CONSTRUCTING AN OPTICAL ILLUSION

The optical illusion above can be viewed in three ways.

- A cube with a corner cut out
- A cube with another cube on its corner
- A room with a cube in the corner

Use a straightedge and a compass to construct this optical illusion.

**Solution:** In the following steps, use light pencil lines that can be erased.

1. Use a compass to draw a circle.
2. Without changing the compass setting (the radius of the circle), mark six successive arcs around the circle. Label the points as A, B, C, D, E, and F.
3. Use a straight edge to draw the segments $\overline{AD}$, $\overline{BE}$, and $\overline{CF}$. These three segments intersect at the center of the circle. Label the center as O.
4. Find the midpoint of $\overline{OA}$. Label this point A’. Do the same for segments $\overline{OB}$, $\overline{OC}$, $\overline{OD}$, $\overline{OE}$, and $\overline{OF}$.
5. Use a straightedge to draw the large hexagon ABCDEF. Then draw the small hexagon A’B’C’D’E’F’.
6. Shade the quadrilateral $\overline{OC’D’E’}$ and the hexagon $\overline{ABB’A’F’F}$. Erase the lines you don’t need and darken the lines you want to keep.

**Project:** Using a compass and a straightedge, construct a similar optical illusion or decorative pattern. Write the procedure of the construction and number each step.