Ring Around the Rose Window

A common architectural feature used in construction during the renaissance was the rose window. It can be found on palaces, cathedrals, and other buildings of that time. Originally made of stone and glass the windows consisted of a large circle with decorative features arranged like spokes of a wheel in the interior of the circle.

Attributes of the window:

- **The window (figure 1) is made up of a central circle with twelve spokes.**
- **The distance from A to C is three times the distance for A to B.**
- **The smaller circles are tangent to each other.**
- **The arcs at the outer edge of the circle are tangent to each other and tangent to the smaller circle on its spoke.**

Your task is to use geometric tools to reproduce this window. The reproduction should be scalable with no visual defects.

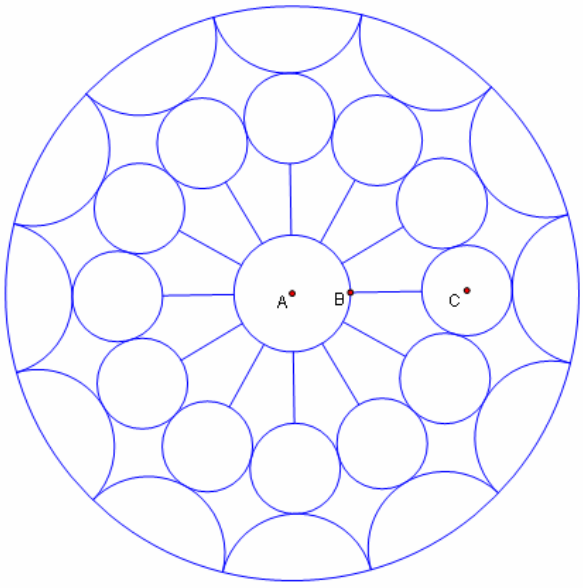
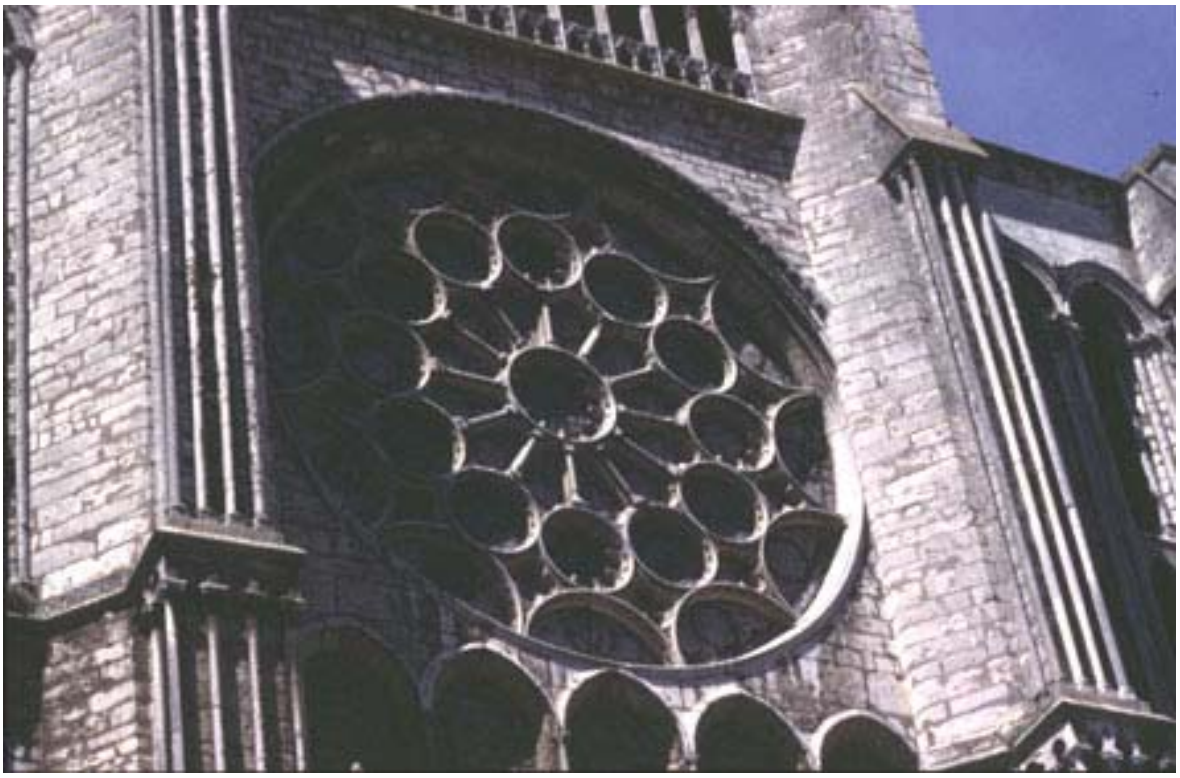
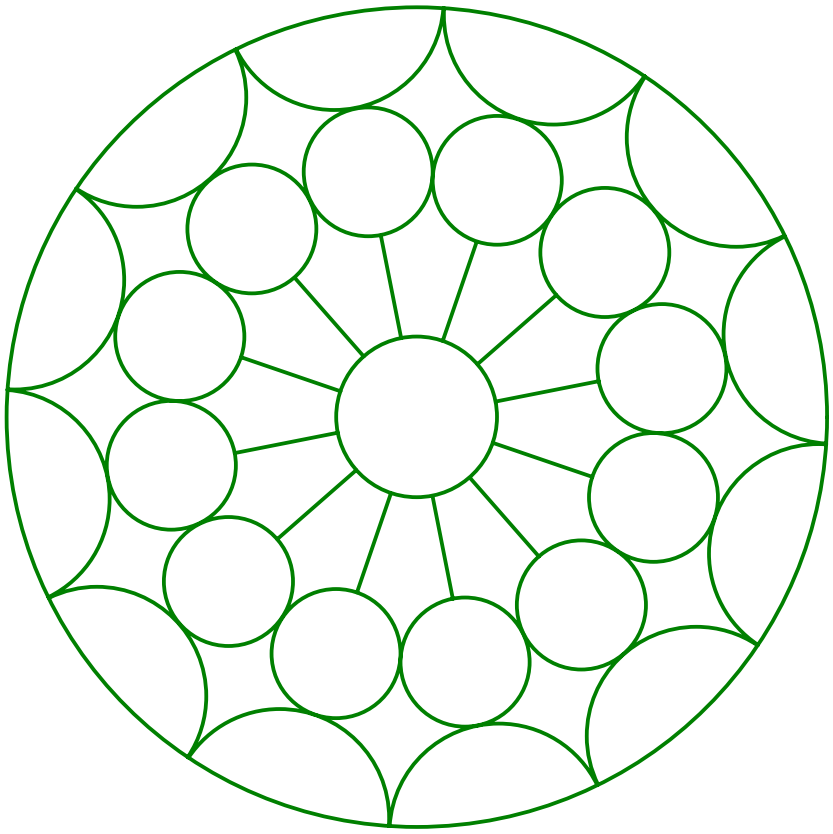


Figure 1.





Understanding the Problem and Planning the Solution

1. Which geometric concepts and skills can be identified in the picture?

2. List as many problem-solving strategies as you can recall. Which strategies will you use to perform your construction?

3. Determine a plan for your construction utilizing pencil and paper techniques. What will you do first, second, etc…? Write your plan below including any diagrams or rough sketches and justifications.

4. What geometric concepts will you utilize to carry out your plan?

5. How can you determine if your pencil and paper construction is scalable with no visual defects?

6. What are some of the challenges to constructing the figure with pencil and paper?

Constructing the Rose

1. Construct the rose window using Geometer's Sketchpad.

2. Did you have to alter your plan for constructing the figure? If so, how and why.