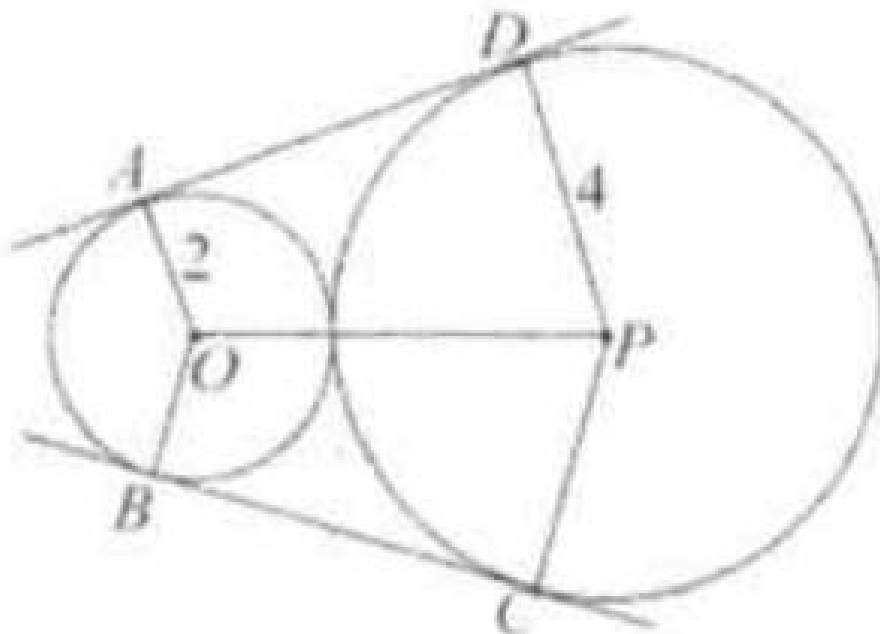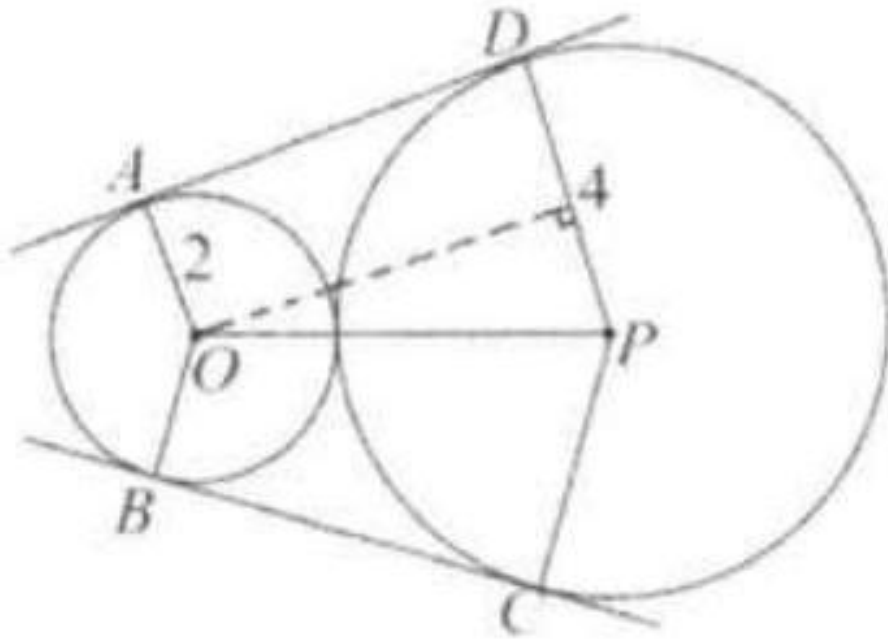# Problem

(2006 AMC 12 B) Circles with centers O and P have radii 2 and 4, respectively, and are externally tangent. Points A and B are on the circle centered at O, and points C and D are on the circle centered at P, such that AD and BC are common external tangents to the circles. What is the area of hexagon $AOBCPD$?

(A) $18\sqrt{3}$
(B) $24\sqrt{2}$
(C) 36
(D) $24\sqrt{3}$
(E) $32\sqrt{2}$

Solution

(B). Through O draw a line parallel to AD intersecting PD at F. Then $AOFD$ is a rectangle and OPF is a right triangle. Thus $DF = 2, FP = 2$, and $OF = 4\sqrt{2}$. The area of trapezoid $AOPD$ is $12\sqrt{2}$, and the area of hexagon

$AOBCPD$ is $2 \times 12\sqrt{2} = 24\sqrt{2}$.