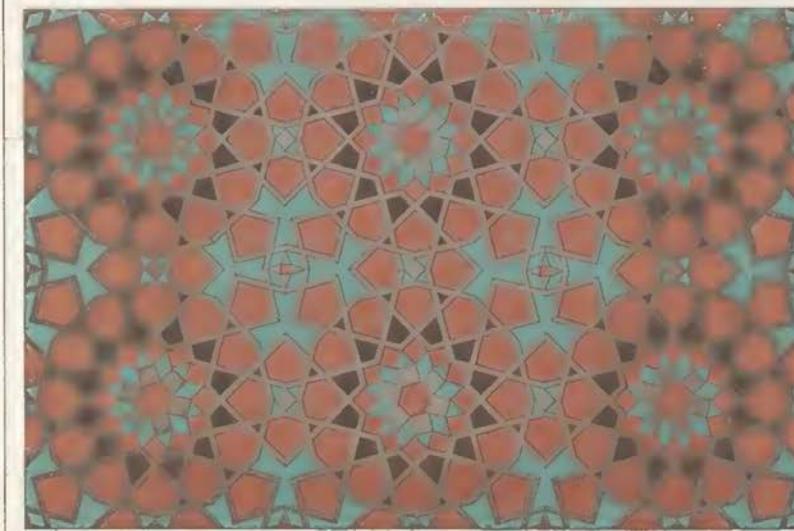
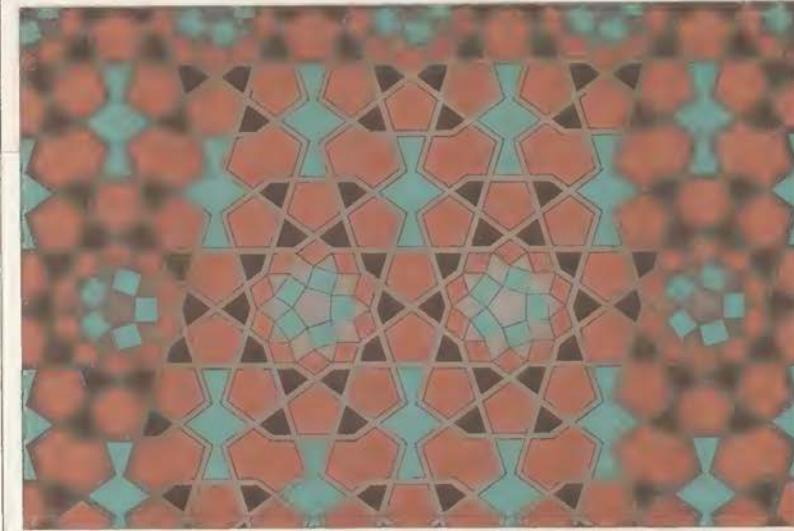


Schmidt lith.

MOSAIQUES

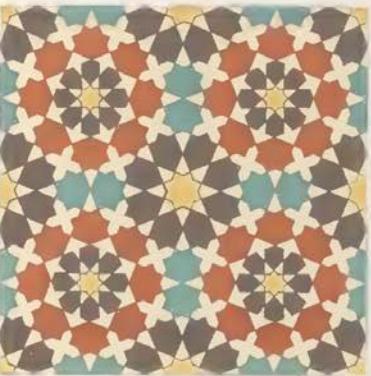
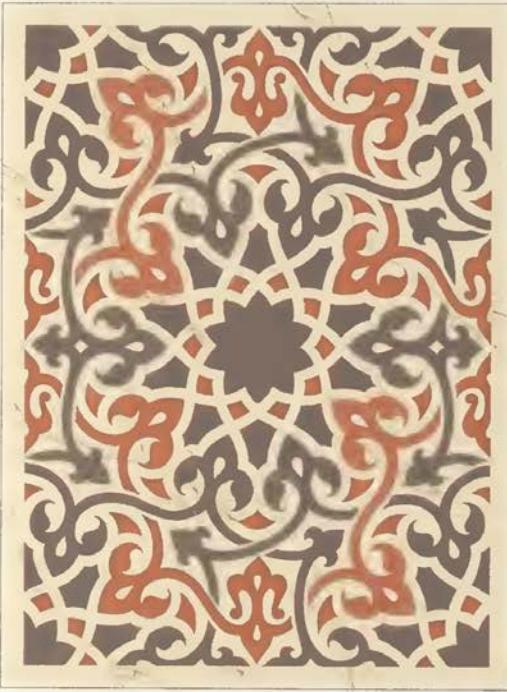
Imp. F. Didot & C^{ie}, Paris

PL VII



Schmidt lith.

Imp. F. Didot & C^{ie}, Paris



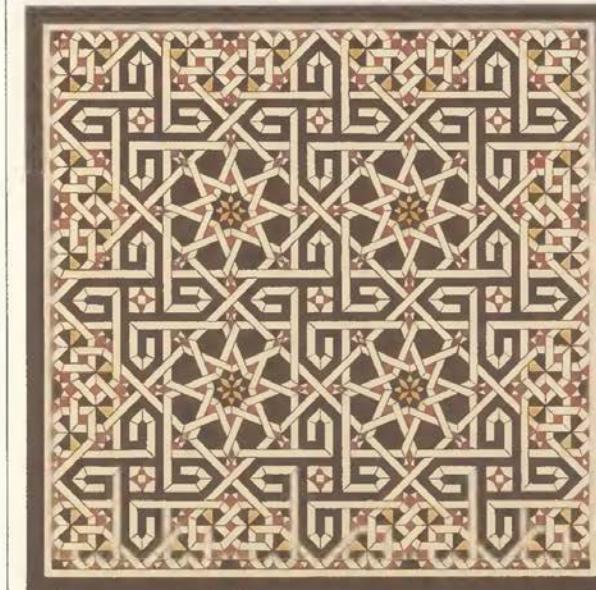
Schmidt, lith.

INCROSTATIONS



Imp. F. Didot & C[°] Paris

PL.VIII.

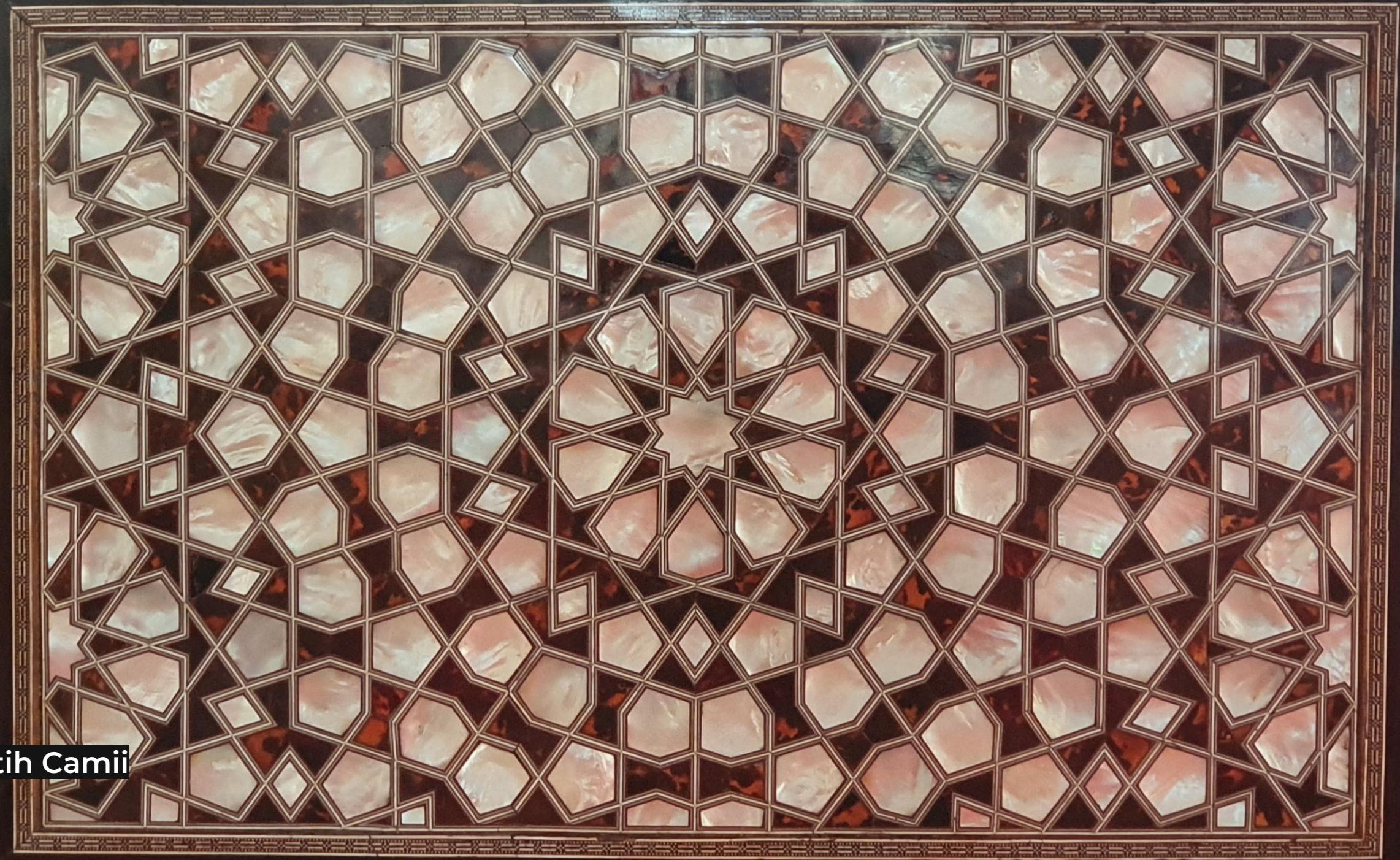


Schmidt, lith.

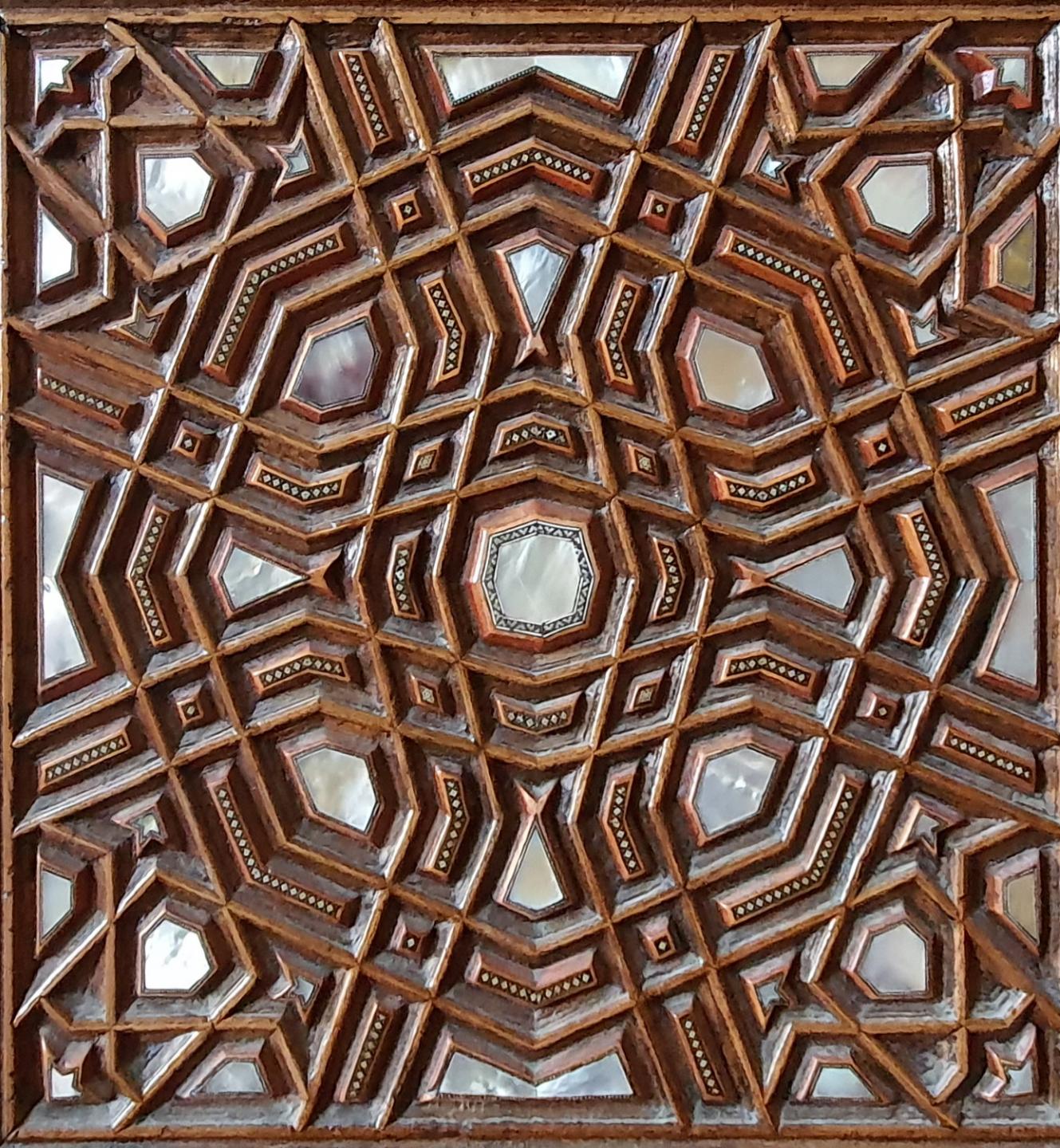


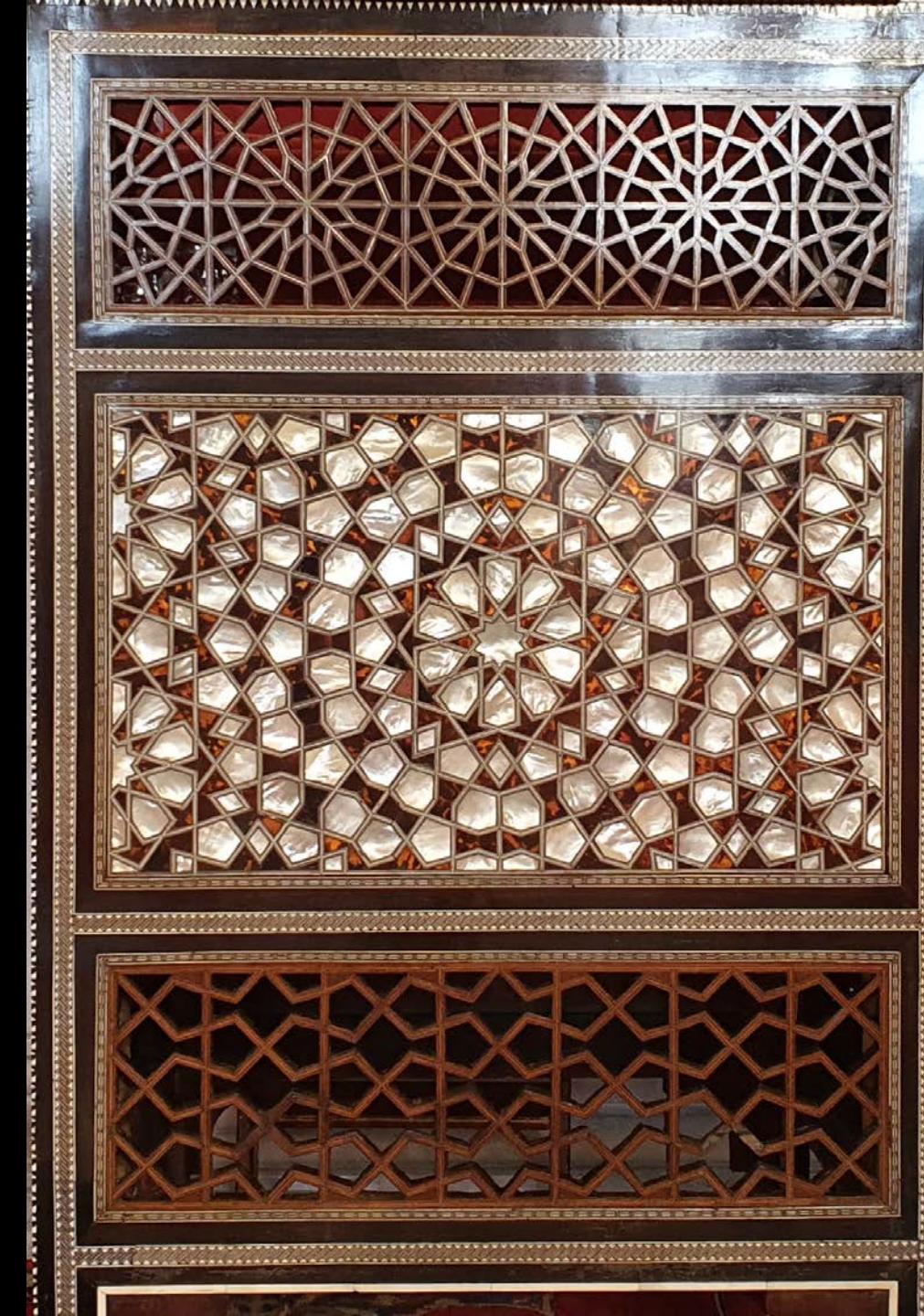
Imp. F. Didot & C[°] Paris

Fatih Camii

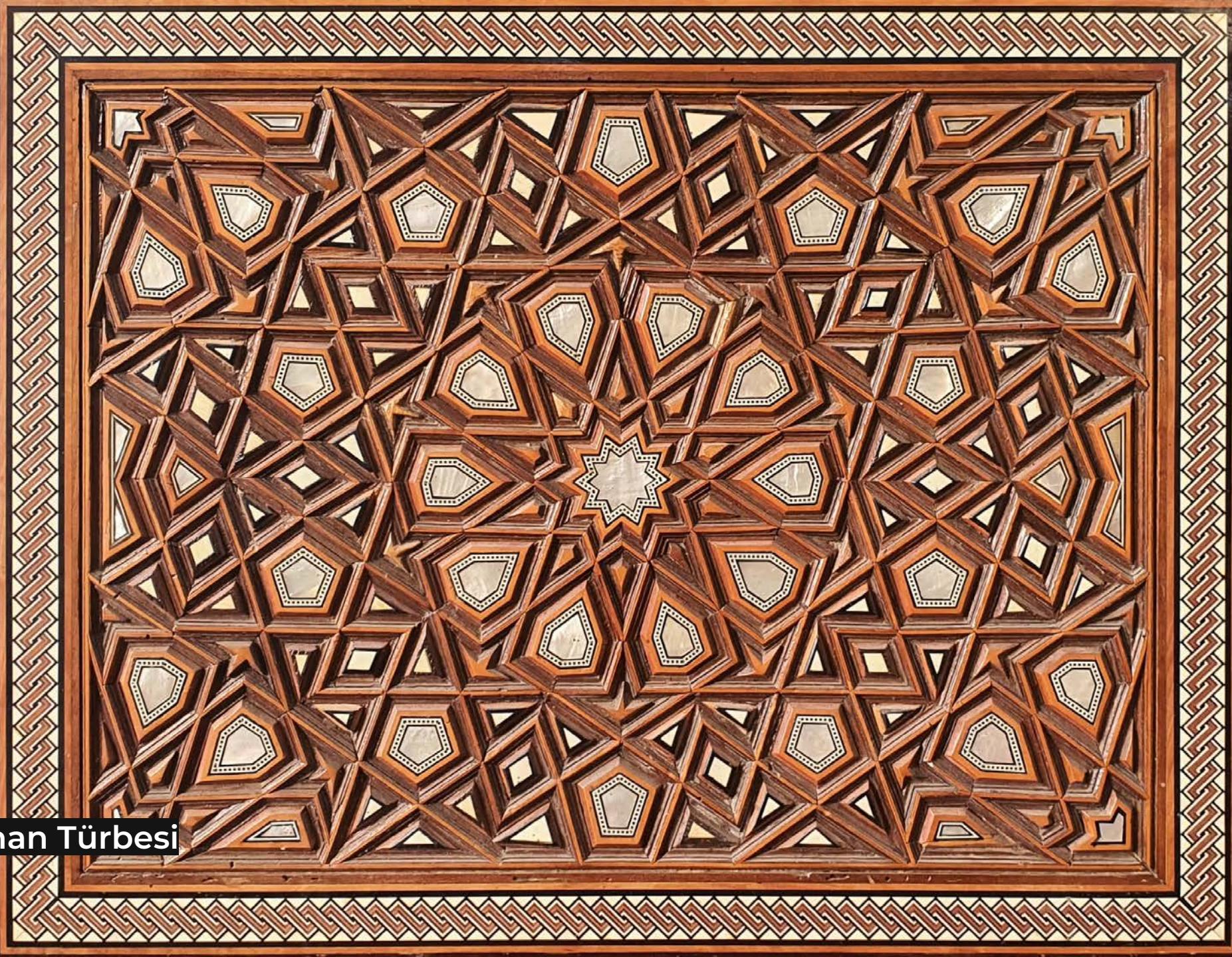


Fatih Camii





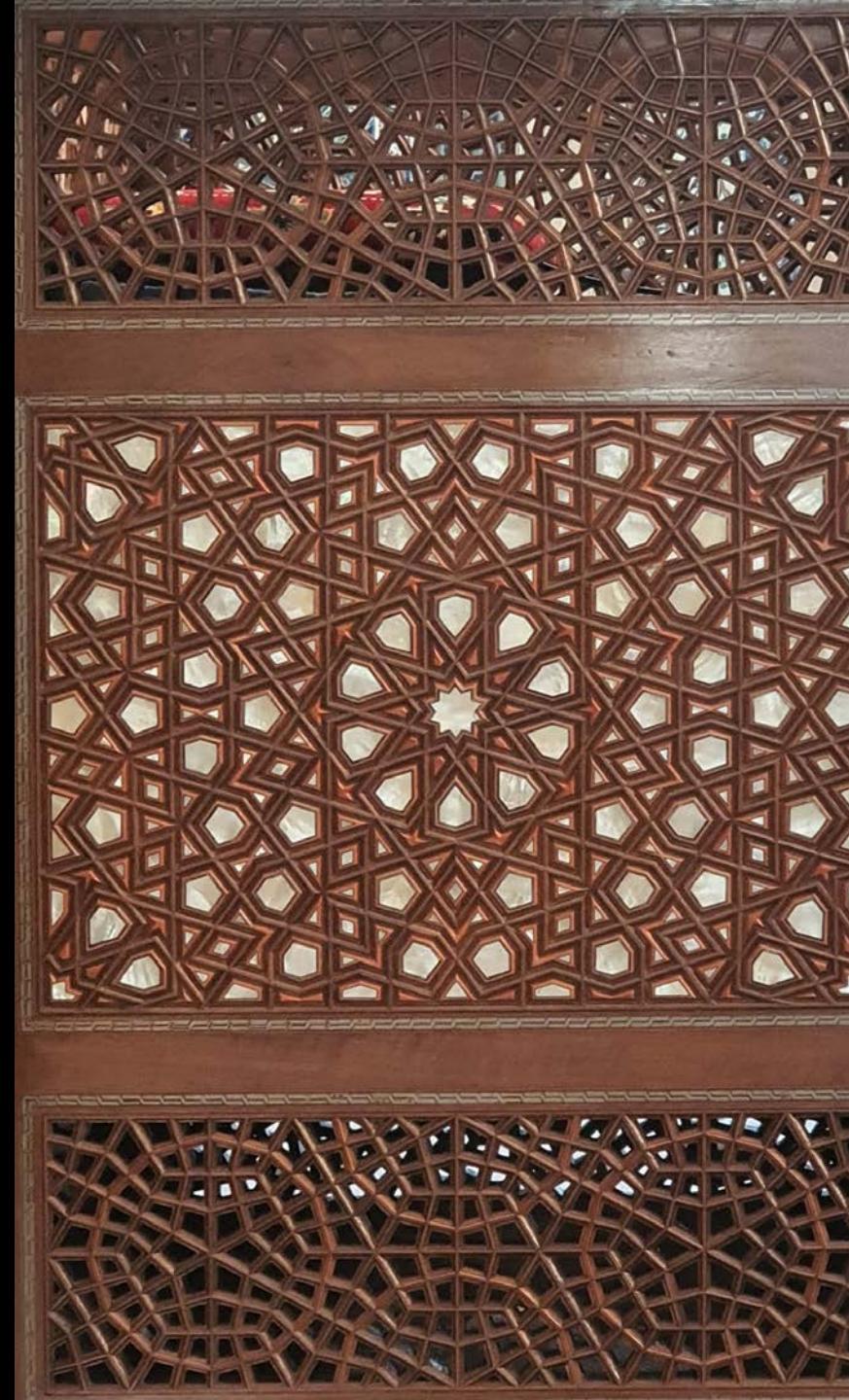
Fatih Camii



Hatice Turhan Türbesi

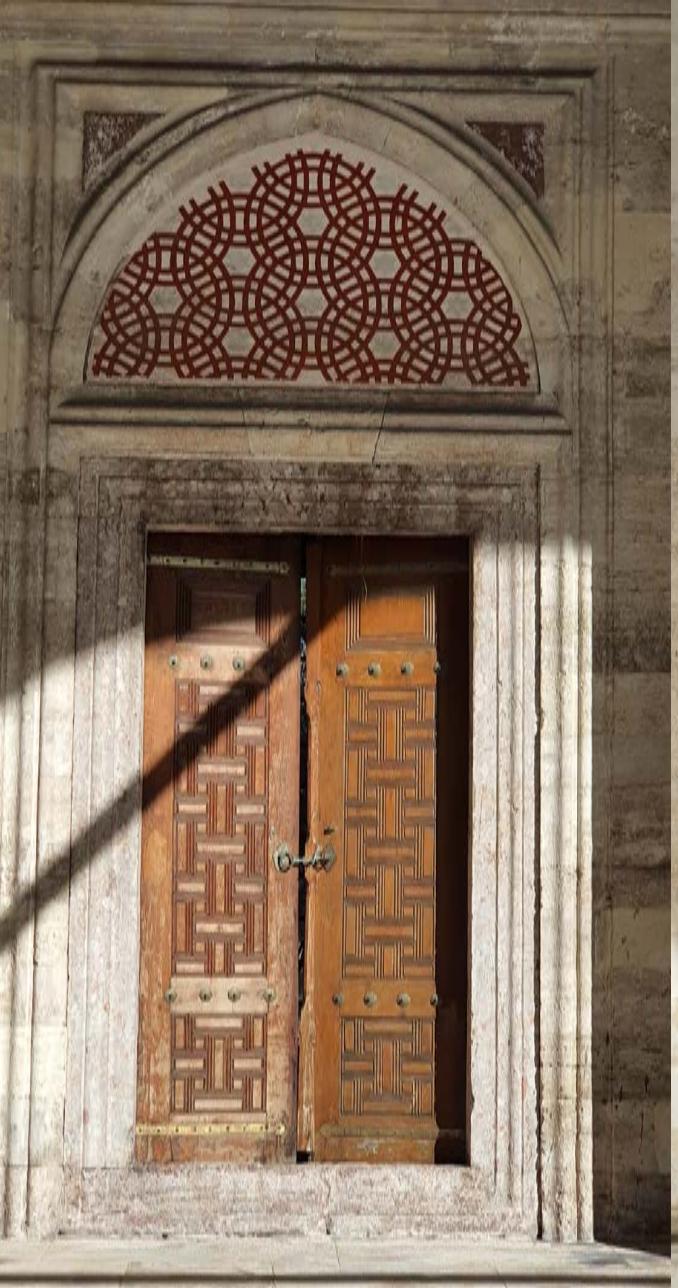


Rüstem Paşa Camii



Rüstem Paşa Camii

Şehzade Camii





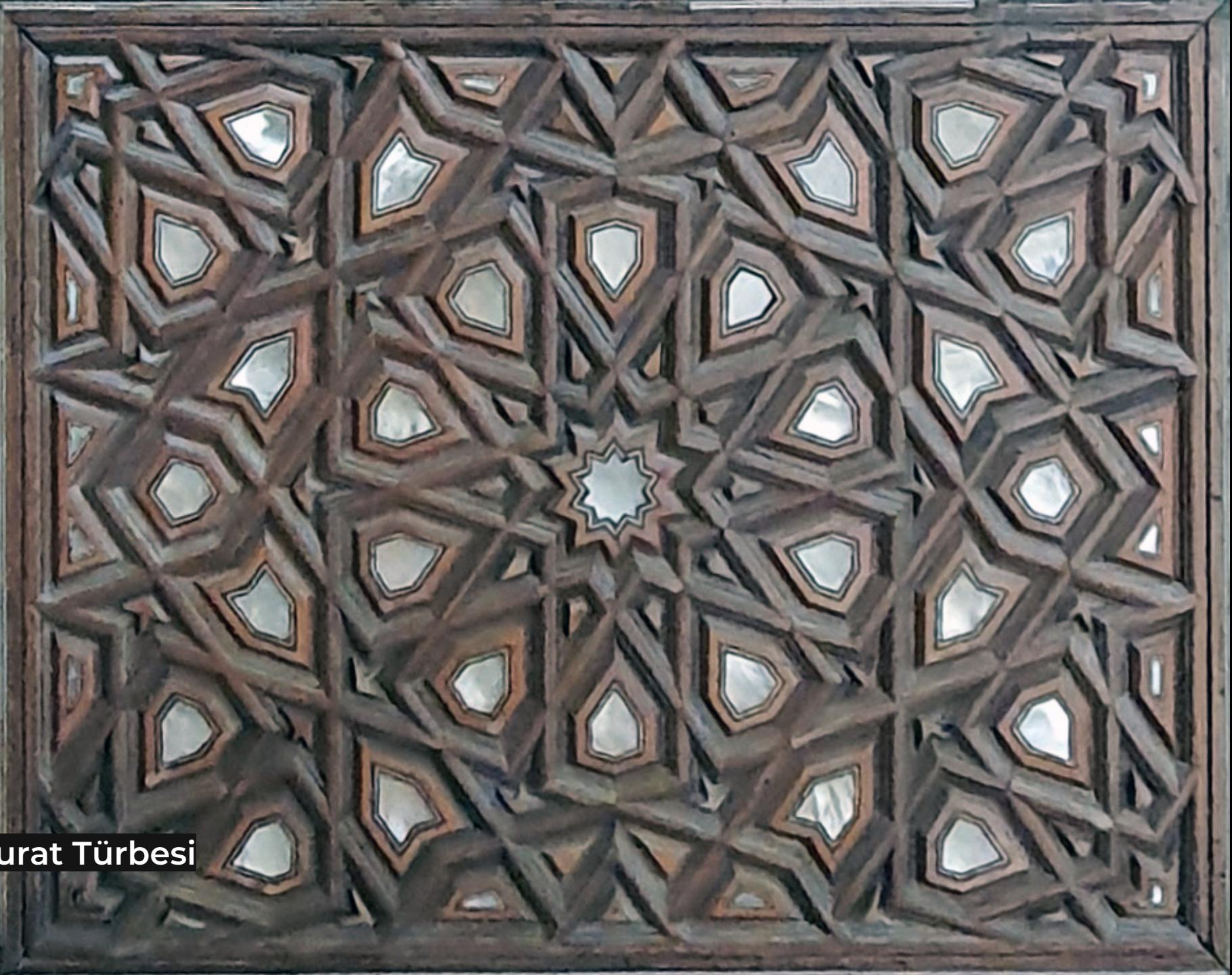
Süleymaniye Camii



Süleymaniye Camii

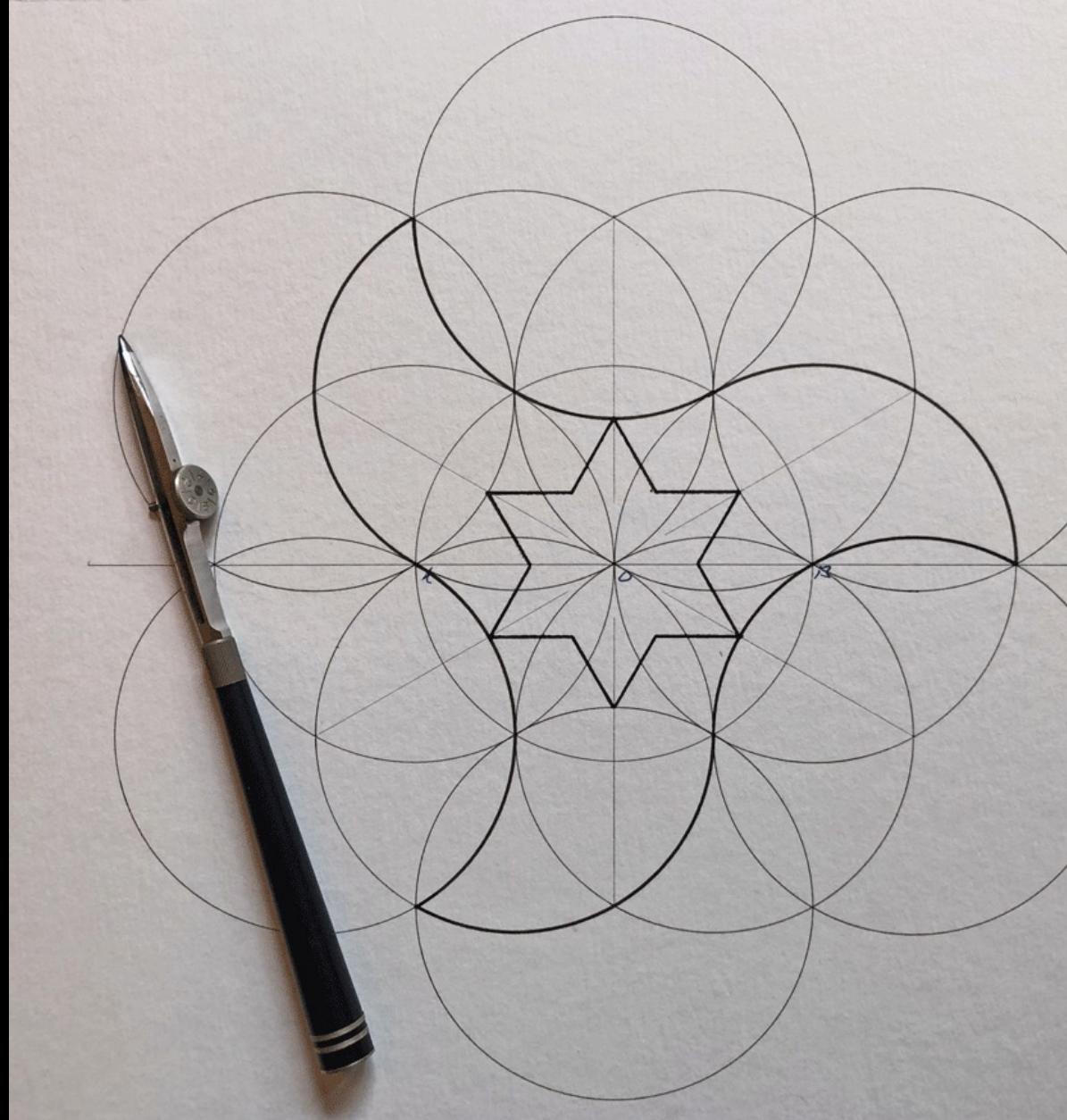
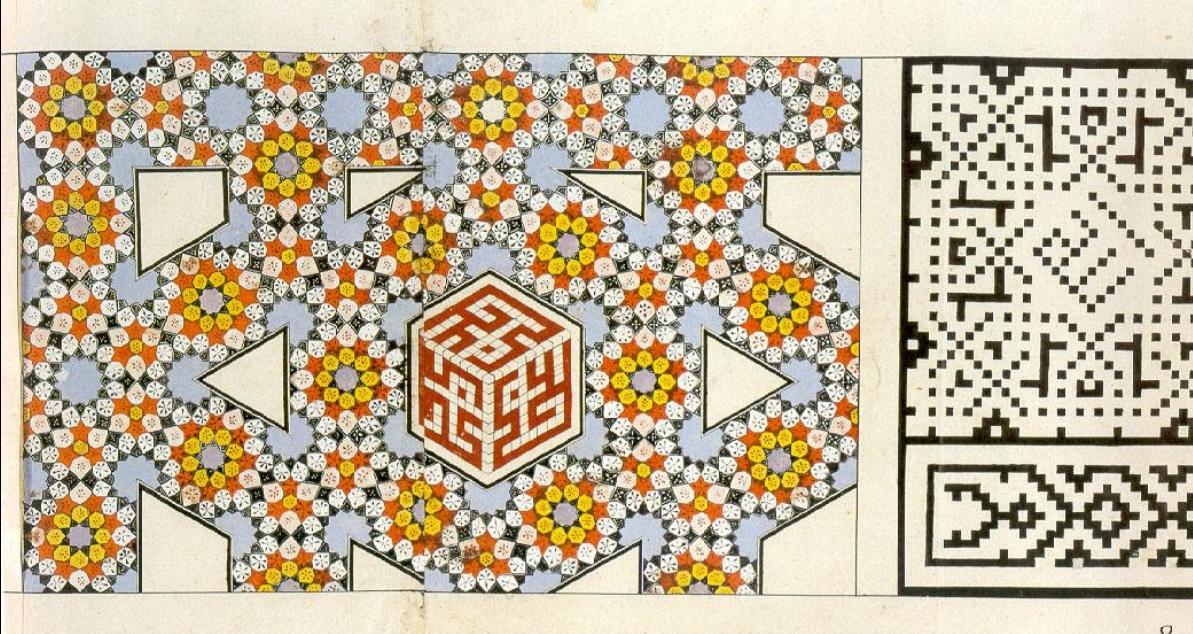


Sultan II.Selim Türbesi



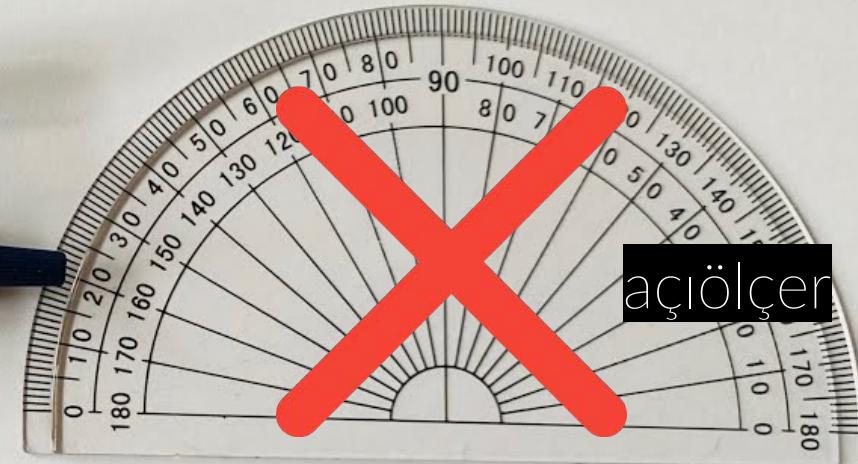
Sultan IV. Murat Türbesi

İşin içinde gerçekten
de Matematik var mı?
Geleneksel Metodlar





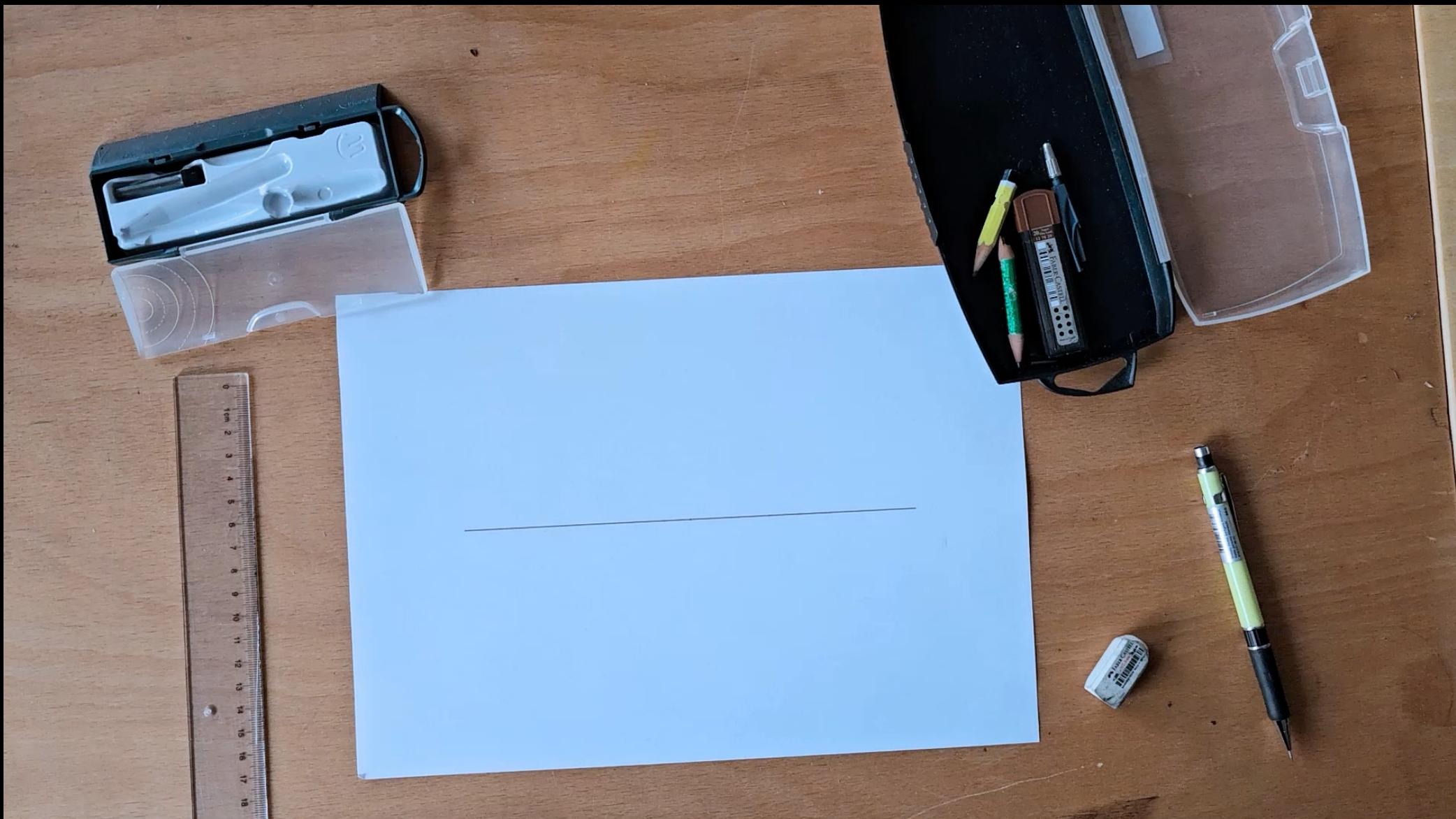
pergel



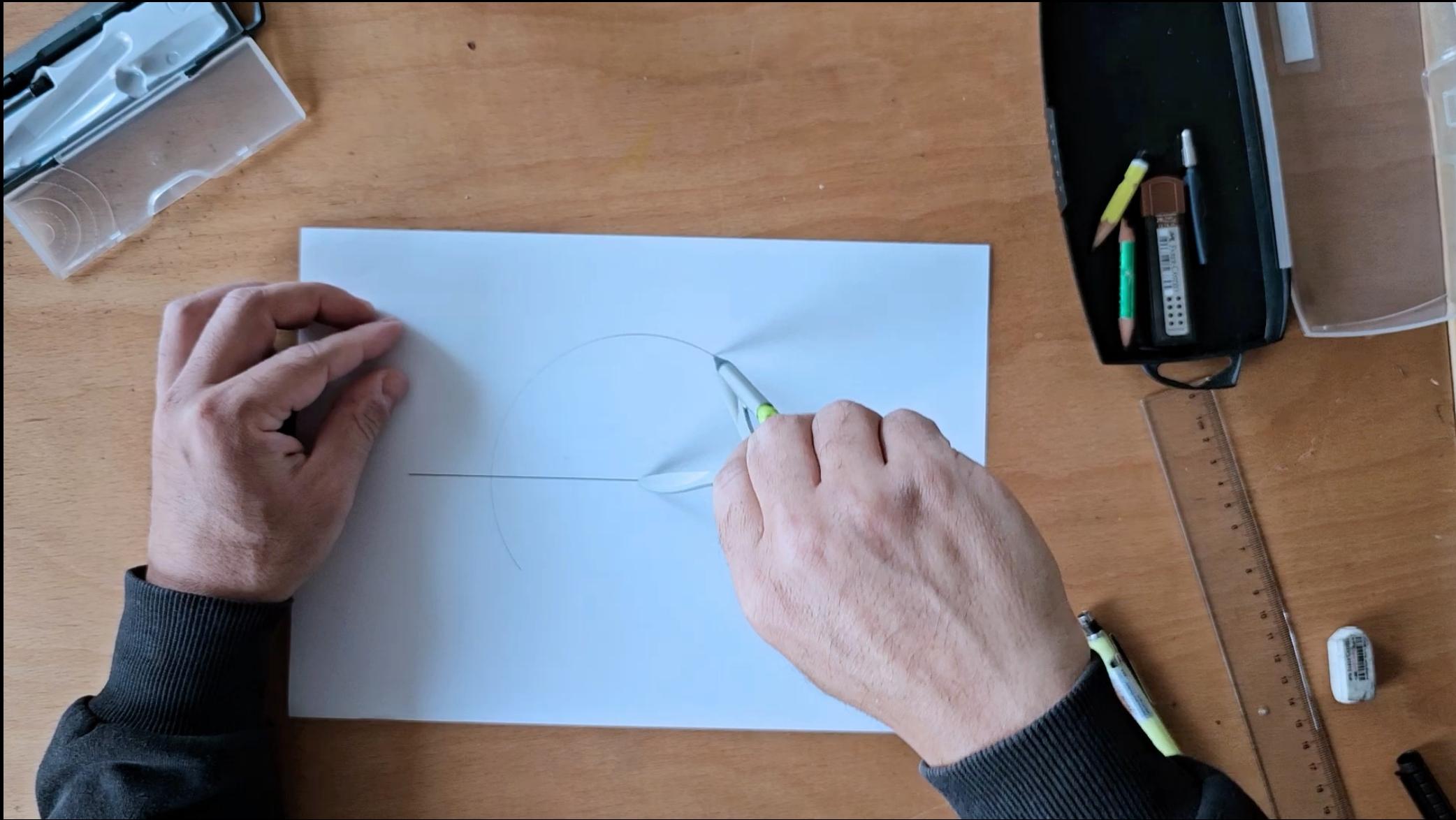
açıölçer



cetvel



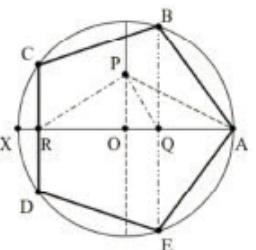
İki ve katları



Altiya Bölme

Construction of Regular Pentagon by H. W. Richmond

As Ptolemy's [construction described by S. Brodie](#), the one below seeks to construct a regular pentagon inscribed in a given circle. The latter is dated 1893 and attributed to H. W. Richmond. The approach has been expanded by [[Conway and Guy](#)] to the construction of other regular polygons.



Let XA be a diameter of the circle with center O.

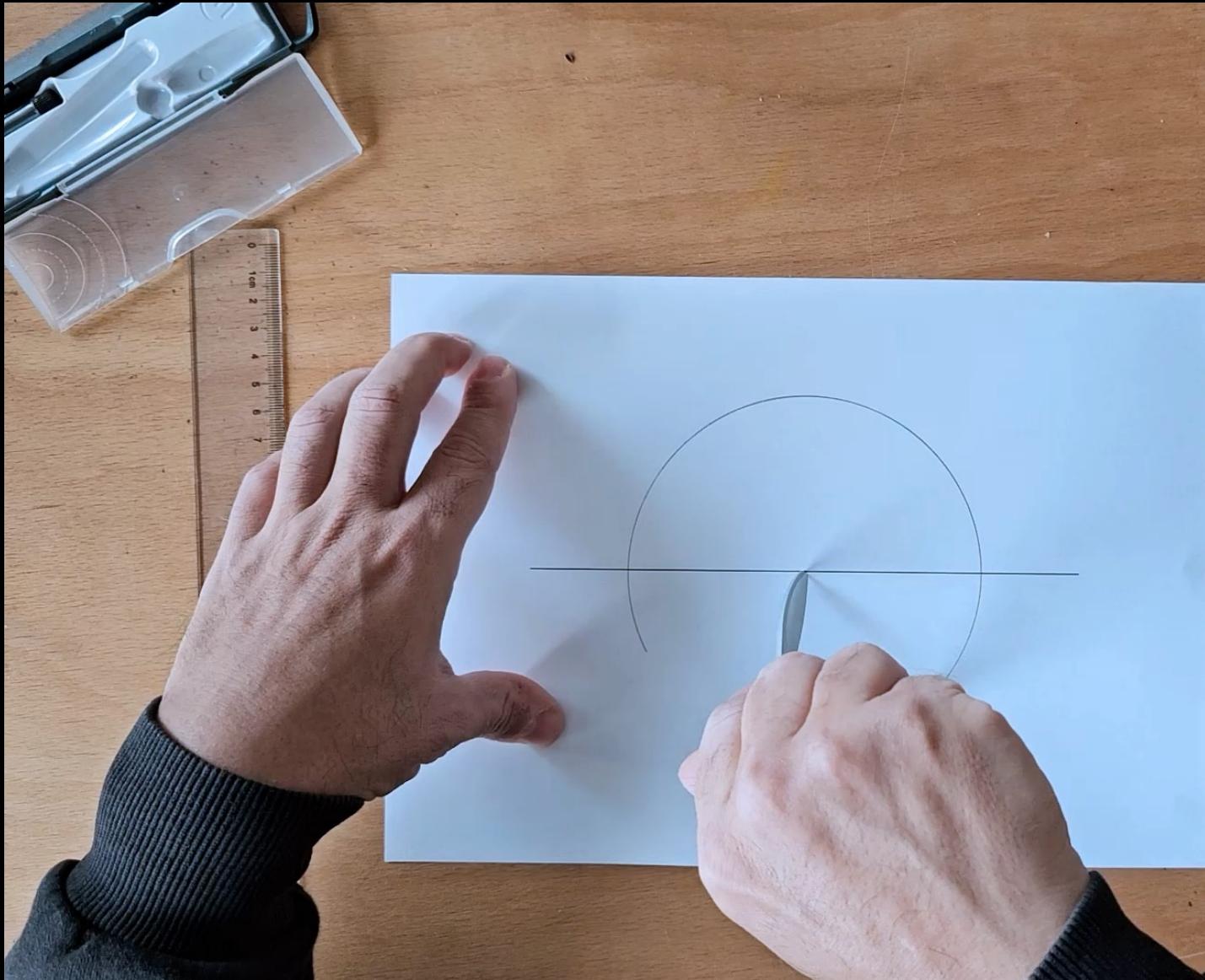
1. Choose P midway on the radius perpendicular to XA.
2. Draw a bisector of $\angle APO$ to the intersection Q with XA,
3. and an external bisector to the intersection with XA at R.
4. If A is taken to be one of the vertices of the regular pentagon, Q and R are the projections of the other four onto XA. These can be obtained by erecting perpendiculars to XA at Q and R.

Proof

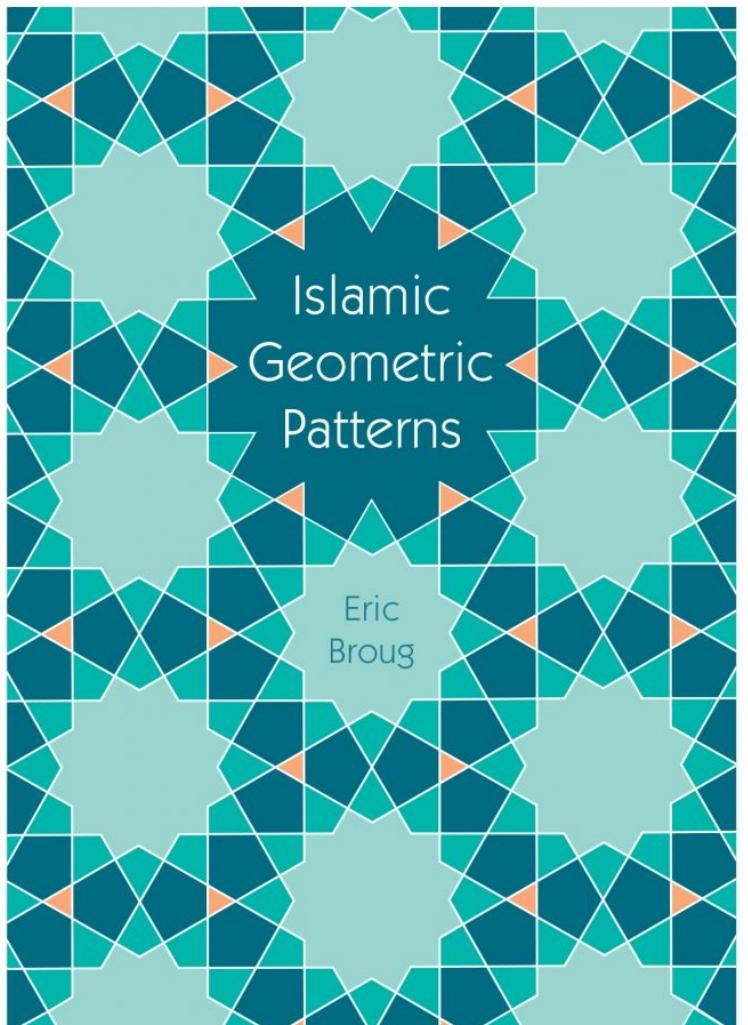
Assume the radius of the circle is 1. Then $OP = 1/2$. From the [Pythagorean theorem](#), $AP = \sqrt{5}/2$. By a [property of angle bisectors](#),

$$OQ / AQ = OP / AP = 1/2 : \sqrt{5}/2.$$

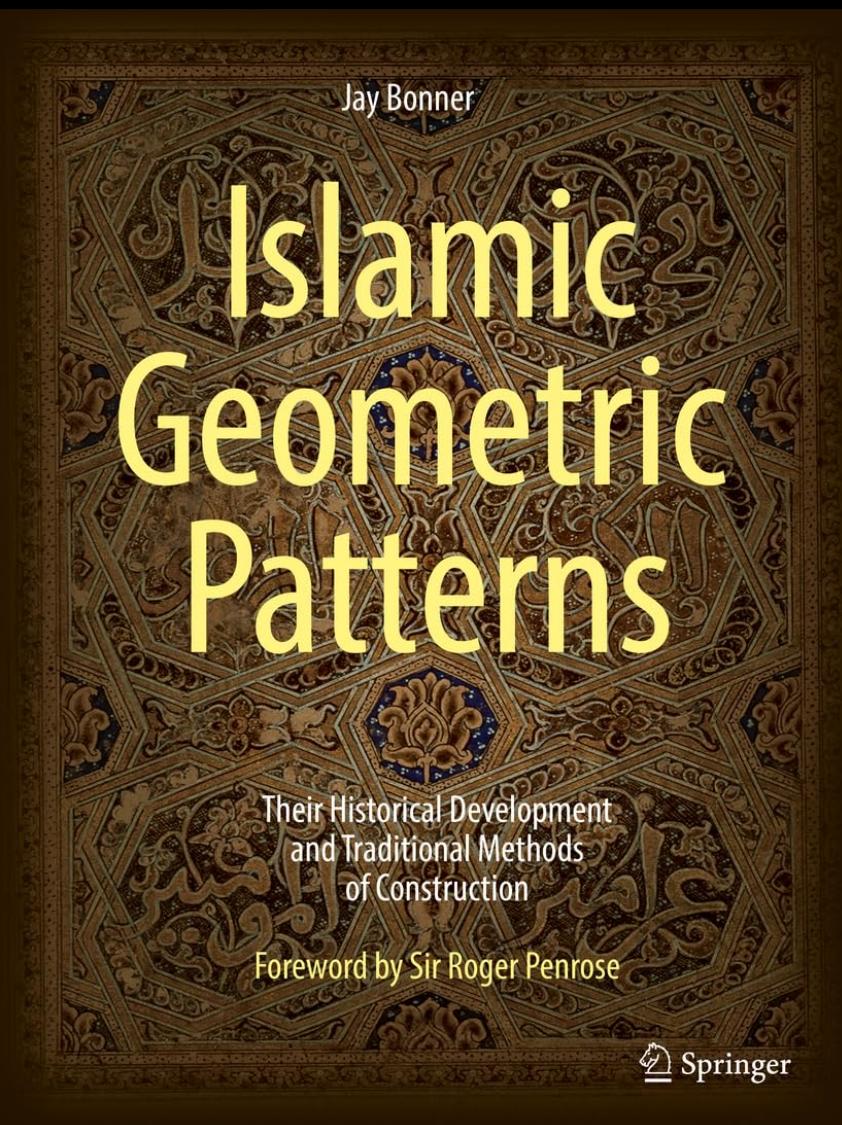
Since $OQ + AQ = 1$, we find $OQ = (\sqrt{5} - 1) / 4$. But the latter is the [value of \$\cos\(72^\circ\)\$](#) , which allows us to conclude (from $\triangle OQB$) that $\angle BOQ = 72^\circ$, such that A and B are indeed successive vertices of a regular pentagon.



Beşe bölme

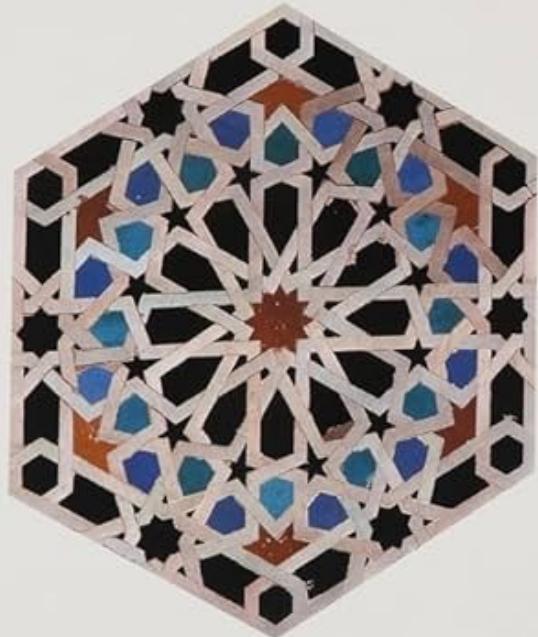


Thames & Hudson



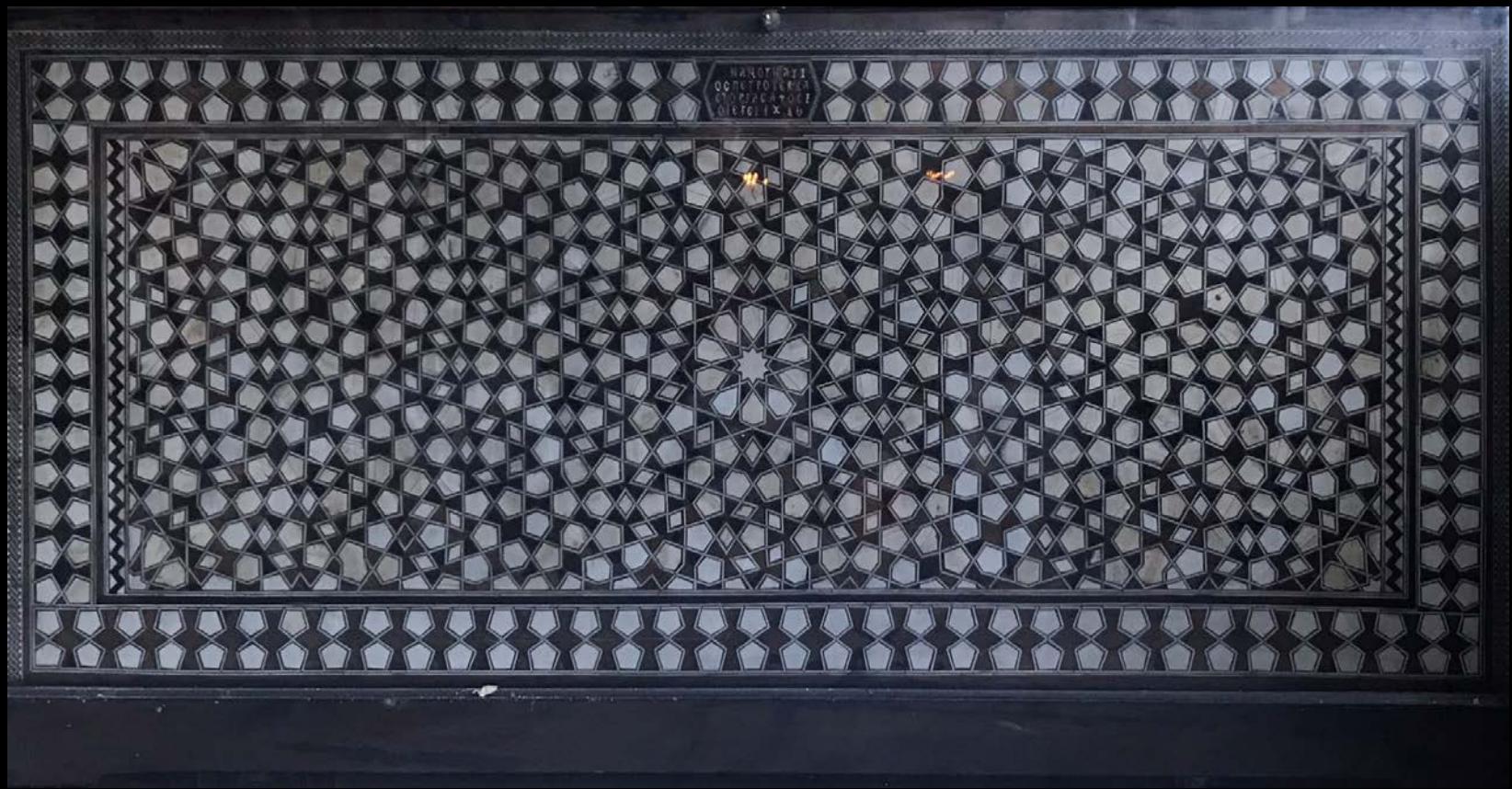
Keith Critchlow
Islamic Patterns
An Analytical and Cosmological Approach
Foreword by Seyyed Hossein Nasr

Thames & Hudson

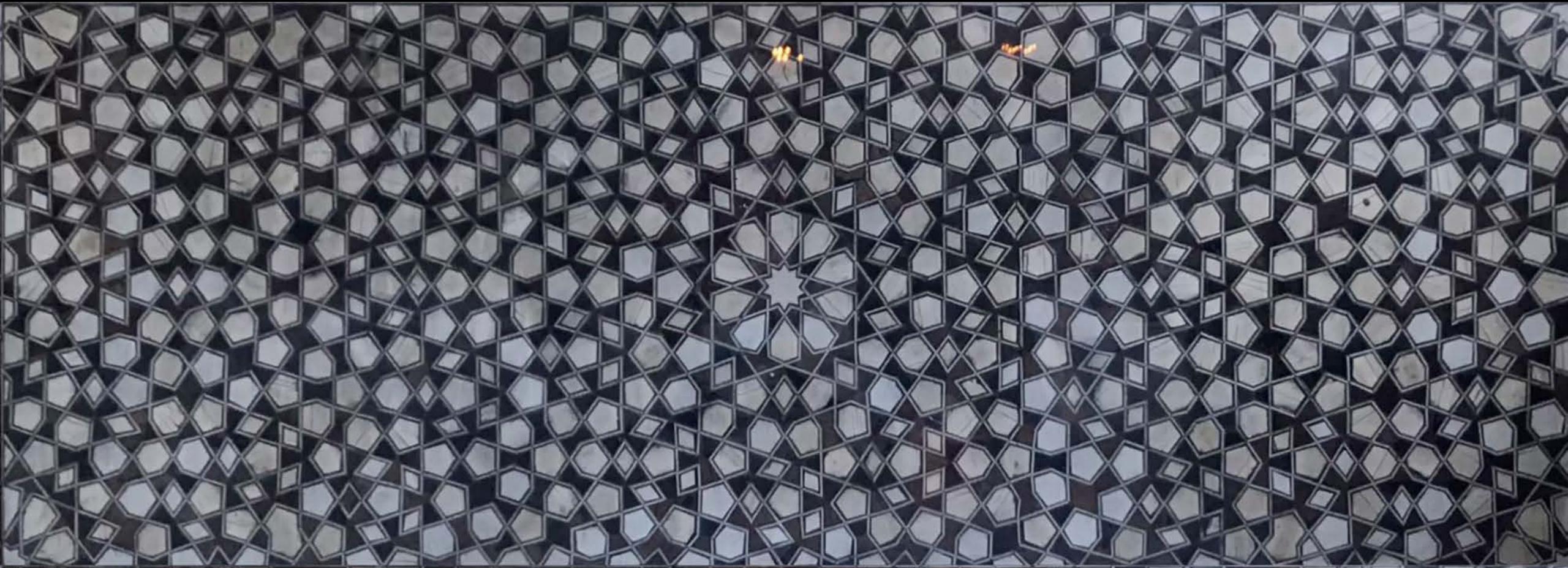


Keith Critchlow
Islamic Patterns

An Analytical and Cosmological Approach
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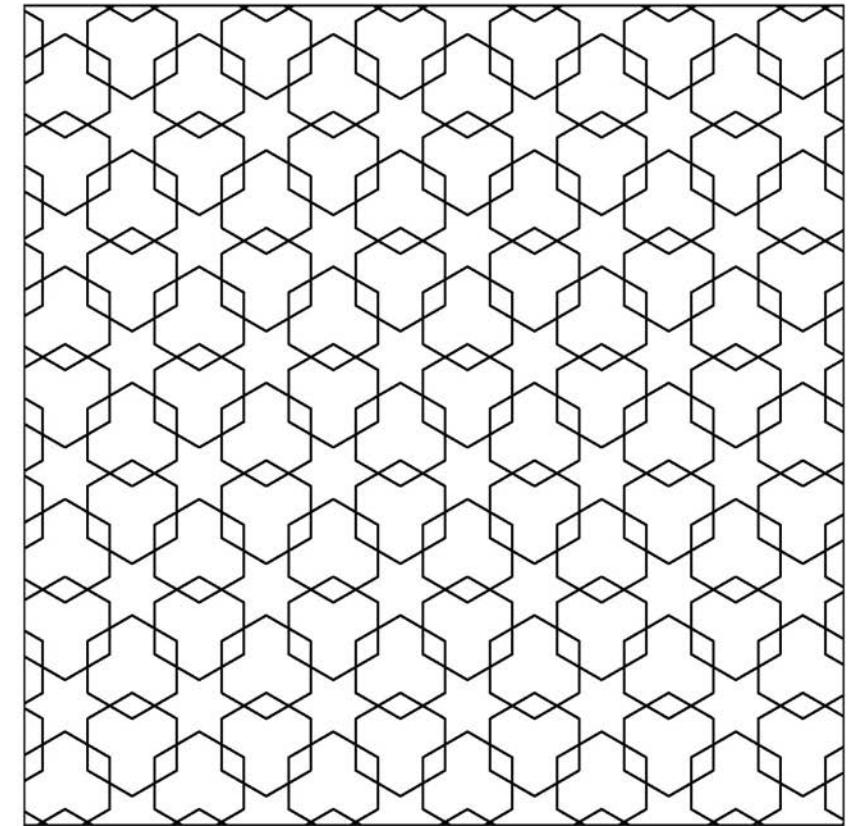


Rum Patrikhanesi, İstanbul



Geometrik Desen Üretme İş Akışı #1

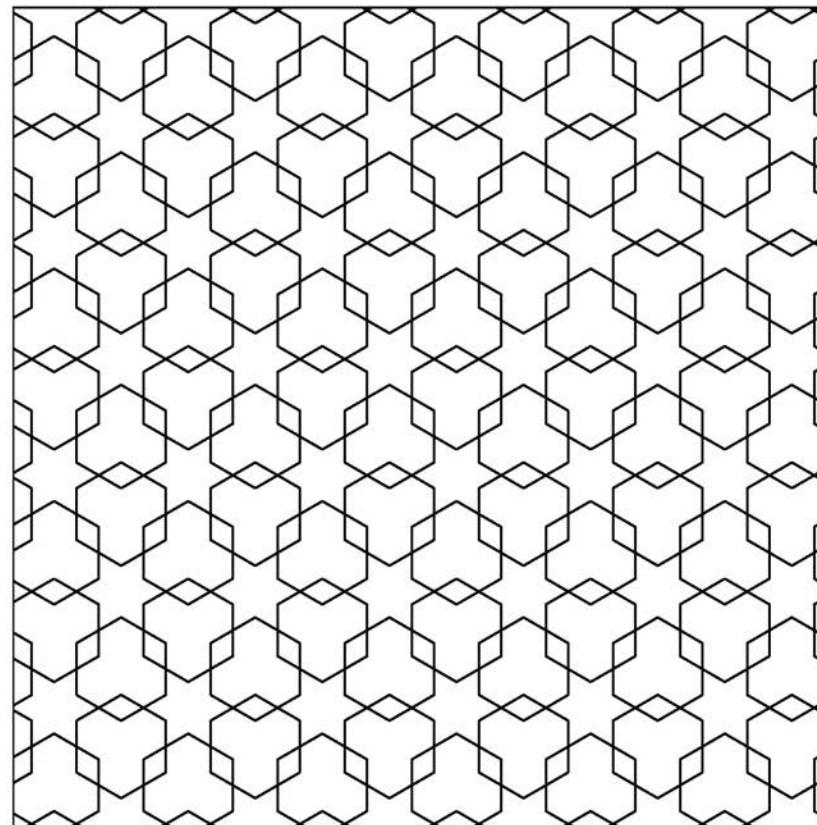
Geometrik deseni inceleyin ve yapıtaşlarını analiz etmeye çalışın



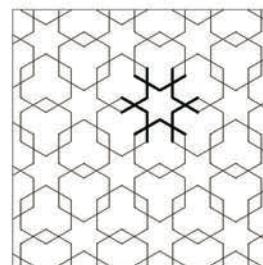
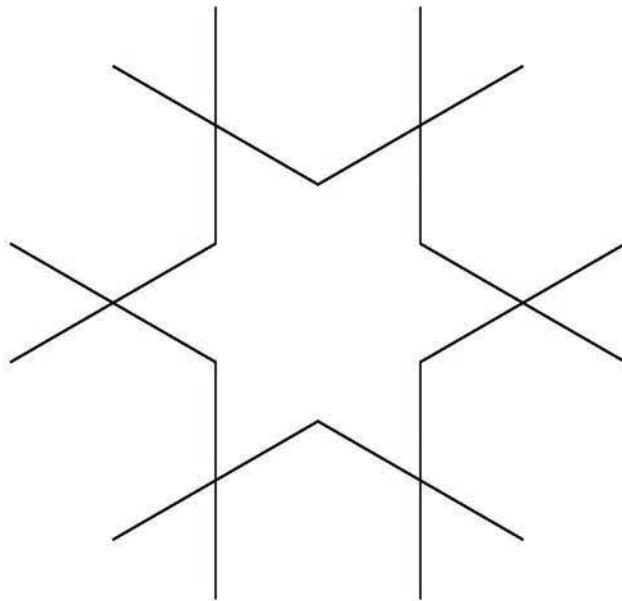
Örnek: İslam Geometri Sanatı / Mevlana Müzesi, Konya

Geometrik Desen Üretme İş Akışı #1

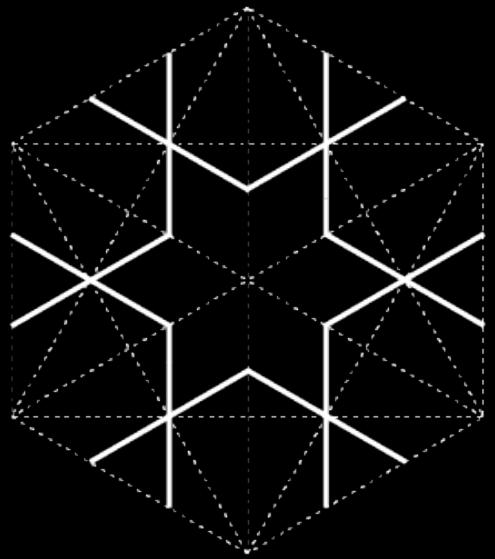
Geometrik deseni inceleyin ve yapıtaşlarını analiz etmeye çalışın



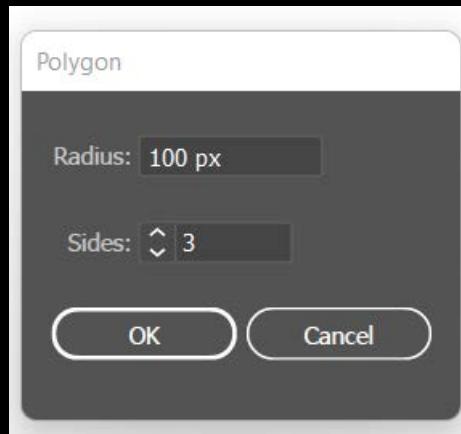
Motif



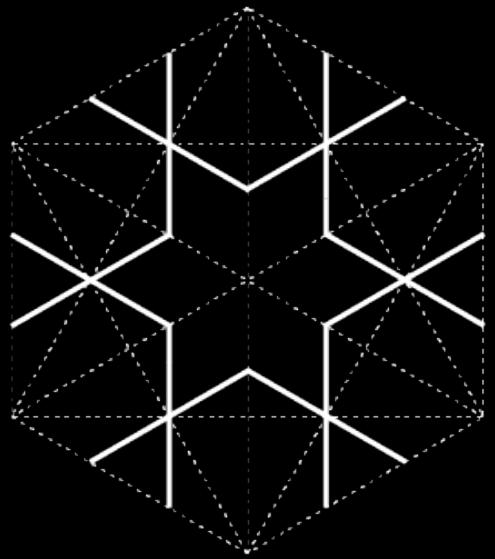
Illustrator İş Akışı



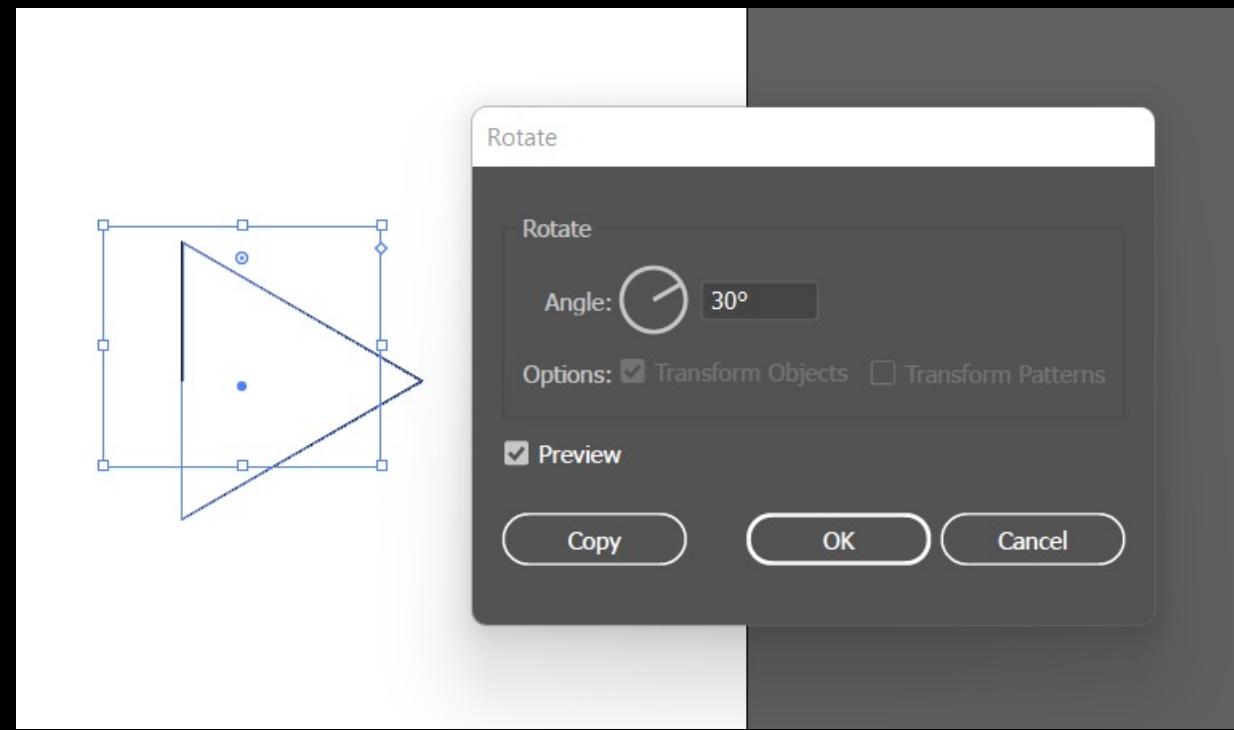
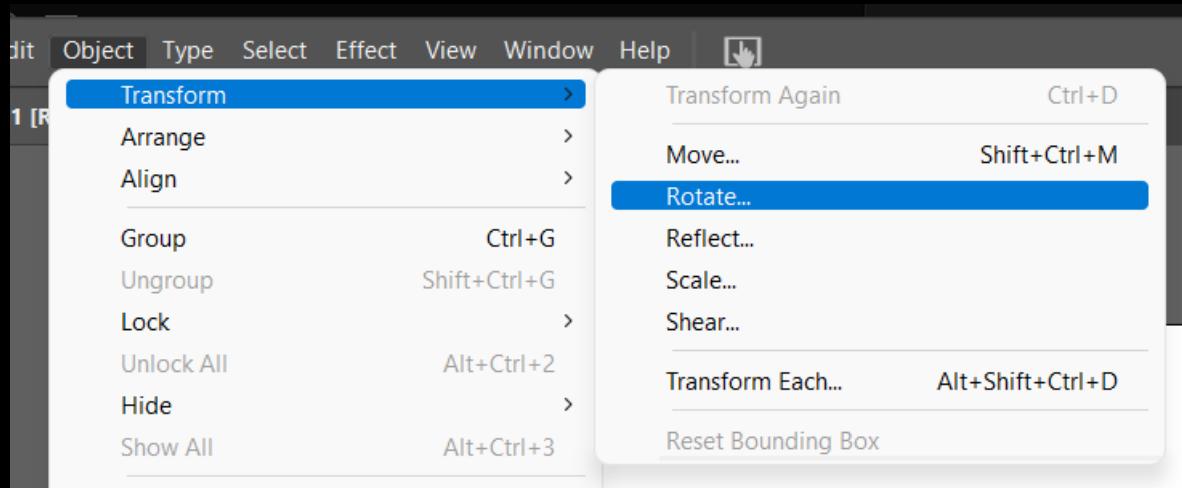
- 1-Artboard yaratın
- 2-Polygon kullanarak için boş üçgen yaratın



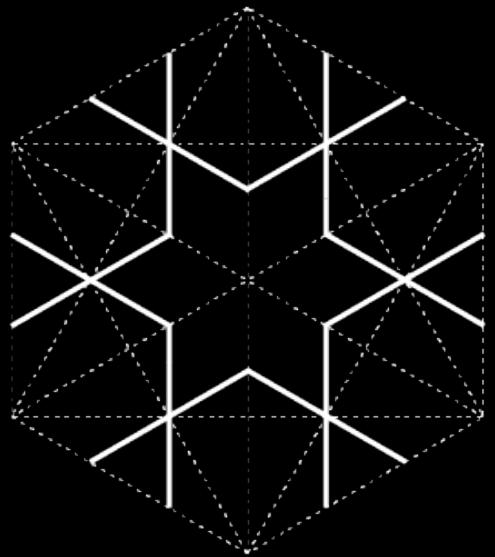
Illustrator İş Akışı



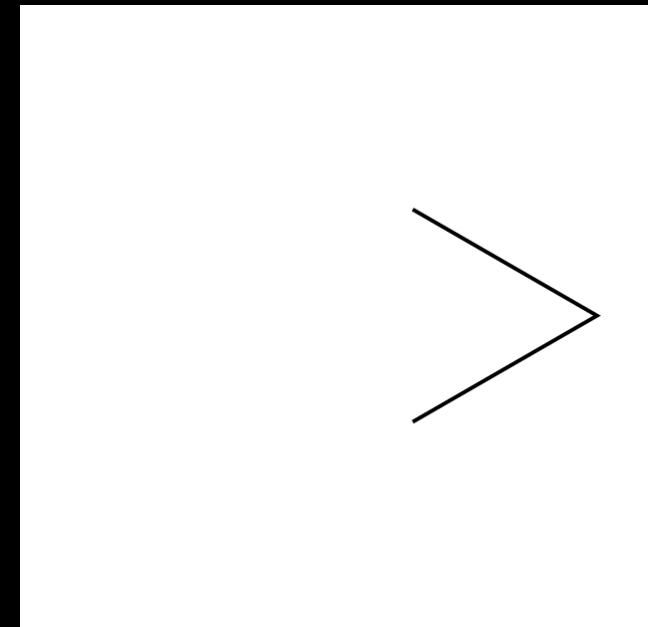
3-Object > Transform > Rotate (30 derece)



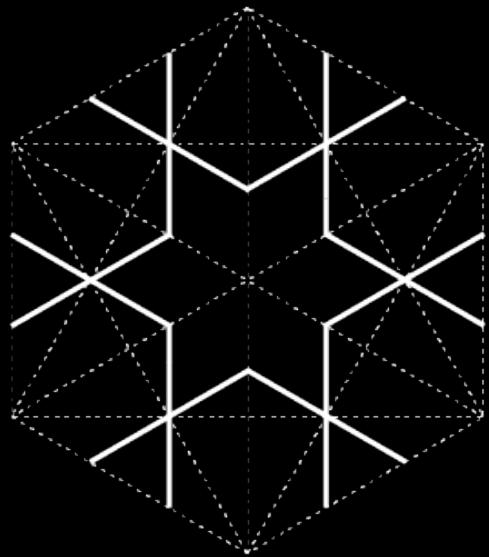
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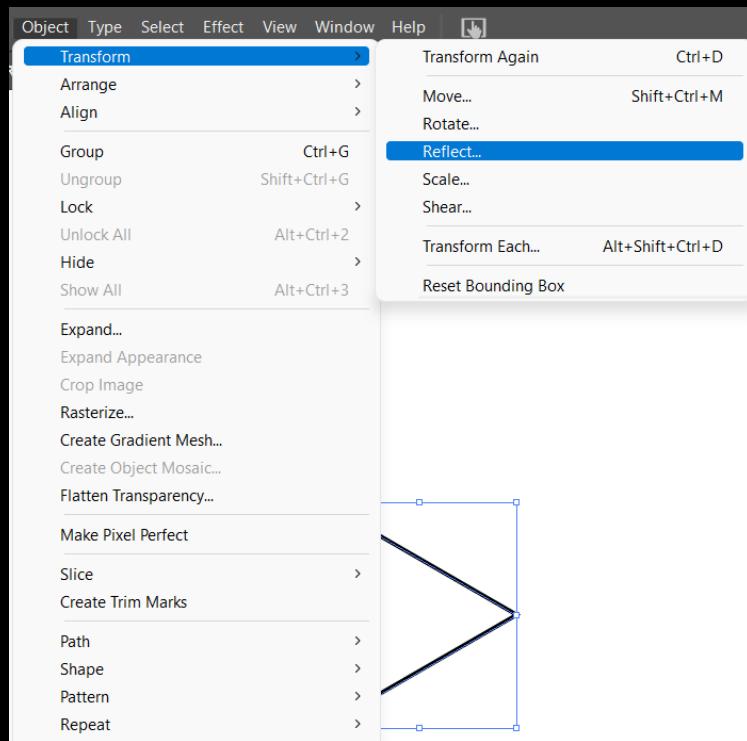
4-Üçgenin sol tarafını silmek için direct selection aracını kullanın.



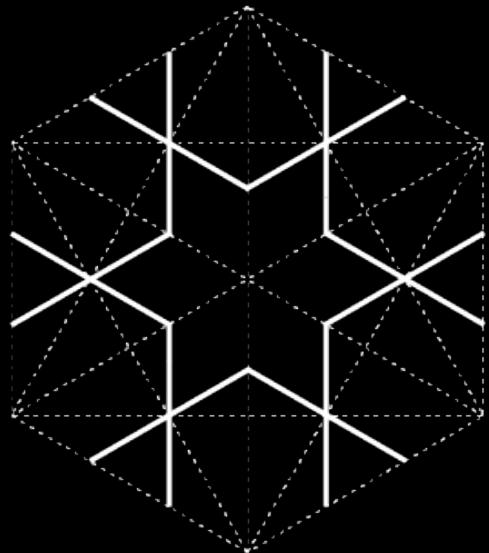
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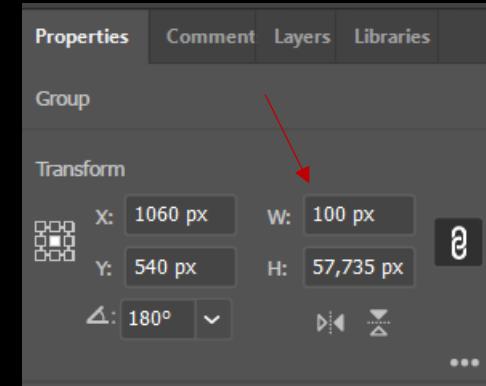
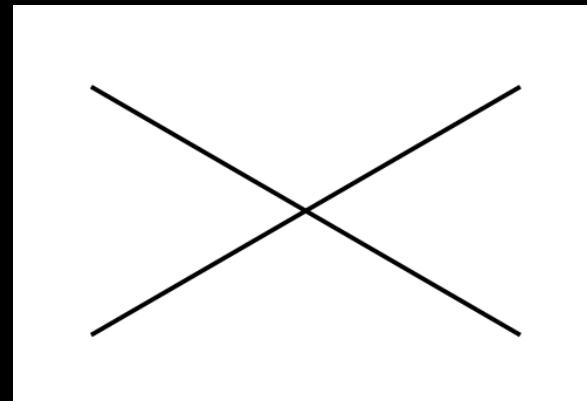
5-Object > Transform > Reflect (Vertical Copy Opsiyonu)



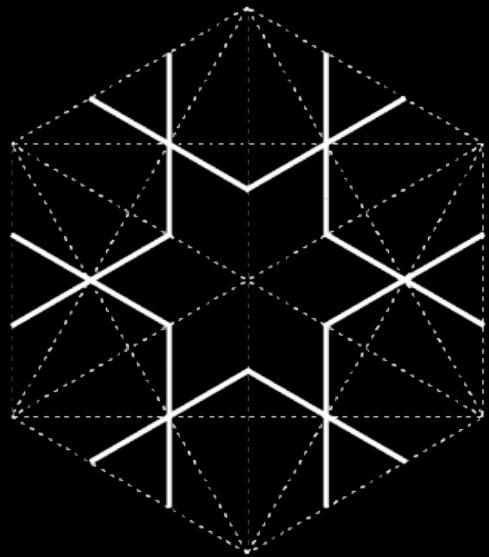
Illustrator İş Akışı



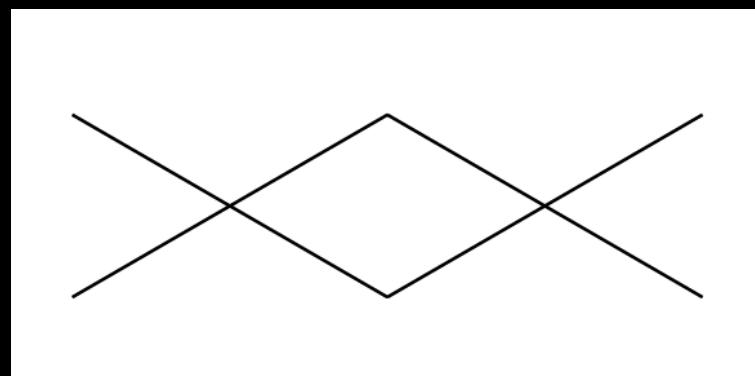
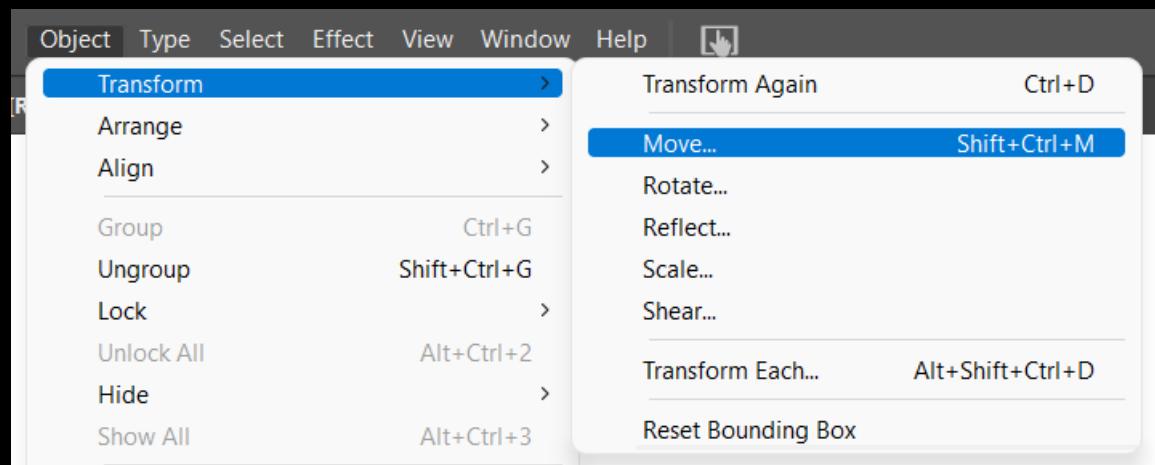
6- Yansıyan kopyayı sağa taşıyın ve ok uçlarını gruplayın (Ctrl+G) ve 100 piksel genişliğinde yapı taşımızı elde ederiz.



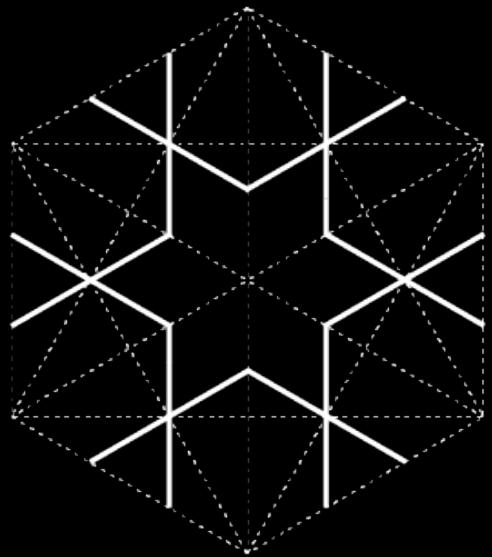
Illustrator İş Akışı



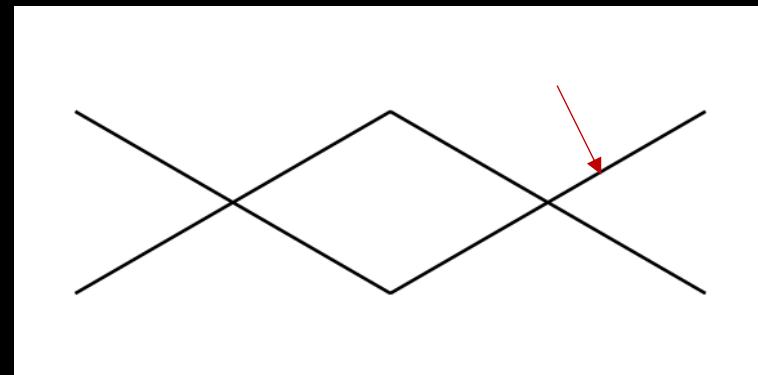
7- Object > Transform > Grup şeklini kopyala seçeneği ile 100 piksel sağa hareket ettirin



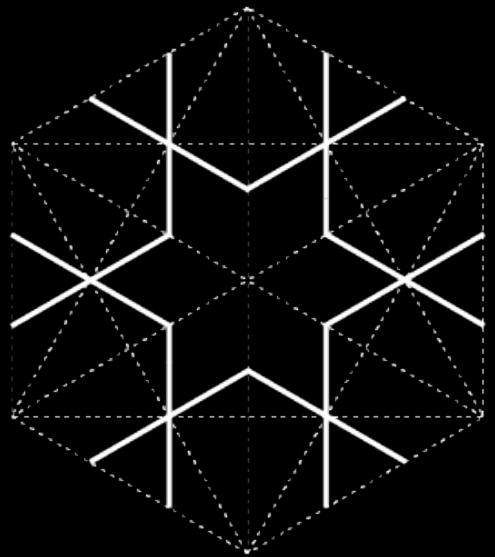
Illustrator İş Akışı



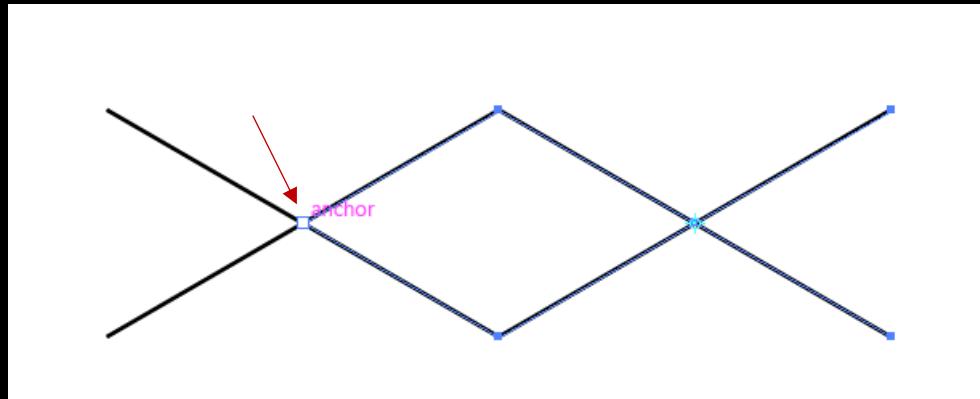
8- En sağdaki grubu seçin ve döndürme aracını kullanmak için klavyenizde r tuşuna basın



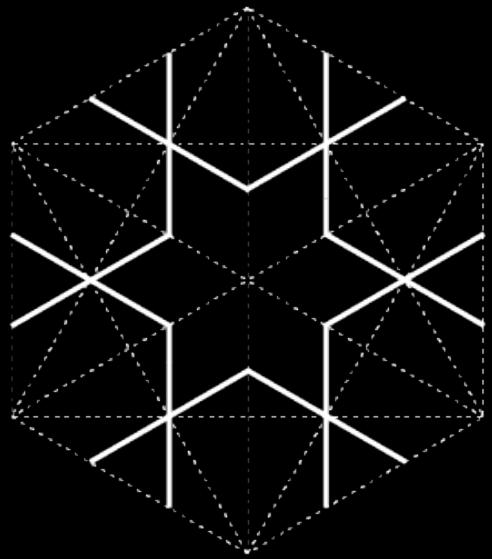
Illustrator İş Akışı



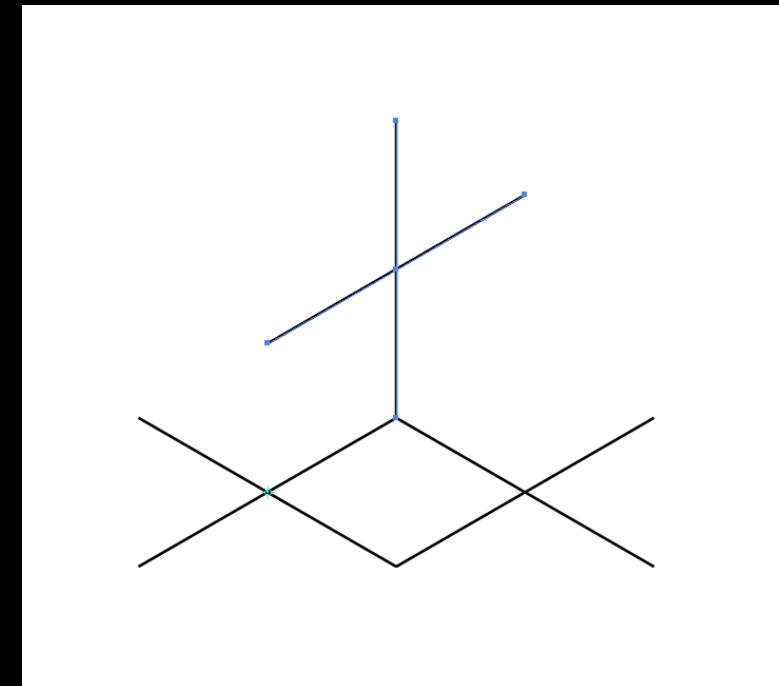
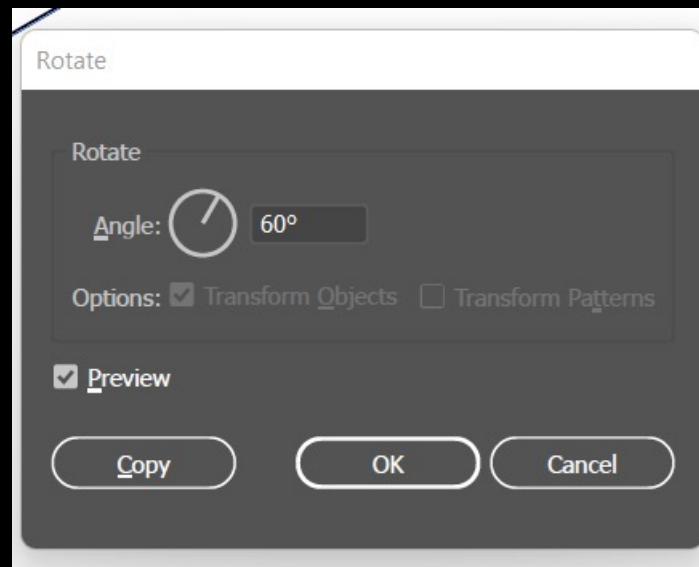
9- Alt tuşunu basılı tutarken, döndürme işleminin bağlantı noktasını konumlandırmak için en soldaki grubun merkezini seçin.



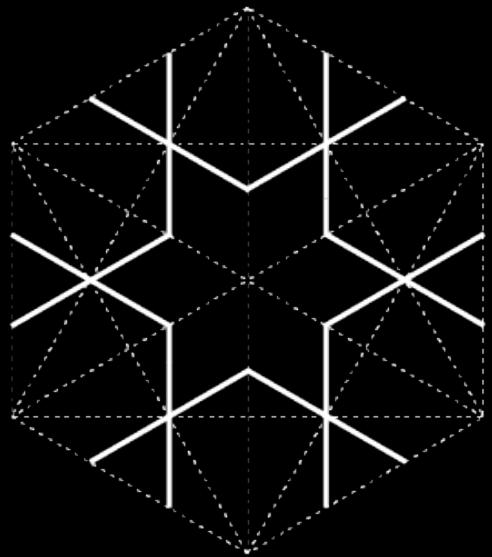
Illustrator İş Akışı



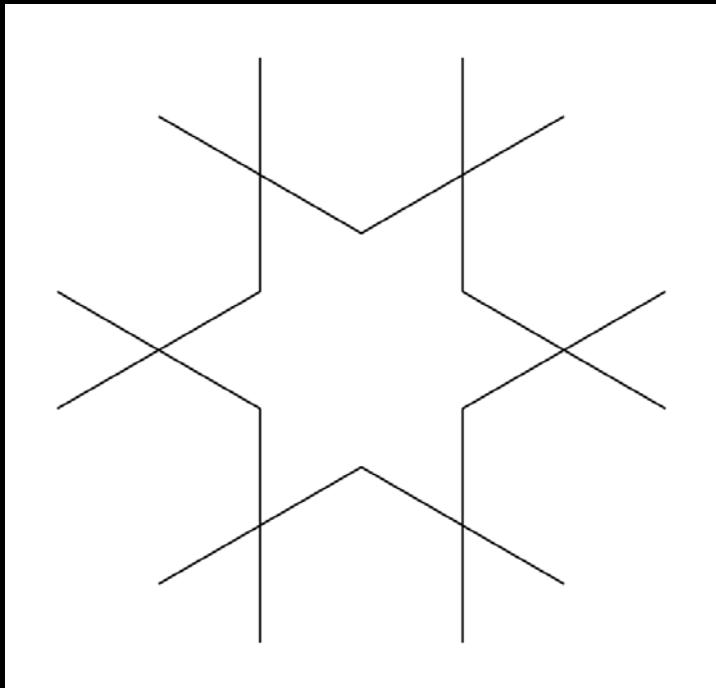
10- Rotation 60 derece ile uygula ve kopyala seçeneği



Illustrator İş Akışı



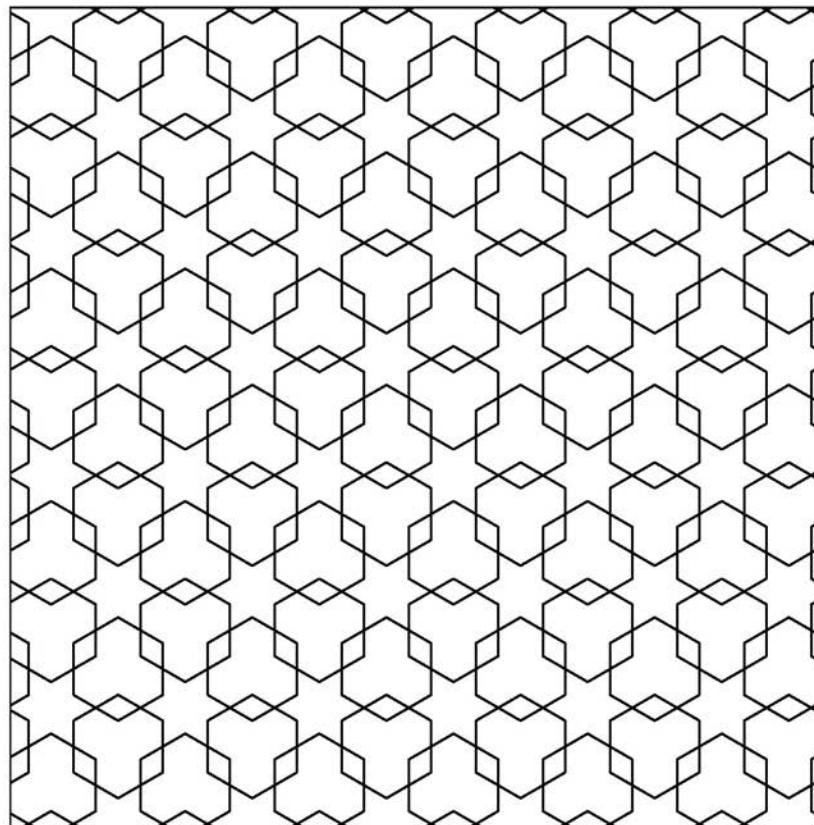
11- Kalan taraflara döndürme uygulamak ve ortadaki şekli silmek için Ctrl + D'yi tekrarlayın. Final!



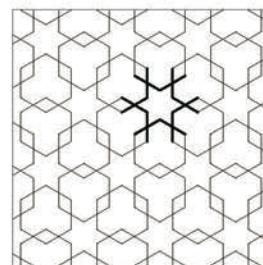
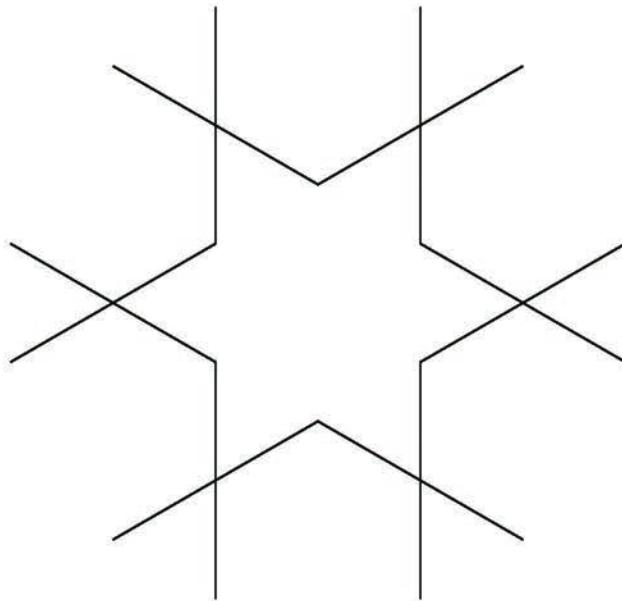
p5js iş akışı

Geometrik Desen Üretme İş Akışı #1

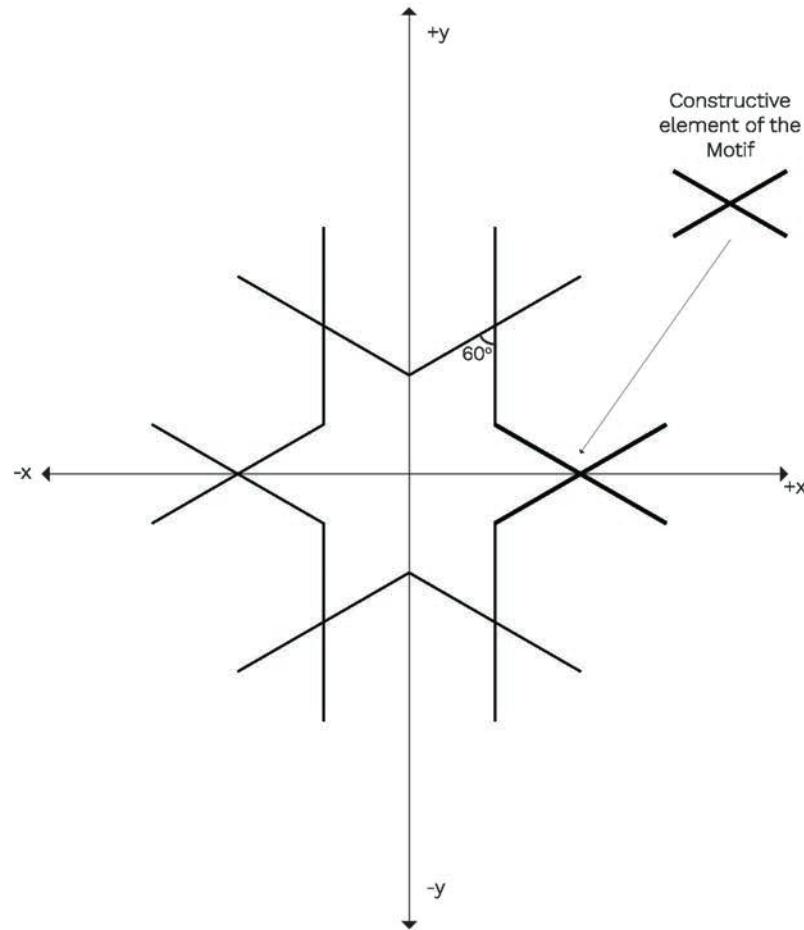
Geometrik deseni inceleyin ve yapıtaşlarını analiz etmeye çalışın



Motif



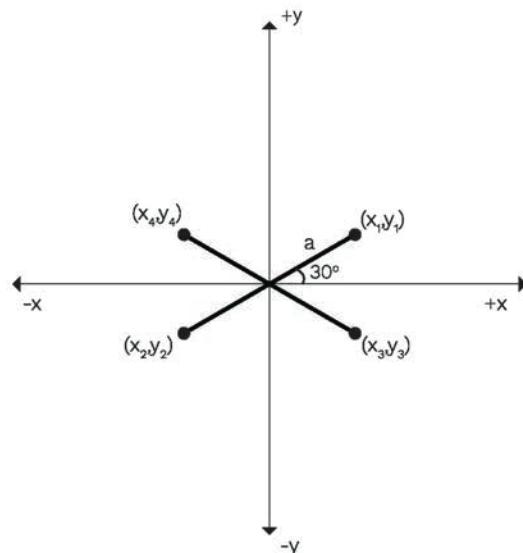
Temel Görsel Bileşini İnceleyelim



Açıları ve Vertex noktalarını tespit etmek

Aşama 1 : Vertex noktalarını bulalım

```
x1= a * cos(30°)  
y1 = a * sin(30°)  
x2 = -x1  
y2 = -y1  
x3 = x1  
y3 = y2  
x4 = x2  
y4 = y1
```



Motifi Oluşturmak

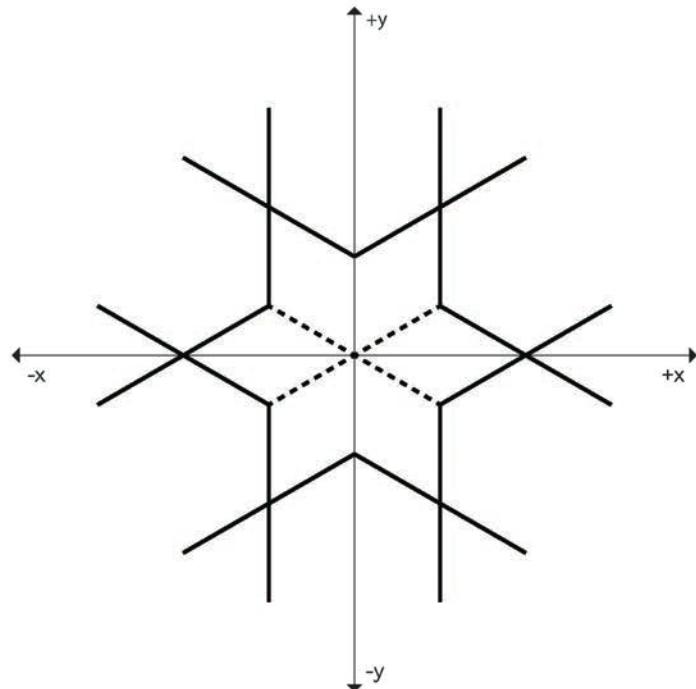
Aşama 2 : Temel Görsel Bileşeni çizmeye çalışalım. İki tane kesişen doğrudan oluşuyor.

```
let a = 30;  
  
function setup() {  
    createCanvas(600, 600);  
    angleMode(DEGREES);  
}  
function draw() {  
    let x1,y1,x2,y2,x3,y3,x4,y4;  
    background(255);  
    push();  
    translate(width*0.5, height*0.5);  
    //line one  
    beginShape();  
    x1 = a * cos(30);  
    y1 = a * sin(30);  
    vertex(x1,y1);  
    x2 = -1 * x1;  
    y2 = -1 * y1;  
    vertex(x2,y2);  
    endShape();  
    //line two  
    beginShape();  
    x3 = x1;  
    y3 = y2;  
    vertex(x3,y3);  
    x4 = x2;  
    y4 = y1;  
    vertex(x4,y4);  
    endShape();  
    pop();  
}
```

Motifi Oluşturmak

Aşama 3 : Motifi, Temel Görsel Bileşeni kullanarak transformasyon fonksiyonları yardımı ile oluşturalım.

Algoritma: Temel Görsel Bileşeni yarı genişliğinde sağa kaydır. Merkez etrafında altı defa döndür.



Motifi Oluşturmak

Aşama 4 : Motifi kodla oluşturmak için 6 tekrarlı bir loop döngüsü kullanacağız. Unutmayın transformasyon fonksiyonlarının sırası önemlidir!

```
let a = 30;

function setup() {
    createCanvas(400, 400);
    angleMode(DEGREES);
}

function draw() {
    let x1,y1,x2,y2,x3,y3,x4,y4;
    background(255);
    push();
    translate(width*0.5, height*0.5);
    for(let i=0; i<6; i++){
        push();
        rotate(i*60);
        //move to the right by its width size
        translate(cos(30)*a*2,0);
        //line one
        beginShape();
        x1 = a * cos(30);
        y1 = a * sin(30);
        vertex(x1,y1);
        x2 = -1 * x1;
        y2 = -1 * y1;
        vertex(x2,y2);
        endShape();
        //line two
        beginShape();
        x3 = x1;
        y3 = y2;
        vertex(x3,y3);
        x4 = x2;
        y4 = y1;
        vertex(x4,y4);
        endShape();
        pop();
    }
    pop();
}
```

Bezeme

Bezeme, motif adı verilen bir veya daha fazla geometrik şekil kullanılarak, üst üste binme ve boşluk olmaksızın bir yüzeyin, genellikle bir düzlemin kaplanmasıdır.



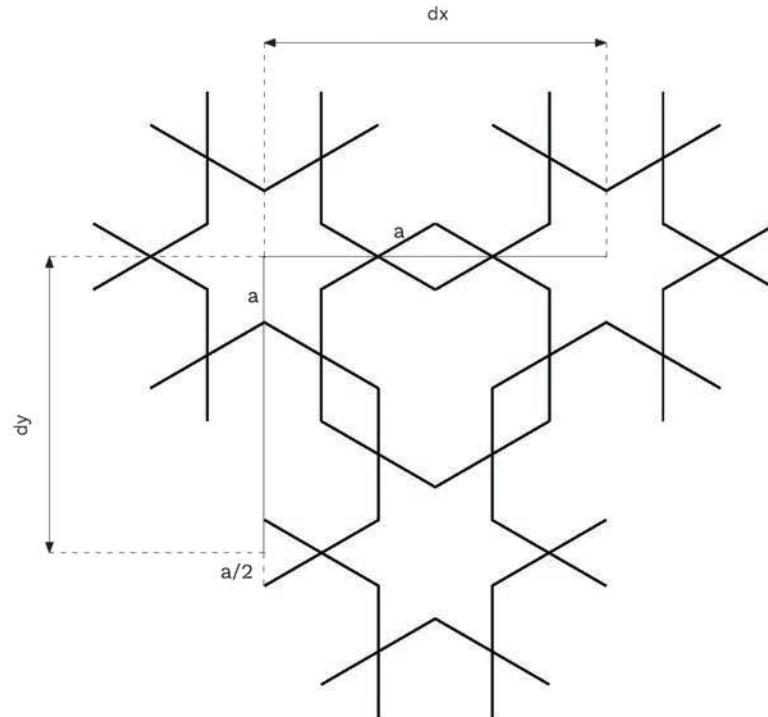
Bezeme p5.js

```
class Rectangle {  
  constructor(name, height, width) {  
    this.name = name;  
    this.height = height;  
    this.width = width;  
  }  
}  
  
let square = new Rectangle('square', 1, 1); // creating new  
instance of Polygon Class.  
console.log(square.width); // prints '1' to the console
```

Bezeme p5.js

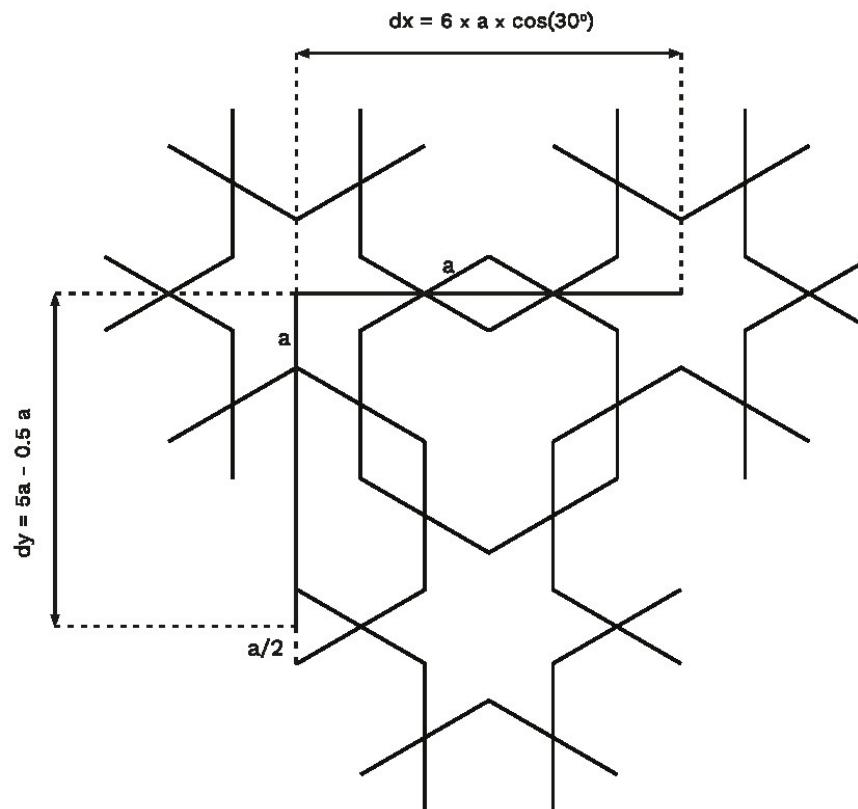
```
let bug; // Declare object
function setup() {
  createCanvas(710, 400); // Create object
  bug = new Jitter();
}
function draw() {
  background(50, 89, 100);
  bug.move();
  bug.display();
}
```

```
// Jitter class
class Jitter {
  constructor() {
    this.x = random(width);
    this.y = random(height);
    this.diameter = random(10, 30);
    this.speed = 1;
  }
  move() {
    this.x += random(-this.speed, this.speed);
    this.y += random(-this.speed, this.speed);
  }
  display() {
    ellipse(this.x, this.y, this.diameter, this.diameter);
  }
}
```



Analyzing the Tessellation

Step 5: We need to calculate the dx, dy, and doff values in the placement.



Tessellation Code

```
// Motif class
class Motif {
    constructor(a) {
        this.a = a;
    }

    display() {
        let x0, y0, x1, y1, x2, y2, x3, y3;
        for (let i = 0; i < 6; i++) {
            push();
            rotate(i * 60);
            translate(cos(30) * this.a * 2, 0);
            //line one
            beginShape();
            x0 = this.a * cos(30);
            y0 = this.a * sin(30);
            vertex(x0, y0);
            x1 = -1 * x0;
            y1 = -1 * y0;
            vertex(x1, y1);
            endShape();
            //line two
            beginShape();
            x2 = x0;
            y2 = y1;
            vertex(x2, y2);
            x3 = x1;
            y3 = y0;
            vertex(x3, y3);
            endShape();
            pop();
        }
    }
}
```

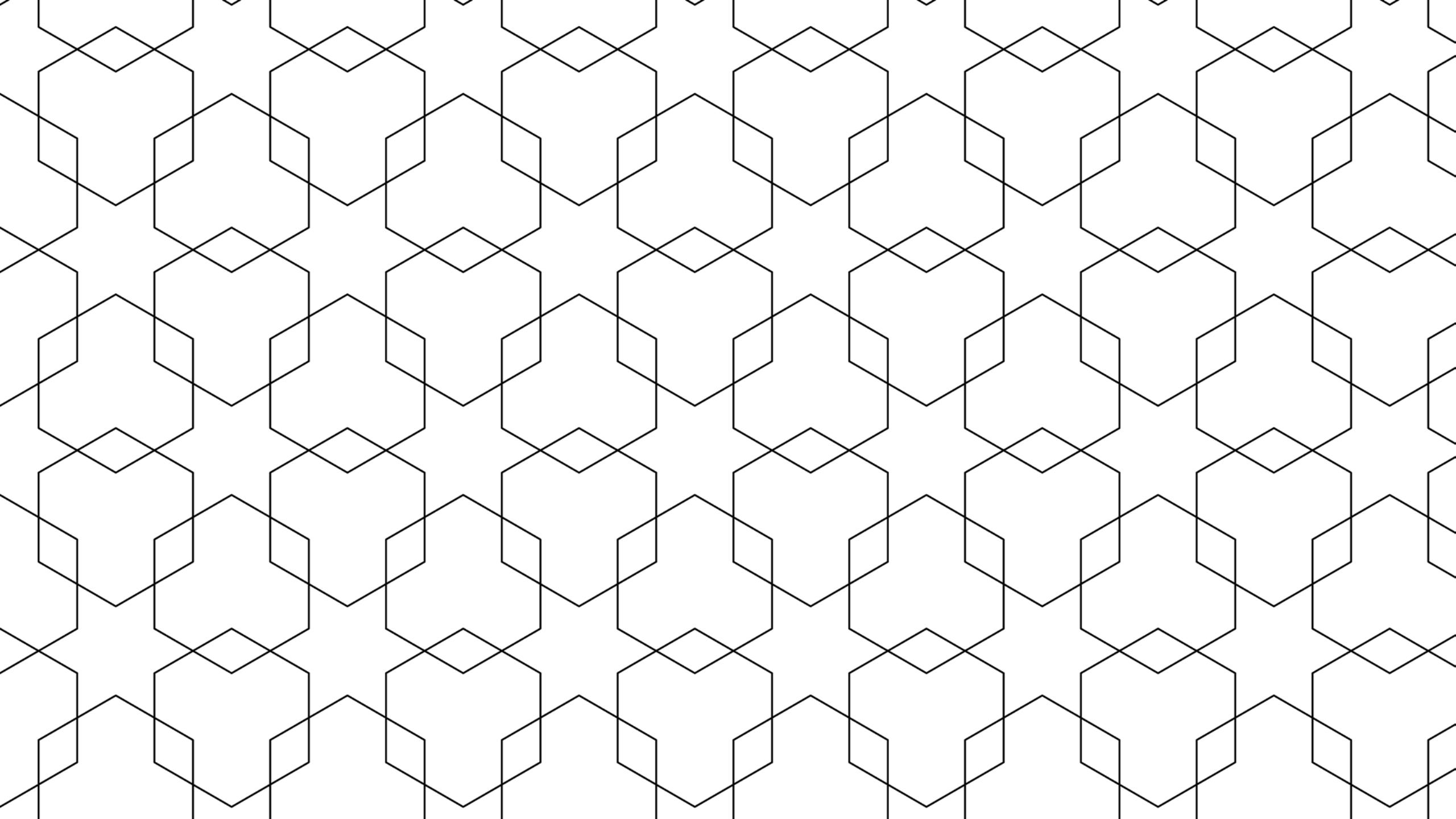
```
//scale factor
let a = 24;
let motif = new Motif(a);
let nRow;
let nCol;
let dx, dy;

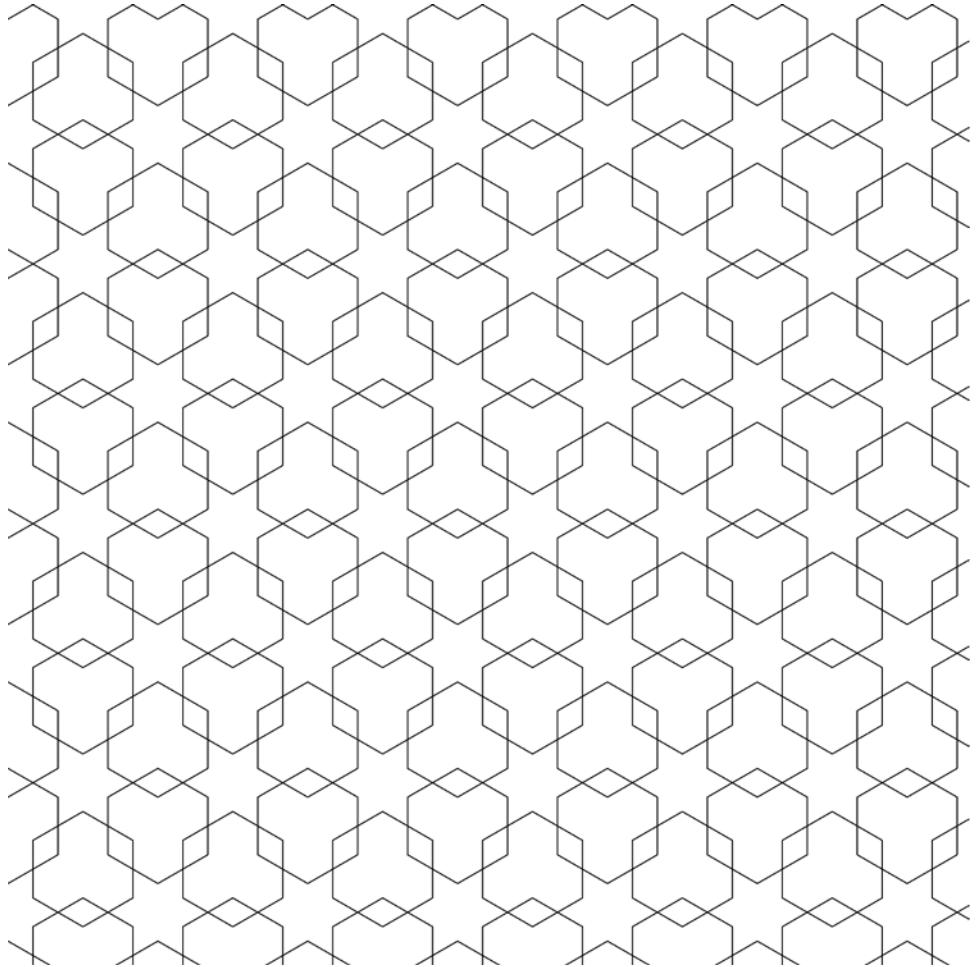
function setup() {
    createCanvas(800, 800);
    angleMode(DEGREES);
    noFill();
    noLoop();
}

dx = 6 * a * cos(30);
dy = 4.5 * a;
doff = 0.5 * dx;

//approximate the nRow and nCol values
nCol = ceil(width / dx);
nRow = ceil(height / dy);

function draw() {
    for (let c = 0; c < nCol; c++) {
        for (let r = 0; r < nRow; r++) {
            push();
            if (r % 2 == 0) {
                //columns 0,2,4
                translate(doff, 0);
            }
            translate(c*dx, r*dy);
            motif.display();
            pop();
        }
    }
}
```



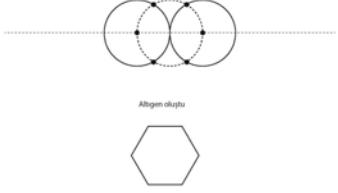


VS



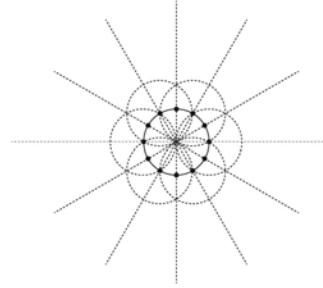
- Örnek: İslam Sanatı Geometrik Desen / Eşrefoğlu Camii, Beyşehir

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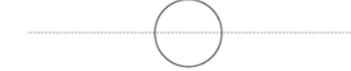


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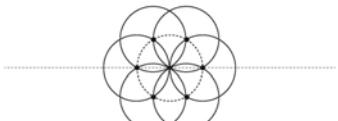
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Aşama 2 : Pergel ile merkezden doğru geçen bir daire çizin



2

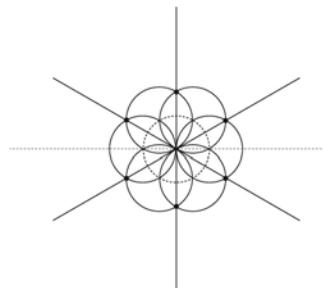
Gönüllü Ödev: El Çizimi

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Aşama 4 : Kesijim noktalarına merkez alan aynı genitlikte dilerler çizin



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Aşama 5 : Kesijim noktalarından geçen doğrular çizin



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Aşama 1 : Çetvelle bir doğru çizin



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