Plane Geometry—concluded

8. The diagonals of the parallelogram $ABCD$ intersect at $O$. Show that if the midpoints of $AO$, $BO$, $CO$, and $DO$ are joined in order, another parallelogram is formed whose area is one-fourth the area of $ABCD$. \[12\%\]

9. A parallelogram with adjacent sides 5 and 12 is inscribed in a circle. Find the area of the circle. \[12\%\]

10. A side of a regular hexagon is 8. Find the perimeter and the area of the triangle formed by joining alternate vertices of the hexagon. \[12\%\]

11. The radii of two circles are 8 and 29 respectively. The distance between their centers is 40. How far from the center of the smaller circle does the common external tangent cut the line of centers? \[12\%\]