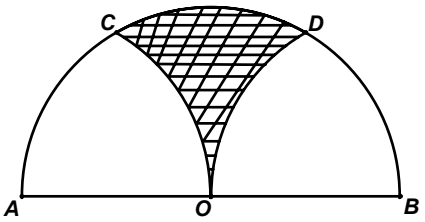
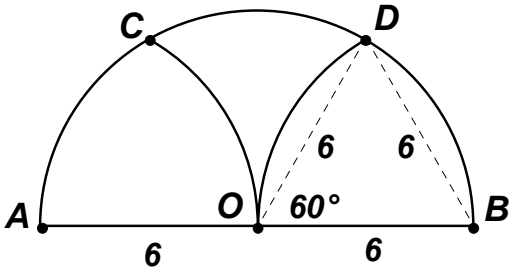
Team Round - continued



E) Area sector $OBD = \frac{1}{6}\pi \cdot 6^2 = 6\pi$

Area (Equilateral ΔOBD) = $\frac{6^2}{4}\sqrt{3} = 9\sqrt{3}$



Area (curvilinear region *OBD*) =
Area(sector *OBD* + sector *BOD* - ΔOBD)
$= 6\pi + 6\pi - 9\sqrt{3} = 12\pi - 9\sqrt{3}$
= Area (curvilinear region *OAC)*

Area (shaded region *OCD*) = Area(semi-circle) – 2 · Area(curvilinear region *OBD*)
$= 18\pi - 2(12\pi - 9\sqrt{3}) =$ **$\underline{18\sqrt{3} - 6\pi}$**

F) The coefficients are given by the expression $\binom{8}{k}(4)^{8-k}(\frac{1}{2})^k = \binom{8}{k}2^{16-3k}$ for $k = 0$ to 8

Combinatorial Factor (Pascal'sTriangle)	**1**	**8**	**28**	**56**	**70**	**56**	**28**	**8**	**1**
Power of 2	**2^16**	**2^13**	**2^10**	**2^7**	**2^4**	**2^1**	**2^-2**	**2^-5**	**2^-8**

Smallest: 7